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October 23, 2012

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

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

Dear Mr. Wickham,

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

If you have any questions or need additional information, please contact me at 925.790.6270.

Sincerely,

Roya Kambin
Union Oil of California – Project Manager

Attachment
Feasibility Study

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

Chevron Environmental Management Company

Feasibility Study

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

October 23, 2012

ARCADIS

Tyler Sale
Environmental Engineer II

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Project Manager

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Professional Geologist

Feasibility Study

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

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Our Ref.:
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Date:
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1. Introduction

On behalf of Chevron Environmental Management Company, for itself and as Attorney-in-Fact for Union Oil Company of California, ARCADIS U.S., Inc. (ARCADIS) prepared this Feasibility Study (FS) to identify and evaluate potential remedial alternatives for interim remedial action to address the petroleum-hydrocarbon-impacted groundwater in the co-mingled plume at 706, 726, and 800 Harrison Street in Oakland, California (site). Figure 1 illustrates the general area of the site and Figure 2 presents a layout of the three properties.

This FS was prepared as requested by the Alameda County Department of Environmental Health (ACEH) in a letter dated July 9, 2012 (Appendix A). This FS presents relevant background information, provides a detailed comparative analysis of potential remedial alternatives, and recommends further actions to address petroleum hydrocarbon concentrations in groundwater.

1.1 Purpose/Remedial Action Objectives

The purpose of this FS is to identify and evaluate remedial action alternatives that are:

- Appropriate for site-specific conditions
- Protective of present and potential future public health, safety, and welfare of the environment
- Consistent with applicable laws, regulations and guidance documents

This FS recommends further action to address groundwater, based on balancing the remedy selection factors.

1.2 Report Organization

A description of site background information is provided in Section 2. A summary of the site conceptual model is provided in Section 3. A discussion of the development of remedial alternatives is presented in Section 4. The analysis and evaluation of each remedial alternative is summarized in Section 5. A discussion of the comparative analysis of remedial alternatives is provided in Section 6.

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2. Site Background

This section describes the site's physical setting, regulatory history, and previous environmental investigations conducted 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, Oakland, California (Figure 1). All property locations and boundaries are shown on Figure 2.

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

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

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

2.2 Site Water and Land Use

Sections 2.2.1 and 2.2.2 describe the beneficial water and land use determinations.

2.2.1 Beneficial Water Use Determination(s)

The site is located in the East Bay Plain sub-basin of the Santa Clara Valley groundwater basin, as identified in the San Francisco Bay Basin (Region 2) Water Quality Control Plan (California Regional Water Quality Control Board – San Francisco Bay Region [RWQCB] 2007). The Santa Clara Valley groundwater basin has been designated as having existing

beneficial uses for municipal and domestic water supply, industrial process water supply, industrial service water supply, and agricultural water supply. The information presented in the Sections 2.2.2, 2.2.3, and 2.2.4 will help to evaluate potential receptors for groundwater at the site.

2.2.2 Review of Well Logs

Water well searches have been performed for all three properties to identify the location of permitted water supply wells within a 1-mile radius of the site. The survey included reviewing the California Department of Water Resources files for water wells within a 1-mile radius of the site. The water well survey concluded that five water supply wells are located within a 1-mile radius of the site: four industrial supply wells and one irrigation supply well. The closest water well is an irrigation well located at 900 Fallon Street at Laney College, approximately 1,880 feet southeast (cross gradient) of the site (Stantec 2009).

2.2.3 Summary of Beneficial Water Use Determination

Potential beneficial uses of the site groundwater, as defined by the RWQCB, are broad and include domestic, municipal, agricultural, and industrial uses (RWQCB 2007).

2.2.4 Land Use Determination

According to the City of Oakland, all three properties are zoned in the central business zoning district. For this FS, it is assumed that potential future uses of the properties will be consistent with current zoning or commercial zoning purposes.

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3. Site Conceptual Model

This section describes the site geology and hydrogeology as well as the nature and extent of remaining petroleum hydrocarbons in the groundwater.

A summary of the site history, previous investigations, and interim remedial actions is included in Appendix B. Well construction and soil boring details are included in Tables 1 and 2, respectively. Historical soil and groundwater analytical data are provided in Tables 3 and 4, respectively.

3.1 Regional Geology

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

3.2 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 sands 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 sand and silty sand are present (Stantec 2009). It is assumed the Merritt Sand lies under the site, based on visual inspections of soil during the investigations (Stantec 2009).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 second semiannual groundwater monitoring and sampling event in August 2012, average depth-to-water measurements were approximately 16.30

(706 Harrison Street), 19.80 (726 Harrison Street), and 17.92 (800 Harrison Street) feet below top of well casing. A deeper water bearing zone was encountered at depths of 42 to 50 feet bgs during advancement of the cone penetrometers. Prior to the June 2011 site assessment, no wells were installed in the deeper water bearing zone. In June 2011, ASE oversaw the installation of monitoring well MW-6 in the source area near EW-1 on the 726 Harrison Street Property within the deeper water bearing zone. MW-6 is screened from 44 to 49 feet bgs (Table 1).

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

A groundwater potentiometric surface map from the second semiannual 2012 monitoring event is presented on Figure 8. A groundwater gradient direction rose diagram is provided on Figure 9.

3.3 Mass Distribution in the Subsurface

3.3.1 Dissolved in Groundwater

The area of impacted groundwater was estimated and is presented on isoconcentration contour maps for total petroleum hydrocarbons quantified as gasoline range organics (TPH-g), benzene, and methyl tert-butyl ether (MTBE) for the August 9, 2012 sampling event (Figures 10, 11, and 12; Table 4). The properties located at 706 and 726 Harrison Street have the greatest mass for the dissolved groundwater plume. The following equation was used to estimate the petroleum hydrocarbon mass remaining in the area of impacted groundwater:

Mass remaining = C * V * n

Where:

C = Average concentration (micrograms per liter [µg/L])

V = Volume of impacted groundwater

n = Porosity of soil (estimated as 30 percent)

Based on this equation, an estimated total of 1.28 pounds of benzene, 2.58 pounds of MTBE, and 5.09 pounds of TPH-g mass exists in the groundwater at the site. The complete calculations are presented in Appendix C.

3.3.2 Sorbed to Soil Matrix

Various excavations have been performed at each property to address petroleum hydrocarbons in the soils. The details of excavations and soil removal activities are described in Appendix B. Soil isopleth contour maps for benzene, MTBE, and TPH-g 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.

Evaluation of the soil data with the corresponding groundwater potentiometric surface maps and cross-sections indicates the presence of two source areas beneath the former USTs at 706 and 726 Harrison Street, which were removed in 1991 and 1995, respectively. Due to the building location, over excavation of the tank pit was not completed for the removal of impacted soil at 726 Harrison Street.

3.4 Groundwater

Elevated concentrations of dissolved TPH-g, benzene, and MTBE are currently present in groundwater on site and downgradient from the USTs at 706 and 726 Harrison Street. A statistical analysis of groundwater analytical trends is presented in Section 3.4.1. Biogeochemical and natural attenuation indicator parameters are discussed in Section 3.4.2. Groundwater isoconcentration contour maps for benzene, MTBE, and TPH-g for the August 2012 sampling event are included on Figures 10, 11, and 12. Groundwater monitoring well hydrographs depicting groundwater elevation and constituent concentration trends are provided in Appendix E.

3.4.1 Linear Regression Trend Analysis

To assess trends in benzene, MTBE, and TPH-g concentrations with time, a statistical evaluation of the groundwater monitoring data was prepared for monitoring wells demonstrating decreasing trends. MTBE is the slowest constituent to naturally attenuate in groundwater and was therefore the focus of the linear regression trend analysis. All monitoring wells from the three properties were included in the linear regression trend analysis. The statistical analysis was performed using a linear regression trend test on historical groundwater analytical data.

Data sets for the analyzed monitoring wells at 706 and 726 Harrison Street consist of monitoring results from 1997 through February 2012, while the data set for 800 Harrison Street consists of monitoring results from 1991 to February 2012. Where non-detect concentrations were used in the calculations, the concentrations were assumed to be equal to the detection limits. Use of the detection limit for concentrations that were below detection provides a conservative estimate for evaluating the concentration trends through time.

Linear regression trend analyses were conducted using natural log-normalized benzene, MTBE, and TPH-g concentration data to estimate concentration-time trend direction, attenuation rates, and approximate time to achieve cleanup goals using a point-rate approach (United States Environmental Protection Agency [USEPA] 2002). The results of the linear regression trend analyses, including correlation coefficients, p-value of the correlation, trend direction, and anticipated date to reach cleanup goals, are summarized in Appendix F. Linear regression analysis allows for estimating the time to reach the cleanup goal at wells with decreasing constituent of concern (COC) concentration trends. The correlation coefficient, R^2, is a measure of how well the linear regression fits the site data; values close to one are considered to be a good fit, while values close to zero are considered to be a poor fit. The p-value of the correlation provides a measure of the level of significance of the statistical test. Correlations were accepted as significant for p-values less than or equal to 0.05 and not significant for p-values greater than 0.05.

Groundwater monitoring data collected at the following wells indicate statistically significant decreasing concentration trends for MTBE:

- 706 Harrison Street: MW-1
- 726 Harrison Street: MW-1, MW-3, MW-4
- 800 Harrison Street: MW-1, MW-5, MW-6, MW-7, MW-8

The groundwater monitoring data collected in the remaining wells do not indicate statistically significant trends. Based on the data sets from 2003 through 2012, the average projected date to reach the water quality objective for MTBE [5 µg/L] in wells with decreasing trends is 2046.

3.4.2 Biogeochemical and Natural Attenuation Indicator Parameters

Native bacteria in soil and groundwater obtain energy for cell production and maintenance by facilitating thermodynamically advantageous reduction-oxidation reactions, involving the transfer of electrons from electron donors to available electron acceptors. Electron

acceptors in groundwater systems include oxygen, nitrate, manganese oxides, ferric iron hydroxides, sulfate, and carbon dioxide.

Natural biodegradation of petroleum hydrocarbons can occur in both aerobic and anaerobic environments. Aerobic biodegradation occurs when sufficient oxygen is present in groundwater. Anaerobic biodegradation processes will become dominant as oxygen is consumed. Anaerobic microorganisms will consume other electron acceptors in the absence of oxygen in the following order of thermodynamic preference: nitrate, ferric iron, sulfate, and carbon dioxide.

As hydrocarbons are biodegraded through anaerobic processes, concentrations of nitrate and sulfate will decrease, while concentrations of dissolved ferrous iron increase. Carbon dioxide will be consumed and created, and methane will be produced within in the plume through this process (Suthersan 1997).

During the third quarter 2012 groundwater monitoring event, biogeochemical and natural attenuation indicator parameters were collected from each monitoring well at all three properties to better understand the extent of biodegradation of petroleum hydrocarbon compounds in groundwater. The parameters collected include dissolved oxygen (DO), oxidation-reduction potential (ORP), nitrate, nitrite, total iron, sulfate, methane, alkalinity as calcium carbonate, nonvolatile organic carbon, and dissolved metals. The biogeochemical and natural attenuation indicator results are presented in Table 5.

Biogeochemical parameters have only been collected once at all three properties. To better understand the biodegradation process in groundwater, one additional round of biogeochemical parameters will be collected from each monitoring well during the first semiannual 2013 groundwater monitoring event. Biogeochemical parameter results are discussed below (without detailed interpretation due to the lack of historical data):

- DO concentrations in groundwater ranged from 0.01 milligram per liter (mg/L) (MW-8, 800 Harrison Street) to 6.25 mg/L (MW-6, 800 Harrison Street) across the three properties.

- Nitrate detections in groundwater ranged from 0.56 mg/L (MW-3, 726 Harrison Street) to 66 mg/L (MW-2, 726 Harrison Street) across the three properties.

- Sulfate detections in groundwater ranged from 2.5 mg/L (MW-5, 800 Harrison Street) to 130 mg/L (MW-2, 800 Harrison Street) across the three properties.

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- Dissolved iron detections ranged from 0.16 mg/L (MW-6, 800 Harrison Street) to 6.9 mg/L (MW-2, 706 Harrison Street) across the three properties.

- Methane detections ranged from 0.0012 mg/L (MW-2, 726 Harrison Street) to 6.8 mg/L (MW-2, 706 Harrison Street) across the three properties.

The biogeochemical parameter monitoring results generally indicate aerobic conditions in groundwater at the site. Monitoring wells located outside of the hydrocarbon groundwater plume typically have higher concentrations of DO, while wells located within the plume generally have lower (but not depleted) DO concentrations. Monitoring well MW-2, located at 706 Harrison Street, demonstrated a depleted nitrate concentration and an elevated ferrous iron concentration with respect to other monitoring wells on the same property. This typically indicates anaerobic, iron-reducing conditions in groundwater within the extent of a hydrocarbon plume; however, MW-2 (706 Harrison Street) contains a fairly high DO concentration.

Results from the baseline biogeochemical and natural attenuation monitoring event indicate moderate evidence of active biodegradation processes occurring at the site, with DO, nitrate, and ferric iron used as electron acceptors. Biodegradation processes at the site will be evaluated following the additional biogeochemical monitoring event to be conducted during the first semiannual 2013 groundwater monitoring event. This additional information will help to understand the biodegradation of petroleum hydrocarbon constituents in groundwater at the site.

3.5 Summary

Over-excavations were completed to remove petroleum-impacted soil during UST removal activities at 706 and 726 Harrison Street. As discussed above, the groundwater monitoring network at 800 Harrison Street contains significantly lower concentrations of COCs compared to the other two properties. The property at 800 Harrison is located hydraulically upgradient of the other two properties (726 and 706 Harrison Street, respectively) and monitoring wells MW-1, MW-5, MW-6, MW-7, and MW-8 at 800 Harrison Street exhibit statistically significant declining trends. Therefore, remedial alternatives will focus on dissolved-phase mass in groundwater at 706 and 726 Harrison Street.

The saturated zone at 706 and 726 Harrison Street primarily comprises moderately permeable silty sand material above a denser silty clay layer. Baseline geochemical parameter data indicate possible background aerobic processes in the aquifer and anaerobic conditions within the plume spanning 706 and 726 Harrison Street. Additional

biogeochemical parameters will be required to fully understand biodegradation processes in groundwater at all three properties.

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4. Development of Remedial Options

Based on results from previous investigations and historical remedial activities conducted at the site, five potential remedial alternatives were compiled for further evaluation in this FS. The following five remedial alternatives were developed for the site:

- Alternative 1 – Monitored Natural Attenuation (MNA)
- Alternative 2 – Air Sparge (AS)/Soil Vapor Extraction (SVE)
- Alternative 3 – Multi-Phase Extraction (MPE)
- Alternative 4 – In-Situ Enhanced Bioremediation
- Alternative 5 – In-Situ Chemical Oxidation (ISCO)

Remedial alternatives 2 through 5 will be evaluated in conjunction with MNA. These remedial alternatives are described in Sections 4.1 through 4.5.

4.1 Remedial Alternative 1 – Monitored Natural Attenuation

Remedial Alternative 1 (RA1) does not involve the implementation of active remediation to remove, treat, or contain COCs at the site. This remedial alternative relies on natural attenuation and biodegradation processes to reduce chemical concentrations through time. Semiannual groundwater monitoring will be performed to document COC concentration changes.

MNA processes achieve site-specific remediation objectives through reliance on natural attenuation within a controlled, monitored site cleanup approach. The natural attenuation process includes a variety of biological, chemical, or physical processes that can reduce mass, toxicity, mobility, volume, or concentrations of COCs in groundwater. Favorable background conditions are necessary in groundwater to drive the natural attenuation process and continued biodegradation of petroleum hydrocarbons. These intrinsic in-situ processes include: biodegradation, volatilization, diffusion, dilution, sorption, and chemical or biological stabilization, transformation, or destruction of COCs.

The effectiveness of natural attenuation processes is driven by the types and concentrations of constituents present and the physical, chemical, and biological characteristics of the soil and groundwater. Natural attenuation processes in the subsurface can reduce the potential risk posed by COCs in multiple ways. The biodegradation process may produce daughter compounds of constituents that are less toxic. Physical processes, dilution, or diffusion within the groundwater aquifer may also reduce risk by decreasing concentration levels. Sorption to soil or aquifer matrix within the subsurface may also decrease constituent mobility.

Components of this alternative include:

- Conducting an additional baseline biogeochemical groundwater monitoring event to further evaluate the biodegradation processes (i.e., anaerobic vs. aerobic) taking place within the site groundwater. This monitoring event would include collection of the same geochemical and natural attenuation parameters collected during the August 9, 2012 event. The supplemental groundwater monitoring event would include collection of DO, nitrate, ferrous iron, sulfate, alkalinity as calcium carbonate, methane, nonvolatile organic carbon, and ORP; and the evaluation of COCs to confirm water quality at the site. This data, in conjunction with initial baseline geochemical parameters, will be used to evaluate the effectiveness of MNA via trend analysis to verify decreasing trends and statistical analysis to determine whether site cleanup objectives can be achieved within a reasonable time frame.

- Continuing the semiannual groundwater monitoring program to confirm continued reduction of site COC concentrations through natural attenuation processes. One semiannual groundwater monitoring event each year would also include collection of biogeochemical indicator parameters, including DO, nitrate, ferrous iron, sulfate, alkalinity as calcium carbonate, methane, nonvolatile organic carbon, and ORP for continued evaluation of the biodegradation processes taking place within site groundwater.

4.2 Remedial Alternative 2 – Air Sparge/Soil Vapor Extraction

Remedial Alternative 2 (RA2) uses AS/SVE to treat petroleum hydrocarbon impacts through physical treatment. AS involves the controlled injection of ambient air into the subsurface beneath the water table through a series of injection wells. The injected air treats dissolved petroleum hydrocarbons through volatilization or stripping. Volatilized volatile organic compounds (VOCs) then migrate upward through groundwater and into the vadose zone. The VOC vapors are captured in SVE wells and directed to a treatment system through air conveyance piping. Typical equipment used for implementation of AS includes vertical sparge wells, a blower to inject air, and system controls and instrumentation.

SVE is a process that removes VOCs from unsaturated soil below the ground surface and above the groundwater table. The SVE process involves inducing a vacuum within the soil matrix through a network of vapor extraction wells. The vacuum induced in the vadose zone volatilizes VOCs in the soil and captures VOCs stripped from groundwater through the AS process. After collection in the SVE wells, vapors are conveyed to a treatment system. Typically, the extracted vapors are treated by vapor-phase granular

activated carbon or thermal destruction (catalytic or thermal oxidation) prior to being discharged through an exhaust stack. Typical equipment used for implementation of SVE includes vertical extraction wells, a vacuum unit (blower), a liquid/vapor separator (knock-out tank), a discharge vapor treatment system, and system controls and instrumentation.

Components of this remedial alternative potentially include:

- Conducting an additional baseline biogeochemical groundwater monitoring event to further evaluate the biodegradation processes taking place within the site groundwater.

- Completing a pilot study to further evaluate soil permeability, porosity, moisture content, VOC mass removal rate, radius of influence, and optimal system design and operation parameters.

- Installing AS and SVE wells, conveyance piping, and a skid-mounted treatment system at the site. The system would include necessary SVE wells to capture subsurface vapors after stripping through the AS process.

- Performing system startup, optimization, and operation and maintenance (O&M) activities.

- Conducting air monitoring activities to evaluate the reduction of total VOC concentrations in the influent and effluent air of the treatment system.

- Maintaining and repairing the concrete/pavement materials covering the majority of the properties during remediation.

- Continuing the semiannual groundwater monitoring program. One semiannual groundwater monitoring event each year would also include collection of biogeochemical indicator parameters, including DO, nitrate, ferrous iron, sulfate, alkalinity as calcium carbonate, methane, nonvolatile organic carbon, and ORP for continued evaluation of the biodegradation processes taking place within site groundwater.

4.3 Alternative 3 – Multi-Phase Extraction

Remedial Alternative 3 (RA3) uses MPE to contain and treat COCs in groundwater. The MPE process extracts impacted groundwater and vapor from the subsurface through use of a high vacuum system and an extraction well network. The vacuum extraction wells are screened across the fringe of the water table to allow removal of soil vapors in the vadose

zone and petroleum-impacted groundwater. The high vacuum induced on the extraction wells lowers the water table surrounding the well casing to expose soil below the water table and allow extraction of the VOCs in the newly exposed soils. The vapors or liquid-phase organics and groundwater are removed, separated, and treated in an aboveground remediation building.

Components of this alternative potentially include:

- Conducting an additional baseline biogeochemical groundwater monitoring event to further evaluate the biodegradation processes taking place within the site groundwater.

- Completing a pilot study to further evaluate soil permeability, porosity, moisture content, VOC mass removal rate, radius of influence, and optimal system design and operation parameters.

- Installing vacuum extraction wells, conveyance piping, and a skid-mounted treatment system at the site. The system could include a sufficient number of vacuum wells to capture subsurface groundwater and vapors.

- Performing system startup, optimization, and O&M activities.

- Conducting air monitoring activities to evaluate the reduction of total VOC concentrations in the influent and effluent air of the treatment system.

- Maintaining and repairing the concrete/pavement materials covering the majority of the properties during remediation.

- Continuing the semiannual groundwater monitoring program. One semiannual groundwater monitoring event each year would also include collection of biogeochemical indicator parameters, including DO, nitrate, ferrous iron, sulfate, alkalinity as calcium carbonate, methane, nonvolatile organic carbon, and ORP for continued evaluation of the biodegradation processes taking place within site groundwater.

4.4 Remedial Alternative 4 – In-Situ Enhanced Bioremediation

Remediation Alternative 4 (RA4) includes in-situ enhanced bioremediation to treat COCs in groundwater through biodegradation. While bioremediation will occur aerobically through natural attenuation at some sites, the enhanced bioremediation approach accelerates the

rate of microorganism degradation reactions and stimulates the activity of microorganisms by optimizing environmental conditions. In-situ enhanced bioremediation typically entails the use of a system to supply oxygen, other electron acceptors, or nutrients to groundwater through an injection well network to stimulate microbial activity.

Components of this alternative potentially include:

- Conducting an additional baseline biogeochemical groundwater monitoring event to further evaluate the biodegradation processes taking place within the site groundwater.

- Completing an injection pilot study to further evaluate soil permeability, porosity, moisture content, radius of influence, required amendment volume, optimal injection well locations, and effectiveness of the enhanced biodegradation process.

- Installing injection wells, conveyance piping, and a skid-mounted treatment system at the site.

- Performing system startup, optimization, and O&M.

- Continuing the semiannual groundwater monitoring program. One semiannual groundwater monitoring event each year would also include collection of biogeochemical indicator parameters, including DO, nitrate, ferrous iron, sulfate, alkalinity as calcium carbonate, methane, nonvolatile organic carbon, and ORP for continued evaluation of the biodegradation processes taking place within site groundwater.

4.5 Remedial Alternative 5 – In-Situ Chemical Oxidation

Remedial Alternative 5 (RA5) involves remediation of groundwater COCs through ISCO by delivering oxidants and other amendments to impacted groundwater to degrade organic hydrocarbon constituents to non-toxic byproducts. Typical chemical oxidants are activated persulfate, ozone, hydrogen peroxide, and potassium permanganate. Oxidant injections can be completed either through direct-push injections or manned injection events into permanent injection wells.

The completion of bench testing and further biogeochemical evaluation would be necessary to determine the proper reagent and dosing requirements. For this FS, we have assumed the use of sodium persulfate as the chemical oxidant with hydrogen peroxide or ferrous sulfate and citric acid as an activator. Assuming adequate dosing and delivery/contact, the

VOCs will likely react rapidly (i.e., within minutes), with complete destruction upon contact (greater than 90 percent effective destruction). Therefore, the effectiveness of this alternative is primarily based on the ability to deliver/distribute the treatment reagents to the affected media, the oxidation reaction kinetics, and the ability to overcome natural oxidant demand of the soils/aquifer. Reaction kinetics will also affect the rate of carbon dioxide generation and the amount of heat generated, and is often an important design consideration from a health and safety perspective.

MNA would be relied upon for areas outside the direct influence of the injection zone for final treatment.

Components of the alternative include:

- Conducting an additional baseline biogeochemical groundwater monitoring event to further evaluate the biodegradation processes taking place within the site groundwater.
- Completing an injection pilot study to further evaluate oxidant demand, potential infiltration/oxidant injection rates, and other parameters related to the design.
- Completing bench testing and further geochemical evaluation to aid in reagent selection and dose requirements.
- Installing an ISCO injection system (such as a network of vertical injection wells) at and hydraulically downgradient from the two source areas on 706 and 726 Harrison.
- Injecting oxidant solution into the injection wells.
- Conducting verification sampling and analysis activities to evaluate the reduction of COC concentrations in unsaturated soil.
- Continuing the semiannual groundwater monitoring program. One semiannual groundwater monitoring event each year would also include collection of biogeochemical indicator parameters, including DO, nitrate, ferrous iron, sulfate, alkalinity as calcium carbonate, methane, nonvolatile organic carbon, and ORP for continued evaluation of the biodegradation processes taking place within site groundwater.

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5. Analysis of Remedial Alternatives

This section describes and evaluates the five remedial alternatives identified in Section 4. Each remedial alternative is evaluated by assessing the following five remedy selection factors:

- Effectiveness
- Long-term reliability
- Implementability
- Implementation risk
- Cost

These five remedy selection factors are described in Section 5.1 and the remedial alternatives are evaluated in Section 5.2.

5.1 Remedy Selection Factors

Each of the five remedy selection factors used in this FS is described below.

5.1.1 Effectiveness

Each remedial action alternative is assessed for its short- and long-term effectiveness in achieving site cleanup goals by considering the following criteria, as appropriate:

- Magnitude of risk from untreated waste or treatment residuals remaining at the site with on-site management and controls to mitigate exposure through various exposure pathways. The characteristics of the residuals will be considered to the degree that they remain hazardous, considering their volume, toxicity, mobility, propensity to bioaccumulate, and propensity to degrade.

- Required level of engineering and institutional controls necessary to manage the risk posed from treatment residuals and untreated hazardous substances remaining at the site.

- For areas requiring remedial action, the ability of the remedial action to restore or protect beneficial uses of site groundwater.

- Adequacy of treatment technologies in meeting treatment objectives.

- Time required to achieve the remedial action objectives.

- Any other information relevant to effectiveness.

5.1.2 Long-Term Reliability

Each remedial action alternative is assessed for its long-term reliability by considering the following criteria, as appropriate:

- Reliability of treatment technologies in meeting treatment objectives.
- Reliability of engineering and institutional controls necessary to manage the risk from treatment residuals and untreated hazardous substances.
- Characteristics of the hazardous substance to be managed and the effectiveness and enforceability through time of engineering and institutional controls in preventing migration of constituents and in managing risks associated with potential exposure.
- Nature, degree, and certainties or uncertainties of any long-term management as related to ease of operation (e.g., operation, maintenance, and monitoring).
- Any other information relevant to long-term reliability.

5.1.3 Implementability

Each remedial alternative is assessed for the ease or difficulty of implementing the remedial action, by considering the following criteria, as appropriate:

- Constructability as related to practical, technical, and legal difficulties and unknowns associated with the implementation of a technology, engineering control, or institutional control.
- Ability to monitor the short- and long-term effectiveness of the remedy.
- Consistency with federal, state, and local requirements; activities needed to coordinate with other agencies; and ability and time required to obtain any necessary authorization from other governmental bodies.
- Availability of necessary services, materials, equipment, and specialists, including the availability of adequate off-site treatment, storage, and disposal capacity and services, and availability of prospective technologies.

- Any other information relevant to implementability.

5.1.4 Implementation Risk

Each remedial action alternative is assessed for the risk associated with implementing the remedial action, by considering the following criteria, as appropriate:

- Potential impacts to the community during implementation of the remedial action and the effectiveness and reliability of protective or preventative measures.
- Potential impacts to workers (800 Harrison Street) during implementation of the remedial action and the effectiveness and reliability of protective or preventative measures.
- Potential impacts to the environment during implementation of the remedial action and the effectiveness and reliability of protective or preventative measures.
- Time until the remedial action is complete.
- Any other information relevant to implementation risk.

5.1.5 Cost

Each remedial alternative is assessed for the reasonableness of cost by considering all of the following criteria, as appropriate:

- Cost of the remedial action including:
  - capital costs, including both direct and indirect costs
  - annual O&M costs
  - costs of any periodic review requirements.
- Degree to which the costs of the remedial action are proportionate to the benefits to human health and the environment created through risk reduction or risk management.
- Degree of sensitivity and uncertainty of the costs.
- Any other information relevant to cost-reasonableness.

The total cost of each alternative represents the sum of the direct capital costs (materials, equipment, labor), indirect capital costs (engineering, licenses/permits, and contingency allowances), and O&M costs. O&M costs may include operating labor, utility usage, necessary chemicals/reagents, and sampling and analysis. These costs are estimated with an anticipated accuracy between -30 and +50 percent, in accordance with USEPA guidance (USEPA 1988). The actual costs will depend on true labor and material costs, competitive market conditions, final project scope, and implementation schedule.

5.2 Remedial Alternative Evaluation

This section evaluates each remedial alternative based on the remedy selection factors described in Section 5.1.

5.2.1 Remedial Alternative 1 – Monitored Natural Attenuation Only

RA1 will rely solely on MNA processes (either aerobic respiration or anaerobic oxidation of petroleum hydrocarbon using naturally occurring electron acceptors) to reduce COC concentrations in groundwater through time. Semiannual groundwater monitoring will be performed to document changes in concentrations through time.

5.2.1.1 Effectiveness

Under RA1, active remediation will not occur; remediation will rely on natural attenuation processes to continue to reduce total COC mass through time. Due to the lack of historical biogeochemical data, it is difficult to provide a complete assessment of the current biodegradation conditions occurring in the aquifer between all three properties. The baseline natural attenuation indicator analytical results from the August 2012 semiannual monitoring event demonstrate possible aerobic conditions and anaerobic oxidation in groundwater. The results of the additional biogeochemical parameter sampling event during 2013 will provide a better understanding of natural COC degradation in groundwater. Potential sources of impacts (e.g., USTs, associated piping) have been removed and previous remedial activities (i.e., over excavations during UST removal) at 706 and 726 Harrison Street have made future COC concentration increases unlikely.

5.2.1.2 Long-Term Reliability

Under RA1, dissolved concentrations of benzene, MTBE, and TPH-g are expected to decrease to cleanup goals within approximately 35 years based on results from the linear regression trend analysis. Groundwater conditions within the plume appear to be anaerobic after baseline geochemical analysis. Under anaerobic conditions, nitrate and sulfate act as

electron-acceptors to support the biodegradation of the petroleum hydrocarbon constituents in groundwater in the presence of depleted DO concentrations. Semiannual groundwater monitoring will document the groundwater changes through time.

5.2.1.3 Implementability

MNA is an easily implementable remedial alternative. MNA relies solely on continuing the current semiannual groundwater monitoring and reporting program with the addition of annual sampling for biogeochemical and natural attenuation indicator parameters.

5.2.1.4 Implementation Risk

The MNA alternative poses minor implementation risk concerns for community members and the environment. Field personnel may come into contact with impacted groundwater during the sampling events and there is the potential for a release of impacted groundwater during sampling activities. Potential risk during sampling procedures can be readily mitigated with proper use of personal protective equipment (PPE) and sampling standard operating procedures.

5.2.1.5 Cost

The costs to implement the MNA alternative include costs associated with groundwater sampling and report preparation. Groundwater concentrations of benzene, MTBE, and TPH-g are expected to reach cleanup goals in approximately 35 years for the majority of wells with remaining impacts. Based on the current remedial time frames estimated using mass remaining calculations, the total estimated cost to implement RA1 is $2,150,000. Assumptions and a breakdown of costs are summarized along with other remedial alternatives in Appendix G.

Due to the ease of implementation for this alternative and the low annual costs, this alternative has been retained for comparative analysis.

5.2.2 Remedial Alternative 2 – Air Sparge/Soil Vapor Extraction

RA2 will involve the installation of AS and SVE wells. The injection of air into the subsurface below the water table under controlled pressure allows VOCs to be volatilized. The resulting VOC vapors are then captured by SVE wells and conveyed into a treatment system. For this FS, ARCADIS has been assumed that 20 AS wells and 15 SVE wells will be installed on the properties located at 706 and 726 Harrison Street to address remaining dissolved - phase source areas. Groundwater conditions will be monitored for effectiveness of

biodegradation and stripping from air sparging. This remedial alternative will require a pilot test to provide data necessary to evaluate the effectiveness of the remedy and estimate the anticipated remedial timeframe; however, for costing purposes, the duration of RA2 implementation, including performance and groundwater monitoring, is assumed to be 6 years.

5.2.2.1 Effectiveness

Historical AS/SVE system operation at 706 Harrison Street has demonstrated effective treatment of VOCs in groundwater. Groundwater concentrations of COCs decreased in monitoring wells located within the influence of AS wells during AS system operations. However, groundwater COC concentrations rebounded following shutdown of the AS/SVE system in 2002. The AS/SVE technology can be an effective remedy through sustained and optimized system operation. A review of historical boring logs and additional soil boring investigation data collected during pilot testing will provide necessary information to select optimal well locations to remediate the site.

5.2.2.2 Long-Term Reliability

This alternative will be reliable for the long term because the VOC concentrations within the soil and groundwater will be reduced and the reduction would be a permanent and irreversible process. Because air is the only amendment added to groundwater and extracted from the vadose zone, the O&M of an AS/SVE system is relatively simple. Typical O&M activities include collection of AS/SVE system component readings, pressures, vacuums, flow rates, and discharge photoionization detector readings and system optimization.

5.2.2.3 Implementability

RA2 is a readily implementable alternative. Equipment and labor required to install injection wells are available and the well installation depths are easily achieved. The AS/SVE system can be applied using an on-site treatment facility installed at 706 Harrison Street. The existing electrical utility connection and former remediation building location could be used to enhance constructability of the treatment system.

5.2.2.4 Implementation Risk

Implementation risks associated with this alternative, such as the risks associated with injection and extraction well installation, can be readily mitigated using standard operating procedures and PPE.

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5.2.2.5 Cost

The estimated costs associated with RA2 are presented in Appendix G. The total capital cost for implementation of RA2 including pilot study, design, equipment procurement, and equipment installation is estimated to be $415,000. Including indirect costs associated with institutional controls, present worth analysis of O&M costs, utility usage, post-treatment groundwater monitoring, and site decommissioning (total estimated cost of approximately $850,000), the total 6-year present worth cost associated with implementation of RA2 is estimated to be $1,408,000.

5.2.3 Remedial Alternative 3 – Multi-Phase Extraction

RA3 involves using MPE to address COCs in groundwater. The MPE process extracts impacted groundwater and/or vapor from the subsurface through use of a high vacuum system and an extraction well network. The groundwater extraction associated with the MPE technology can hydraulically control impacted groundwater migration and increase SVE efficiency. MPE systems can enhance the biodegradation processes in the vadose zone due to the addition of oxygen.

For this FS, ARCADIS has been assumed 15 extraction wells will be installed at 706 and 726 Harrison Street. Groundwater conditions will be monitored for effectiveness of vapor and liquid recovery rates from the extraction wells. RA3 will require a pilot test to provide data necessary to evaluate the effectiveness of the remedy and estimate the anticipated remedial timeframe; however, for costing purposes, remedial operation (including performance and groundwater monitoring) is assumed to continue for 6 years.

5.2.3.1 Effectiveness

Historical SVE system operation at 706 Harrison Street demonstrated effective hydrocarbon soil vapor recovery from the vadose zone. The SVE system was shutdown in 2001 due to diminishing mass removal rates. The MPE system will allow more VOCs to volatilize due to water table depression around MPE wells, increasing mass removal rates during sustained operation while continuing to remove hydrocarbon-impacted groundwater.

5.2.3.2 Long-Term Reliability

This alternative will be reliable for long-term operation because COC concentrations within the lower vadose zone (exposed by water table depression) and groundwater will be reduced through physical treatment. The O&M activities associated with MPE are similar to

RA2, but would entail additional time and effort to monitor vapor and groundwater extraction parameters.

5.2.3.3 Implementability

RA3 is a readily implementable alternative. Equipment and labor required to install extraction wells are available and the well installation depths are easily achieved. The MPE system can be applied using an on-site treatment facility installed at 706 Harrison Street. The existing electrical utility connection and former remediation building location will be used to ease constructability of the treatment system.

5.2.3.4 Implementation Risk

Implementation risks associated with RA3, such as the risks associated with extraction well installation, can be readily mitigated using standard operating procedures and PPE. A high-vacuum system and additional treatment of extracted water pose additional implementation risks that can be accounted for through standard operating procedures and a detailed MPE system O&M manual.

5.2.3.5 Cost

The estimated costs associated with RA3 are presented in Appendix G. The total capital cost for implementation of RA3 is estimated to be $318,000. Including indirect costs associated with institutional controls, present worth analysis of O&M costs, utility usage, post-treatment groundwater monitoring, and site decommissioning (total estimated cost of $770,000), the total 6-year present worth cost associated with implementation of RA3 is estimated to be $1,208,000.

5.2.4 Remedial Alternative 4 – In-Situ Enhanced Bioremediation

RA4 entails in-situ enhanced bioremediation to treat COCs in groundwater through biodegradation. In-situ enhanced bioremediation typically involves the introduction of oxygen, other electron acceptors, or nutrients to groundwater through an injection well network to stimulate microbial activity.

5.2.4.1 Effectiveness

Effectiveness of bioremediation is dependent upon soil permeability, constituent (i.e., MTBE) biodegradability, and native bacteria characteristics. The saturated zone consists primarily of moderately permeable silty sands that may inhibit bioremediation amendment

contact with impacted groundwater during injections. Baseline geochemical parameters indicate possible background aerobic conditions in the aquifer and anaerobic conditions within the plume. These readings may indicate higher effectiveness of oxygen or other electron acceptor introduction.

5.2.4.2 Long-Term Reliability

Bioremediation relies on microbial activity to treat VOCs in groundwater in-situ through biodegradation; as a result, the groundwater monitoring timeframe can be longer than anticipated depending on native bacteria consumption of introduced amendments. This can lead to extended operation of the bioremediation system and decreases the ease of system operation.

5.2.4.3 Implementability

RA4 is a readily implementable alternative. Equipment and labor required to install extraction wells are available and the well installation depths are easily achieved. The bioremediation system can be installed using an on-site treatment facility installed at 706 Harrison. The existing electrical utility connection and former remediation building location would be used to ease constructability of the treatment system. The procurement of oxygen delivery agents, other electron acceptors, or nutrient amendments would not complicate implementability of the remedial alternative.

5.2.4.4 Implementation Risk

Implementation risks associated with RA4, such as the risks associated with injection well installation and groundwater amendment handling, can be readily mitigated using standard operating procedures and PPE.

5.2.4.5 Cost

The estimated costs associated with RA4 are presented in Appendix G. The total capital cost for implementation of RA4 is estimated to be $300,000. Including indirect costs associated with institutional controls, present worth analysis of O&M costs, utility usage, post-treatment groundwater monitoring, and site decommissioning (total estimated cost of $1,040,000), the total 8-year present worth cost associated with implementation of RA4 is estimated to be $1,470,000.

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5.2.5 Remedial Alternative 5 – In-Situ Chemical Oxidation

RA5 involves ISCO injections to deliver oxidants and other amendments to impacted groundwater to degrade organic hydrocarbon constituents to non-toxic byproducts. For this FS, ARCADIS has assumed the use of sodium persulfate as the chemical oxidant, with hydrogen peroxide or ferrous sulfate and citric acid as an activator.

5.2.5.1 Effectiveness

The application of ISCO injections is effective in reducing the flux of dissolved hydrocarbon constituents downgradient of the treatment area. Batch ISCO injections can also be effective in reducing the size of the plume and mass of dissolved MTBE and other COCs.

5.2.5.2 Long-Term Reliability

RA5 would target residual dissolved hydrocarbon mass in the source area for active treatment. Petroleum hydrocarbons would be degraded rapidly in the treatment zone and reduce the concentration and migration of COCs downgradient. Long-term reliability would depend on selected oxidant and dosing requirements, which would be developed and refined during injection pilot testing and bench testing procedures. The injection events would be the most labor-intensive portion of the alternative. All four injections would occur within the first 2 years of remedy implementation. Groundwater monitoring would be the only O&M activity associated with RA5 following the ISCO injections.

5.2.5.3 Implementability

Due to the anticipated number of injection locations (40 injection points), RA5 will be the most difficult remedial alternative to implement. Although the anticipated injection areas are located in the parking lots of 706 and 726 Harrison Street, persulfate injection equipment and chemical handling in a moderately trafficked area can cause logistical issues and health and safety concerns.

5.2.5.4 Implementation Risk

Potential risks to workers are high when dealing with persulfate injection and chemical handling. Risk to workers and the community posed by injection equipment and oxidants can be mitigated through proper PPE usage, chemical handling procedures, and work area exclusion zones.

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5.2.5.5 Cost

The estimated costs associated with RA5 are presented in Appendix G. The total capital cost for implementation of RA5 is estimated to be $290,000. Including indirect costs associated with institutional controls, present worth analysis of injection events, post-injection groundwater monitoring, and site decommissioning (total estimated cost of $1,300,000), the total 8-year present worth cost associated with implementation of RA5 is estimated to be $1,590,000.

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6. Comparative Analysis of Remedial Alternatives

This section presents a comparative analysis of the five remedial alternatives for groundwater remediation:

- Alternative 1 – Monitored Natural Attenuation
- Alternative 2 – Air Spage/Soil Vapor Extraction
- Alternative 3 – Multi-phase Extraction
- Alternative 4 – In-Situ Enhanced Bioremediation
- Alternative 5 – In-Situ Chemical Oxidation

The comparative analysis examines the advantages and disadvantages of each remedial alternative relative to each other and considers the five remedy selection factors: effectiveness, long-term reliability, implementability, implementation risk, and cost. The results of the comparative analysis are used as the basis for selecting a recommended remedial alternative to address groundwater impacts at the site.

6.1 Compliance with Remedy Selection Factors

6.1.1 Effectiveness

No active remedial actions will be implemented under RA1 (MNA) to address petroleum hydrocarbon constituents in groundwater. Baseline biogeochemical parameter results indicate that possible biodegradation is occurring within the plume; however, additional monitoring data is required to fully assess current biodegradation processes and aquifer conditions. RA1 implementation may not be reasonable given the mobility of MTBE in groundwater and potential downgradient migration. Active remediation may be necessary to control potential migration off site from 706 Harrison Street.

RA2, RA3, RA4, and RA5 will likely protect current and future public health, safety, and welfare of the environment because they will actively treat petroleum-hydrocarbon-impacted groundwater. RA4 and RA5 may be limited depending on the radius of influence from injections and ability to deliver amendments/reagents to impacted groundwater in the moderately permeable silty sands beneath the anticipated treatment area.

RA2, RA3, RA4, and RA5 will also require a monitoring component to evaluate the groundwater concentration trends through time to evaluate overall remedy effectiveness. All remedial alternatives would include an annual increase in groundwater monitoring parameter analyses to track biogeochemical parameters during remedy implementation.

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6.1.2 Long-Term Reliability

All remedial alternatives will be reliable for long-term implementation because the hydrocarbon source areas have been removed during UST removal and over-excavations at 706 and 726 Harrison Street. Remedial alternatives will be implemented to address residual dissolved-phase mass. Ease of operation was also evaluated as a component of long-term reliability for each remedial alternative.

RA1 entails only groundwater monitoring and sampling throughout remedy duration, with no additional O&M for an active remediation system. RA2 and RA3 entail moderate O&M for physical treatment remediation systems. RA4 requires slightly more intense O&M activities to monitor the bioremediation treatment system. These additional O&M activities entail groundwater amendment procurement and handling, detailed biogeochemical parameter analysis, and ensuring that optimal system parameters remain constant to accelerate biodegradation of hydrocarbon constituents in groundwater. RA5 does not entail long-term O&M activities associated with a treatment system because batch ISCO injections will be performed semiannually. Health and safety risks must be considered when choosing a remedy. Implementation of ISCO injections is a more involved remedy pertaining to chemical handling and health and safety. However, following ISCO injections, groundwater monitoring will be the only task associated with long-term implementation.

6.1.3 Implementability

RA1 would be easily implemented at the site. RA2, RA3, and RA4 are more difficult to implement because an active treatment system will be installed and operated on site. After a constructability review, a remediation system location and electrical utility connection are available in the area of the former AS/SVE system located at 706 Harrison Street for RA2, RA3, and RA4. These available implementation requirements will ease the construction of the treatment systems for RA2, RA3, and RA4. RA5 would be the most difficult remedy to implement at the site due to the number of anticipated ISCO injection points. The injection points would target residual dissolved source mass areas beneath 726 and 706 Harrison Street. While anticipated injection points would be located in the parking lot at each property, performing ISCO injections would be difficult due to traffic in the parking lots and potential injection point accessibility issues.

6.1.4 Implementation Risk

RA1 does not involve any implementation risk because it does not include implementation of active remediation. RA2, RA3, RA4, and RA5 pose risks associated with drilling activities,

soil and groundwater sample collection, and injection activities; however, these hazards can be readily mitigated using standard operating procedures and PPE.

6.1.5 Cost

The estimated costs associated with RA1 are considerable due to the duration of groundwater monitoring necessary to evaluate the effectiveness of MNA and determine where groundwater cleanup objectives can be achieved within a reasonable time frame. The total estimated cost to implement RA1 (estimated to be a 35-year time frame) is $2.15 million. The total estimated costs to implement RA2, RA3, RA4, and RA5 are $1.4, $1.2, $1.45, and $1.59 million, respectively.

6.2 Recommended Remedial Alternative

Based on the results of the comparative analysis presented above, RA2 and RA3 are recommended for pilot testing. RA1 is not recommended for further evaluation because it is the least effective alternative, takes the longest to achieve remedial objectives, and is the most costly alternative. RA4 is not recommended for further evaluation because RA4 will likely take longer than RA2 or RA3 to achieve remedial objectives and is not as likely to succeed. RA5 is not recommended for further evaluation because RA5 would be the most difficult alternative to implement. RA5 requires the most disturbance to the site, the most disruption to current operations, and has greater implementation risks due to the chemicals that would be handled on site.

At this time, sufficient information is not available to determine which alternative (RA2 or RA 3) is preferable. ARCADIS recommends pilot testing both AS/SVE and MPE prior to the preparation of a remedial action plan. During pilot testing, additional soil borings will be advanced to record site lithology and confirm the depth of the clay confining layer in the source area. The additional information about site geology and the outcome of the pilot tests will provide the information needed to determine if RA2 or RA3 has a greater likelihood of success.

Following approval of this FS, a work plan will be submitted detailing the methodology of the pilot studies and how the data collected during the pilot studies will be used to select the appropriate remedial alternative for the site.

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7. References

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Tables

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

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

Explanation

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

Table 2
Soil Boring Details
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

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

Explanation

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

Table 3
Historical Soil Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B							
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
706 Harrison Street															
GP-5	06/24/11	5.0	<0.30	NA	NA	NA	NA	<0.0074	<0.0074	<0.0074	<0.015	<0.0074	<0.0074	<0.0074	NA
	06/24/11	10.0	<0.18	NA	NA	NA	NA	<0.0044	<0.0044	<0.0044	<0.0089	<0.0044	<0.0044	<0.0044	NA
	06/24/11	15.0	<0.16	NA	NA	NA	NA	<0.0040	<0.0040	<0.0040	<0.0081	<0.0040	<0.0040	<0.0040	NA
	06/24/11	20.0	2.1	NA	NA	NA	NA	<0.0043	<0.0043	0.0057	<0.0085	0.0099	<0.0043	<0.0043	NA
GP-6	06/24/11	5.0	<0.19	NA	NA	NA	NA	<0.0047	<0.0047	<0.0047	<0.0094	<0.0047	<0.0047	<0.0047	NA
	06/24/11	10.0	<0.17	NA	NA	NA	NA	<0.0043	<0.0043	<0.0043	<0.0086	<0.0043	<0.0043	<0.0043	NA
	06/24/11	15.0	<0.18	NA	NA	NA	NA	<0.0045	<0.0045	<0.0045	<0.0089	<0.0045	<0.0045	<0.0045	NA
GP-7	06/24/11	5.0	<0.23	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
	06/24/11	10.0	<0.19	NA	NA	NA	NA	<0.0048	<0.0048	<0.0048	<0.0096	<0.0048	<0.0048	<0.0048	NA
	06/24/11	15.0	<0.17	NA	NA	NA	NA	<0.0043	<0.0043	<0.0043	<0.0086	<0.0043	<0.0043	<0.0043	NA
MW-1	07/23/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
MW-2	07/23/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	10.0	NA	NA	ND	NA	NA	**0.059**	0.036	0.0061	0.031	NA	NA	NA	ND
	07/23/93	15.0	NA	NA	48	NA	NA	**0.56**	2.8	1.5	**8.8**	NA	NA	NA	ND
MW-3	07/23/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	07/23/93	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
MW-4	11/28/94	16.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	17.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	26.0	NA	NA	ND/0.021	NA	NA	ND/ND	ND/ND	ND/ND	ND/ND	NA	NA	NA	ND
MW-5	11/30/94	18.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
MW-6	12/01/94	16.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
MW-7	12/02/94	16.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	12/02/94	18.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	12/02/94	26.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
SB-B	11/28/94	11.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	16.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	26.0	NA	NA	1.1	NA	NA	**0.18**	0.054	0.024	0.071	NA	NA	NA	ND
SB-I	12/02/94	11.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
VW-1	07/23/93	17.0	NA	NA	360	NA	NA	**18**	**40**	**13**	**68**	NA	NA	NA	ND
VW-2	07/23/93	17.0	NA	NA	6,000	NA	NA	**210**	**890**	**210**	**1,200**	NA	NA	NA	ND
VW-3	11/28/94	11.0	NA	NA	410	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/28/94	18.0	NA	NA	14,000	NA	NA	**120**	**620**	**220**	**1,100**	NA	NA	NA	ND
	11/28/94	26.0	NA	NA	ND	NA	NA	**0.059**	0.041	0.0028	0.050	NA	NA	NA	ND
VW-4	11/29/94	17.5	NA	NA	15,000	NA	NA	**160**	**700**	**240**	**1,200**	NA	NA	NA	ND
VW-5	11/30/94	11.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/30/94	17.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	ND
	11/30/94	26.0	NA	NA	ND	NA	NA	ND	0.012	ND	ND	NA	NA	NA	ND
726 Harrison Street															
AS-1	NA	6.0	NA	NA	740	NA	NA	<0.25	<0.25	**3.5**	**5.1**	<0.25	NA	NA	NA
BH-A	NA	11.5	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
BH-B	NA	15.0	NA	NA	360	NA	NA	**0.55**	**5.0**	**3.4**	**23**	**0.064**	NA	NA	NA
BH-C	NA	10.0	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
EW-1	NA	10.0	NA	NA	2,300	NA	NA	**0.33**	0.27	**16**	**26**	<0.25	NA	NA	NA
GP-3	06/20/11	7.0	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	0.00087 J	<0.0050	<0.0050	NA

Table 3
Historical Soil Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B							
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
	06/20/11	10.0	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
	06/20/11	15.0	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
MW-1	NA	14.5	NA	NA	<1.0	NA	NA	0.011	<0.005	<0.005	<0.005	<0.05	NA	NA	NA
	NA	19.5	NA	NA	650	NA	NA	**1.2**	<0.05	2.2	**2.8**	<0.05	NA	NA	NA
MW-2	NA	16.0	NA	NA	<1.0	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA
MW-3	NA	16.0	NA	NA	<1.0	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA
MW-4	NA	16.0	NA	NA	<1.0	NA	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA
MW-5	NA	14.0	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
MW-6	06/20/11	6.5	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
	06/20/11	11.0	<0.20	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0050	NA
	06/20/11	16.0	0.12 J	NA	NA	NA	NA	<0.0050	<0.0050	<0.0050	<0.010	0.0092	<0.0050	<0.0050	NA
VE-1	NA	9.0	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
VE-2	NA	14.0	NA	NA	<1.0	NA	NA	<0.005	<0.005	<0.005	<0.005	<0.005	NA	NA	NA
800 Harrison Street															
EB-1	05/29/91	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/29/91	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/29/91	15.0	NA	NA	ND	NA	NA	0.0087	ND	ND	ND	NA	NA	NA	NA
	05/29/91	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/29/91	22.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-2	05/29/91	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/29/91	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/29/91	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/29/91	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/29/91	22.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-3	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	9.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	14.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	19.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-4	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	9.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	14.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	19.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-5	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	19.0	NA	NA	310	NA	NA	**0.71**	2.4	1.3	2.2	NA	NA	NA	NA
EB-6	03/18/94	4.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	9.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	14.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	19.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-7	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	19.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-8	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	18.5	NA	NA	21,000	NA	NA	**7.0**	**78**	**26**	**140**	NA	NA	NA	NA
EB-9	03/18/94	5.5	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	10.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA

Table 3
Historical Soil Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B							
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
	03/18/94	15.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	20.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-10	03/18/94	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-11	03/18/94	5.0	NA	ND	1.8	NA	NA	ND	0.0091	ND	0.0088	NA	NA	NA	NA
	03/18/94	6.0	NA	19	3.6	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	10.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EB-12	03/18/94	5.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	03/18/94	10.5	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
GP-1	03/28/12	6.0	<0.16	NA	NA	NA	NA	<0.0040	<0.0040	<0.0040	<0.0079	<0.0040	<0.0040	<0.0040	NA
	03/28/12	10.0	<0.18	NA	NA	NA	NA	<0.0045	<0.0045	<0.0045	<0.0090	<0.0045	<0.0045	<0.0045	NA
	03/28/12	14.0	<0.16	NA	NA	<4.0	<50	<0.0040	<0.0040	<0.0040	<0.0079	<0.0040	<0.0040	<0.0040	NA
GP-2	06/24/11	5.0	<0.63	NA	NA	NA	NA	<0.016	<0.016	<0.016	<0.031	<0.016	<0.016	<0.016	NA
	06/24/11	10.0	21	NA	NA	NA	NA	<0.0044	<0.0044	<0.0044	<0.0088	0.013	<0.0044	<0.0044	NA
	06/24/11	14.0	**3,200**	NA	NA	NA	NA	<0.0044	<0.0044	0.013	0.11	**0.028**	<0.0044	<0.0044	NA
	06/24/11	17.0	**1,000**	NA	NA	NA	NA	<0.0044	0.024	0.015	0.098	**0.060**	<0.0044	<0.0044	NA
MW-1	05/30/91	5.0	NA	2.2	1.1	NA	NA	ND	ND	ND	0.010	NA	NA	NA	NA
	05/30/91	10.0	NA	43	43	NA	NA	ND	0.0059	0.0074	0.43	NA	NA	NA	NA
	05/30/91	15.0	NA	120	250	NA	NA	**0.80**	0.73	0.91	**2.9**	NA	NA	NA	NA
	05/30/91	20.0	NA	ND	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	24.0	NA	ND	ND	NA	NA	ND	ND	ND	0.0073	NA	NA	NA	NA
MW-2	05/30/91	5.0	NA	NA	ND	NA	NA	ND	ND	ND	0.0054	NA	NA	NA	NA
	05/30/91	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	15.0	NA	NA	ND	NA	NA	0.015	ND	0.0064	0.025	NA	NA	NA	NA
	05/30/91	20.0	NA	NA	ND	NA	NA	0.0086	ND	ND	ND	NA	NA	NA	NA
	05/30/91	22.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-3	05/30/91	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	05/30/91	23.0	NA	NA	2.9	NA	NA	0.0079	ND	0.012	0.031	NA	NA	NA	NA
MW-4	10/01/92	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	22.5	NA	NA	27	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-5	10/01/92	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	22.0	NA	NA	27	NA	NA	ND	0.0060	ND	0.014	NA	NA	NA	NA
MW-6	10/01/92	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	20.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	10/01/92	21.5	NA	NA	170	NA	NA	ND	0.38	1.8	**4.5**	NA	NA	NA	NA
MW-7	04/14/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA

Table 3
Historical Soil Analytical Data
Chevron Site ID 351646
800, 726, and 706 Harrison Street, Oakland, California

Sample Name	Sample Date	Sample Depth (ft bgs)	LUFT GC/MS					EPA 8260B							
			TPPH (mg/kg)	TPH-d (mg/kg)	TPH-g (mg/kg)	TPH-mo (mg/kg)	TOG (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	EDB (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
	04/14/93	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	21.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-8	04/14/93	5.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	10.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	15.0	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	04/14/93	20.5	NA	NA	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
ESLs for Residential Soils			**83**	**-**	**-**	**-**	**-**	**0.044**	**2.9**	**3.3**	**2.3**	**0.023**	**-**	**-**	-

Explanation

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
706 Harrison Street											
VW-3	06/03/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	03/25/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
VW-4	06/03/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	03/25/03	NA	NA	NA	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
726 Harrison Street											
MW-1	07/03/97	NA	NA	NA	**18000**	**2700**	**350**	**450**	**900**	**--**	**7400**
	12/15/98	31.95	17.32	14.63	**18000**	**1500**	**270**	**260**	**560**	**--**	**14000**
	04/03/99	31.95	15.52	16.43	**44000**	**2800**	**400**	**440**	**960**	**--**	**43000**
	06/17/99	31.95	16.90	15.05	**33000**	**2200**	**250**	**460**	**660**	**--**	**25000**
	08/27/99	31.95	17.39	14.56	**6000**	**1000**	**97**	**190**	**230**	**16000**	**14000**
	09/12/99	31.95	18.03	13.92	**15000**	**1500**	**160**	**220**	**420**	**--**	**17000**
	07/03/00	31.95	15.11	16.84	**9300**	**1500**	**210**	**66**	**530**	**--**	**12000**
	07/06/00	31.95	16.66	15.29	**26000**	**1700**	<250	**360**	**580**	**--**	**30000**
	11/10/00	31.95	18.08	13.87	**13000**	**1600**	<100	**140**	**160**	**--**	**19000**
	01/18/01	31.95	17.96	13.99	**14000**	**450**	<100	**110**	**230**	**--**	**9600**
	05/04/01	31.95	16.35	15.60	**38000**	**2200**	**180**	**290**	**590**	**--**	**35000**
	07/17/01	31.95	16.94	15.01	**35000**	**1800**	<100	**300**	**170**	**--**	**35000**
	05/01/10	28.98	17.35	11.63	**17000**	**1500**	**210**	**420**	**790**	**--**	**27000**
	01/18/02	28.98	15.40	13.58	**18000**	**1500**	**120**	**160**	**220**	**--**	**22000**
	11/04/02	28.98	15.76	13.22	**41000**	**2700**	**210**	**340**	**380**	**--**	**30000**
	08/07/02	28.98	16.17	12.81	**36000**	**2800**	**140**	**360**	**300**	**--**	**31000**
	09/02/10	28.98	16.72	12.26	**30000**	**1700**	**310**	<100	<100	**--**	**19000**
	01/29/03	28.98	16.26	12.72	**26000**	**2400**	<100	**310**	**520**	**--**	**20000**
	11/04/03	28.98	16.56	12.42	**22000**	**1700**	<100	**270**	**580**	**--**	**16000**
	07/18/03	28.98	16.42	12.56	**40000**	**3200**	**290**	**480**	**830**	**--**	**39000**
	09/03/10	28.98	16.88	12.10	**54000**	**3300**	<130	**350**	**310**	**--**	**49000**
	01/28/04	28.98	16.10	12.88	**26000**	**3000**	**310**	**420**	**800**	**--**	**31000**
	07/04/04	28.98	15.43	13.55	**33000**	**2800**	**130**	**310**	**310**	**--**	**39000**
	07/23/04	28.98	16.41	12.57	**56000**	**4500**	<250	**390**	<500	**--**	**53000**
	12/04/10	28.98	17.73	11.25	**25000**	**1400**	<250	<250	<500	**--**	**25000**
	01/29/05	28.98	15.02	13.96	**24000**	**1600**	<100	**160**	<200	**--**	**19000**
	04/28/05	28.98	14.99	13.99	**10000**	**2000**	<100	**160**	**100**	**--**	**34000**
	07/19/05	28.98	16.36	12.62	**37000**	**2100**	**83**	**210**	**230**	**--**	**28000**
	10/18/05	28.98	17.82	11.16	**37000**	**1300**	<250	<250	<250	**--**	**23000**
	01/23/06	28.98	15.80	13.18	**23000**	**780**	<100	**160**	**260**	**--**	**11000**
	12/04/06	28.98	13.24	15.74	**11000**	**1500**	**87**	**360**	**670**	**--**	**17000**
	10/07/06	28.98	15.64	13.34	**72000**	**4700**	<250	**350**	<500	**--**	**66000**
	10/16/06	28.98	17.51	11.47	**26000**	**1600**	<250	**330**	<500	**--**	**22000**
	01/26/07	28.98	18.36	10.62	**7200**	**1500**	<70	**140**	**96**	**--**	**34000**
	04/18/07	28.98	17.79	11.19	**5400**	**1100**	<50	**200**	**120**	**--**	**21000**
	02/08/07	28.98	18.20	10.78	**6600**	**1500**	**64**	**240**	**190**	**--**	**32000**
	10/23/07	28.98	18.75	10.23	**5900**	**1300**	**52**	**200**	**180**	**--**	**28000**
	01/30/08	28.98	17.90	11.08	**2700**	**300**	21	**64**	**90**	**--**	**5200**
	04/18/08	28.98	18.21	10.77	**3800**	**930**	**41**	**110**	**130**	**--**	**15000**
	07/28/08	28.98	18.85	10.13	**6000**	**900**	**52**	**140**	**160**	**--**	**10000**
	10/29/08	28.98	19.24	9.74	**7300**	**1700**	**74**	**140**	**220**	**--**	**17000**
	01/26/09	28.98	19.17	9.81	**4900**	**720**	**48**	**140**	**180**	**--**	**6300**
	03/08/09	31.98	18.62	13.36	**4000**	**870**	**44**	**110**	**120**	**--**	**13000**
	01/25/10	31.98	18.26	13.72	**3200**	**360**	26	**82**	**86**	**--**	**3000**
	03/08/10	31.98	18.13	13.85	**3800**	**560**	27	**97**	**92**	**--**	**8600**
	02/17/11	31.98	18.15	13.83	**6000**	**1100**	**51**	**110**	**110**	**--**	**11000**
	08/23/11	31.98	18.60	13.38	**8200**	**290**	36	**66**	**79**	**4700**	**--**
	02/07/12	31.98	18.77	13.21	**370**	46	1.7	4.2	4.5	**3800**	**--**
	08/09/12	31.98	17.82	14.16	**6600**	**760**	27	**58**	**60**	**6700**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
726 Harrison Street											
MW-2	12/15/98	32.40	18.03	14.37	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
	03/04/99	32.40	16.11	16.29	--	--	--	--	--	--	--
	06/17/99	32.40	17.72	14.68	<50	<0.5	<0.5	<0.5	<0.5	<5.0	<5.0
	08/27/99	NA	NA	NA	--	--	--	--	--	--	--
	12/09/99	NA	NA	NA	--	--	--	--	--	--	--
	03/07/00	NA	NA	NA	--	--	--	--	--	--	--
	06/07/00	32.40	17.67	14.73	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	10/11/00	32.40	18.91	13.49	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	01/18/01	32.40	18.66	13.74	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	04/05/01	32.40	16.97	15.43	<50	<0.5	<0.5	<0.5	<0.5	--	<5.0
	07/17/01	32.40	17.54	14.86	NA	NA	NA	NA	NA	NA	NA
	10/05/01	29.44	17.98	11.46	NA	NA	NA	NA	NA	NA	NA
	01/18/02	29.44	15.87	13.57	NA	NA	NA	NA	NA	NA	NA
	04/11/02	29.44	16.36	13.08	NA	NA	NA	NA	NA	NA	NA
	07/18/02	29.44	16.72	12.72	NA	NA	NA	NA	NA	NA	NA
	10/09/02	29.44	17.33	12.11	NA	NA	NA	NA	NA	NA	NA
	01/29/03	29.44	16.82	12.62	NA	NA	NA	NA	NA	NA	NA
	04/11/03	29.44	17.15	12.29	NA	NA	NA	NA	NA	NA	NA
	07/18/03	29.44	17.05	12.39	NA	NA	NA	NA	NA	NA	NA
	10/09/03	29.44	17.52	11.92	NA	NA	NA	NA	NA	NA	NA
	01/28/04	29.44	16.70	12.74	NA	NA	NA	NA	NA	NA	NA
	04/07/04	29.44	16.02	13.42	NA	NA	NA	NA	NA	NA	NA
	07/23/04	--	--	--	--	--	--	--	--	--	--
	10/12/04	29.44	17.31	12.13	NA	NA	NA	NA	NA	NA	NA
	01/29/05	29.44	15.46	13.98	NA	NA	NA	NA	NA	NA	NA
	04/28/05	29.44	15.79	13.65	NA	NA	NA	NA	NA	NA	NA
	07/19/05	29.44	17.25	12.19	NA	NA	NA	NA	NA	NA	NA
	10/18/05	29.44	17.72	11.72	NA	NA	NA	NA	NA	NA	NA
	01/23/06	29.44	15.65	13.79	NA	NA	NA	NA	NA	NA	NA
	04/12/06	29.44	12.33	17.11	NA	NA	NA	NA	NA	NA	NA
	07/10/06	29.44	16.58	12.86	<50	<0.50	<0.50	<0.50	<1.0	--	4.5
	10/16/06	29.44	18.33	11.11	<50	<0.50	<0.50	<0.50	<1.0	--	<0.5
	01/26/07	29.44	19.21	10.23	<50	0.55	1	<0.50	1.4	--	0.97
	04/18/07	29.44	18.58	10.86	<50	**1.5**	2.6	0.93	3.2	--	0.64
	08/02/07	29.44	19.02	10.42	<50	<0.50	<0.50	<0.50	<0.50	--	2.2
	10/23/07	--	--	--	--	--	--	--	--	--	--
	01/30/08	29.44	18.63	10.81	<50	<0.50	<0.50	<0.50	<0.50	--	**300**
	04/18/08	29.44	19.04	10.40	<50	<0.50	<0.50	<0.50	<0.50	--	**40**
	07/28/08	--	--	--	--	--	--	--	--	--	--
	10/29/08	29.44	20.01	9.43	<50	<0.50	<0.50	<0.50	<0.50	--	**300**
	01/26/09	29.44	19.84	9.60	<50	<0.50	<0.50	<0.50	<0.50	--	**120**
	08/03/09	32.44	19.39	13.05	<50	<0.50	<0.50	<0.50	<0.50	--	1
	01/25/10	32.44	18.67	13.77	<50	<0.50	<0.50	<0.50	<0.50	--	**12**
	03/08/10	32.44	18.84	13.60	<50	<0.50	<0.50	<0.50	<0.50	--	<0.50
	02/17/11	32.44	18.82	13.62	<50	<0.50	<0.50	<0.50	<0.50	--	**5.2**
	08/23/11	32.44	19.38	13.06	<50	<0.50	<0.50	<0.50	<1.0	0.37	--
	02/07/12	32.44	19.52	12.92	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	08/09/12	32.44	18.55	13.89	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
MW-3	12/15/98	31.61	17.26	14.35	**6500**	<50	**50**	**60**	**502**	--	**3900**
	03/04/99	31.61	15.47	16.14	**2800**	<25	<25	<25	<25	--	**1600**
	06/17/99	31.61	16.92	14.69	**1000**	<10	<10	<10	<10	--	**1400**
	08/27/99	31.61	17.40	14.21	**230**	<0.5	0.51	0.50	1	**1600**	**1500**
	12/09/99	31.61	18.01	13.60	**870**	<0.5	<0.5	<0.5	<0.5	--	**2100**
	03/07/00	31.61	16.15	15.46	**150**	**4**	<0.5	<0.5	<0.5	--	**830**
	06/07/00	31.61	16.85	14.76	**140**	<0.5	<0.5	<0.5	<0.5	--	**1100**
	10/11/00	31.61	18.07	13.54	**620**	<5.0	<5.0	<5.0	<5.0	--	**1500**
	01/18/01	31.61	17.89	13.72	**1200**	<5.0	<5.0	<5.0	<5.0	--	**1000**
	04/05/01	31.61	16.21	15.40	**1700**	<5.0	<5.0	<5.0	<5.0	--	**1900**
	07/17/01	31.61	16.90	14.71	**1400**	<10	<10	<10	<10	--	**1700**
	10/05/01	28.64	17.32	11.32	<1000	<10	<10	<10	<10	--	**1700**

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
726 Harrison Street											
MW-3 cont'd	01/18/02	28.64	15.35	13.29	**1600**	**26**	20	16	**54**	--	**2100**
	04/11/02	28.64	15.82	12.82	**2600**	**21**	16	<10	**21**	--	**2300**
	07/18/02	28.64	16.15	12.49	**2800**	<10	<10	<10	<10	--	**3800**
	10/09/02	28.64	16.67	11.97	**6000**	<50	<50	<50	<50	--	**4900**
	01/29/03	28.64	16.19	12.45	**1800**	<10	<10	<10	<10	--	**2300**
	04/11/03	28.64	16.49	12.15	**2900**	<25	<25	<25	<25	--	**3100**
	07/18/03	28.64	16.42	12.22	**3400**	<10	<10	<10	<10	--	**3200**
	10/09/03	28.64	16.80	11.84	**2300**	<10	<10	<10	<10	--	**2700**
	01/28/04	28.64	15.94	12.70	**1700**	<10	<10	<10	<10	--	**2900**
	04/07/04	28.64	15.28	13.36	**2700**	<10	<10	<10	<20	--	**3600**
	07/23/04	28.64	16.15	12.49	**4200**	<25	<25	<25	<50	--	**4900**
	10/12/04	28.64	16.63	12.01	**5000**	<50	<50	<50	<100	--	**5900**
	01/29/05	28.64	16.15	12.49	<1000	<10	<10	<10	<20	--	**3100**
	04/28/05	28.64	14.94	13.70	<200	<2.0	<2.0	<2.0	<2.0	--	**1300**
	07/19/05	28.64	16.25	12.39	**4400**	<20	<20	<20	<40	--	**3000**
	10/18/05	28.64	16.76	11.88	**18000**	<50	<50	<50	<50	--	**6800**
	01/23/06	28.64	15.81	12.83	**17000**	<100	<100	<100	<200	--	**7000**
	04/12/06	28.64	13.22	15.42	<200	<2.0	<2.0	<2.0	<2.0	--	**7800**
	07/10/06	28.64	15.49	13.15	**11000**	<100	<100	<100	<200	--	**12000**
	10/16/06	28.64	17.46	11.18	<10000	<100	<100	<100	<100	--	**17000**
	01/26/07	28.64	18.02	10.62	<200	<2.0	<2.0	<2.0	<2.0	--	**4000**
	04/18/07	28.64	17.75	10.89	<900	<9.0	<9.0	<9.0	<9.0	--	**11000**
	08/02/07	28.64	18.38	10.26	**110**	<0.80	<0.80	<0.80	2	--	**410**
	10/23/07	28.64	19.61	9.03	< 80	<0.80	<0.80	<0.80	<0.80	--	**480**
	01/30/08	28.64	17.65	10.99	< 80	<0.80	<0.80	<0.80	<0.80	--	**430**
	04/18/08	28.64	18.08	10.56	<50	<0.50	<0.50	<0.50	<0.50	--	**350**
	07/28/08	28.64	18.77	9.87	61	<0.50	<0.50	<0.50	<0.50	--	**140**
	10/29/08	28.64	19.14	9.50	**120**	<0.50	<0.50	<0.50	<0.50	--	**640**
	01/26/09	28.64	19.06	9.58	**210**	**1.9**	<1.5	<1.5	<1.5	--	**1300**
	08/03/09	31.64	18.51	13.13	<250	<2.5	<2.5	<2.5	<2.5	--	**1600**
	01/25/10	31.64	18.02	13.62	87	<0.50	<0.50	<0.50	<0.50	--	**300**
	03/08/10	31.64	18.06	13.58	92	<0.50	<0.50	<0.50	<0.50	--	**32**
	02/17/11	31.64	18.03	13.61	<50	<0.50	<0.50	<0.50	<0.50	--	**25**
	08/23/11	31.64	18.56	13.08	60	<0.50	<0.50	<0.50	<0.50	**9.1**	--
	02/07/12	31.64	18.71	12.93	25	<0.50	<0.50	<0.50	<1.0	**2.1**	--
	08/09/12	31.64	17.74	13.90	39	<0.50	<0.50	<0.50	<1.0	**9.2**	--
MW-4	12/15/98	32.53	17.59	14.94	**880**	**3**	<0.5	<0.5	<0.5	--	**950**
	03/04/99	32.53	15.88	16.65	**3800**	<25	<25	<25	<25	--	**3700**
	06/17/99	32.53	17.14	15.39	**2700**	<25	<25	<25	<25	--	**2700**
	08/27/99	32.53	17.65	14.88	**440**	**4.7**	1.1	0.58	1.3	**1700**	**1600**
	12/09/99	32.53	18.28	14.25	**1100**	<2.5	<2.5	<2.5	<2.5	--	**1700**
	03/07/00	32.53	15.41	17.12	<250	<2.5	<2.5	<2.5	<2.5	--	**1700**
	06/07/00	32.53	17.09	15.44	**530**	**8.8**	<2.5	<2.5	<2.5	--	**440**
	10/11/00	32.53	18.33	14.20	**700**	**3.9**	<2.5	<2.5	<2.5	--	**680**
	01/18/01	32.53	18.23	14.30	**2000**	<2.5	<2.5	<2.5	<2.5	--	**780**
	04/05/01	32.53	16.69	15.84	**810**	<2.5	<2.5	<2.5	<2.5	--	**620**
	07/17/01	32.53	17.32	15.21	**880**	<2.5	<2.5	<2.5	<2.5	--	**570**
	10/05/01	29.58	17.71	11.87	**550**	<2.5	<2.5	<2.5	<2.5	--	**710**
	01/18/02	29.58	15.85	13.73	**960**	<5.0	<5.0	<5.0	<5.0	--	**1300**
	04/11/02	29.58	16.14	13.44	**1100**	<5.0	<5.0	<5.0	<5.0	--	**550**
	07/18/02	29.58	16.56	13.02	**1200**	<5.0	<5.0	<5.0	<5.0	--	**890**
	10/09/02	29.58	17.09	12.49	**1300**	<5.0	<5.0	<5.0	<5.0	--	**880**
	01/29/03	29.58	16.65	12.93	**530**	<1.0	<1.0	<1.0	<1.0	--	**190**
	04/11/03	29.58	16.93	12.65	**690**	<2.5	<2.5	<2.5	<2.5	--	**310**
	07/18/03	29.58	16.78	12.80	**1600**	<10	<10	<10	<10	--	**1300**
	10/09/03	29.58	17.26	12.32	**1500**	<10	<10	<10	<10	--	**1400**
	01/28/04	29.58	16.38	13.20	**1200**	<10	<10	<10	<10	--	**1900**
	04/07/04	29.58	15.64	13.94	**1900**	<10	<10	<10	<20	--	**2200**
	07/23/04	29.58	16.58	13.00	**1800**	<10	<10	<10	<20	--	**1600**

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
726 Harrison Street											
MW-4 cont'd	10/12/04	--	--	--	--	--	--	--	--	--	--
	01/29/05	29.58	14.90	14.68	<1300	<13	<13	<13	<25	--	**3900**
	04/28/05	29.58	15.18	14.40	**510**	<1.5	<1.5	<1.5	<1.5	--	**510**
	07/19/05	29.58	16.48	13.10	**5400**	<50	<50	<50	<100	--	**2700**
	10/18/05	29.58	16.99	12.59	**10000**	<50	<50	<50	<50	--	**9000**
	01/23/06	29.58	15.09	14.49	**10000**	<100	<100	<100	<200	--	**8300**
	04/12/06	29.58	13.49	16.09	**1900**	<10	<10	<10	<20	--	**2200**
	07/10/06	29.58	14.99	14.59	**750**	**5.4**	<5.0	<5.0	<10	--	**790**
	10/16/06	29.58	17.29	12.29	**2400**	<10	<10	<10	<10	--	**2200**
	01/26/07	29.58	18.17	11.41	**250**	<1.5	<1.5	<1.5	<1.5	--	**7000**
	04/18/07	29.58	18.06	11.52	<400	<4.0	<4.0	<4.0	<4.0	--	**2300**
	02/08/07	29.58	18.45	11.13	**400**	<4.0	<4.0	<4.0	<4.0	--	**4500**
	10/23/07	29.58	18.99	10.59	<500	<5.0	<5.0	<5.0	<5.0	--	**3400**
	01/30/08	29.58	18.14	11.44	**580**	**89**	1.5	< 0.90	2.5	--	**500**
	04/18/08	29.58	18.49	11.09	**660**	**13**	0.58	0.51	0.94	--	**180**
	07/28/08	29.58	19.15	10.43	**520**	**19**	0.97	1.4	2.6	--	**71**
	10/29/08	29.58	19.53	10.05	**480**	**38**	1.8	4.5	4.3	--	**420**
	01/26/09	29.58	19.52	10.06	**470**	**51**	2.2	4.2	5.2	--	**180**
	08/03/09	32.56	18.91	13.65	**320**	**62**	<0.5	0.59	<0.5	--	**120**
	01/25/10	32.56	18.51	14.05	**820**	**110**	1.9	1.3	5.5	--	**8.8**
	03/08/10	32.56	18.45	14.11	**500**	**8.6**	0.84	<0.50	1.4	--	**43**
	02/17/11	32.56	18.46	14.10	**440**	**4.9**	<0.50	<0.50	0.87	--	**40**
	08/23/11	32.56	18.88	13.68	**630**	**36**	1.3	0.69	3.6	**32**	--
	02/07/12	32.56	19.09	13.47	**210**	<0.50	<0.50	<0.50	<1.0	**17**	--
	08/09/12	32.56	18.16	14.40	**280**	**2**	<0.50	<0.50	<1.0	**21**	--
MW-5	08/29/01	29.06	17.42	11.64	**14000**	**1300**	**470**	**230**	**800**	--	**14000**
	01/18/02	29.06	15.68	13.38	**24000**	**3200**	**1300**	**390**	**1500**	--	**5700**
	04/11/02	29.06	16.17	12.89	**23000**	**2700**	**980**	**38**	**950**	--	**4300**
	07/08/02	29.06	16.51	12.55	**19000**	**3300**	25	**360**	**1100**	--	**2100**
	10/09/02	29.06	17.10	11.96	**24000**	**2800**	**990**	**360**	**820**	--	**2400**
	01/29/03	29.06	16.58	12.48	**17000**	**2100**	**1400**	**380**	**1400**	--	<250
	04/11/03	29.06	16.87	12.19	**26000**	**2900**	**2200**	**590**	**2200**	--	**630**
	07/18/03	29.06	16.77	12.29	**26000**	**3500**	**1700**	**480**	**1300**	--	**1300**
	10/09/03	29.06	17.21	11.85	**27000**	**3800**	**1900**	**510**	**1700**	--	**1200**
	01/28/04	29.06	16.34	12.72	**29000**	**4800**	**2900**	**770**	**2300**	--	**3300**
	04/07/04	29.06	15.38	13.68	**23000**	**4400**	**2700**	**720**	**2200**	--	**1700**
	07/23/04	29.06	16.55	12.51	**29000**	**5200**	**2200**	**810**	**1400**	--	**2200**
	10/12/04	29.06	17.02	12.04	**26000**	**4300**	**2000**	**670**	**1300**	--	**2200**
	01/29/05	29.06	15.23	13.83	NA	NA	NA	NA	NA	--	NA
	04/28/05	29.06	15.41	13.65	NA	NA	NA	NA	NA	--	NA
	07/19/05	29.06	16.79	12.27	NA	NA	NA	NA	NA	--	NA
	10/18/05	29.06	17.28	11.78	NA	NA	NA	NA	NA	--	NA
	01/23/06	29.06	15.28	13.78	**21000**	**1800**	**1200**	**270**	**820**	--	**13000**
	04/12/06	29.06	13.66	15.40	NA	NA	NA	NA	NA	--	NA
	07/10/06	29.06	16.14	12.92	**45000**	**3700**	**2600**	**650**	**1800**	--	**23000**
	10/16/06	29.06	19.33	9.73	**66000**	**4200**	**3300**	**800**	**2100**	--	**35000**
	01/26/07	29.06	18.94	10.12	**30000**	**3200**	**2600**	**610**	**2400**	--	**38000**
	04/18/07	29.06	18.21	10.85	**30000**	**4300**	**3300**	**800**	**2600**	--	**27000**
	08/02/07	29.06	19.00	10.06	**26000**	**3700**	**2800**	**690**	**1900**	--	**32000**
	10/23/07	29.06	19.15	9.91	**34000**	**4400**	**3700**	**860**	**3200**	--	**34000**
	01/30/08	29.06	18.21	10.85	**28000**	**3900**	**2800**	**750**	**2300**	--	**26000**
	04/18/08	29.06	18.61	10.45	**30000**	**4300**	**3200**	**810**	**2000**	--	**32000**
	07/28/08	29.06	19.23	9.83	**34000**	**3700**	**3000**	**740**	**2900**	--	**28000**
	10/29/08	29.06	19.62	9.44	**29000**	**3300**	**2900**	**680**	**2800**	--	**27000**
	01/26/09	29.06	19.51	9.55	**19000**	**2100**	**1500**	**410**	**1500**	--	**18000**
	03/08/09	32.06	19.00	13.06	**28000**	**3500**	**2800**	**630**	**2600**	--	**28000**
	01/25/10	32.06	18.43	13.63	**12000**	**1400**	**750**	**270**	**900**	--	**7500**
	03/08/10	32.06	18.50	13.56	**24000**	**3300**	**2200**	**620**	**1700**	--	**26000**
	02/17/11	32.06	18.47	13.59	**27000**	**3500**	**1900**	**630**	**2200**	--	**24000**
	08/23/11	32.06	19.02	13.04	**19000**	**1100**	**400**	**190**	**390**	**14000**	--
	02/07/12	32.06	19.16	12.90	**19000**	**890**	**410**	**360**	**990**	**17000**	--
	08/09/12	32.06	18.24	13.82	**16000**	**1400**	**580**	**470**	**960**	**16000**	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
726 Harrison Street											
MW-6	08/23/11	32.04	28.35	3.69	**500**	<0.50	<0.50	<0.50	<1.0	**740**	--
	02/07/12	32.04	26.53	5.51	**410**	<0.50	<0.50	<0.50	<1.0	**970**	--
	08/09/12	32.04	28.27	3.77	**830**	<0.50	<0.50	<0.50	<1.0	**970**	--
800 Harrison Street											
MW-1	06/05/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
	09/30/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
	12/30/91	34.94	--	--	ND	ND	ND	ND	ND	--	--
	04/02/92	34.94	--	--	ND	ND	ND	ND	ND	--	--
	06/30/92	34.94	--	--	ND	ND	ND	ND	ND	--	--
	09/15/92	34.94	--	--	76	**1**	ND	ND	ND	--	--
	12/21/92	34.94	21.17	13.77	95	0.69	ND	ND	1	--	--
	04/28/93	34.94	--	--	**920**	**3.1**	2.3	1.2	9.7	--	--
	07/23/93	34.94	20.13	14.81	ND	0.5	0.66	ND	ND	--	--
	10/05/93	34.69	20.30	14.39	92	**1.5**	ND	ND	0.72	--	--
	01/03/94	34.69	20.52	14.17	ND	ND	ND	ND	ND	--	--
	04/02/94	34.69	20.16	14.53	ND	ND	ND	ND	ND	--	--
	07/05/94	34.69	19.27	15.42	**250**	**4.8**	13	1.2	7.3	--	--
	10/06/94	34.69	20.87	13.82	**540**	**1.4**	ND	0.66	11	--	--
	01/02/95	34.69	19.67	15.02	**140**	ND	ND	ND	ND	--	--
	04/03/95	34.69	17.61	17.08	**580**	**3.6**	0.8	ND	4	--	--
	07/14/95	34.69	18.58	16.11	**260**	**2.1**	ND	ND	1.2	--	--
	10/10/95	34.69	19.60	15.09	**220**	**2**	ND	25	5.6	--	**29**
	01/03/96	34.69	19.69	15.00	**190**	**2.4**	ND	0.71	1.2	--	--
	04/10/96	34.69	17.65	17.04	**540**	**8.9**	1.7	1.5	7.4	--	**50**
	07/09/96	34.69	18.52	16.17	**490**	**3**	1.4	1.3	2.5	--	**150**
	01/24/97	34.69	17.72	16.97	**760**	**27**	0.89	5.2	10	--	**510**
	07/23/97	34.69	19.42	15.27	ND	ND	ND	ND	ND	--	**550**
	01/26/98	34.69	17.46	17.23	**1800**	ND	ND	ND	ND	--	**4800**
	07/03/98	34.69	18.61	16.08	ND	ND	ND	ND	ND	--	**1800**
	01/14/99	34.69	18.92	15.77	83	ND	ND	ND	ND	--	**230**
	07/15/99	34.69	17.84	16.85	**110**	ND	ND	ND	1	--	**290**
	01/07/00	34.69	19.13	15.56	ND	ND	ND	ND	ND	--	**260**
	07/19/00	34.69	20.27	14.42	ND	ND	ND	ND	ND	--	**648**
	01/02/01	34.69	20.04	14.65	ND	ND	ND	ND	ND	--	**119**
	05/23/01	34.69	18.27	16.42	84	ND	ND	ND	ND	--	**760**
	07/30/01	34.69	18.56	16.13	<50	<0.50	<0.50	<0.50	<0.50	--	**350**
	10/15/01	34.69	18.72	15.97	96	<0.50	<0.50	<0.50	<0.50	--	**160**
	01/14/02	34.69	16.78	17.91	**450**	<2.5	<2.5	<2.5	3.3	--	**4100**
	04/15/02	34.69	17.35	17.34	<1000	<10	<10	<10	<10	--	**10000**
	07/15/02	34.69	17.63	17.06	**2100**	<10	<10	<10	<20	**2100**	--
	01/18/03	34.69	17.04	17.65	<25000	<250	<250	<250	<500	**29000**	--
	07/11/03	34.69	17.91	16.78	**4000**	<25	<25	<25	<50	**6300**	--
	02/04/04	34.69	17.98	16.71	**8000**	<50	<50	<50	<100	**8500**	--
	08/11/04	34.69	17.84	16.85	**1100**	<10	<10	<10	<20	**1500**	--
	03/31/05	34.69	15.71	18.98	<2000	<0.50	<0.50	0.54	2.2	**4900**	--
	09/30/05	34.69	17.65	17.04	**190**	<0.50	<0.50	<0.50	<1.0	**160**	--
	03/27/06	34.69	15.03	19.66	**760**	<0.50	<0.50	<0.50	<1.0	**1000**	--
	09/27/06	34.69	18.45	16.24	**170**	<0.50	<0.50	<0.50	0.61	**73**	--
	03/27/07	34.69	18.84	15.85	**120**	<0.50	<0.50	<0.50	<0.50	**99**	--
	09/28/07	34.69	19.73	14.96	68	<0.50	<0.50	<0.50	<0.50	**15**	--
	03/26/08	34.69	19.32	15.37	**200**	<0.50	<0.50	<0.50	1	**47**	--
	07/28/08	34.69	20.15	14.54	<50	<0.50	<0.50	<0.50	<1.0	**8.7**	--
	01/26/09	34.69	20.74	13.95	<50	<0.50	<0.50	<0.50	<1.0	**5.2**	--
	08/03/09	34.72	20.10	14.62	76	<0.50	<0.50	<0.50	<1.0	**12**	--
	01/25/10	34.72	19.78	14.94	<50	<0.50	<0.50	<0.50	<1.0	**14**	--
	08/03/10	34.72	19.47	15.25	**210**	<0.50	<0.50	<0.50	<1.0	**37**	--
	02/17/11	34.72	19.50	15.22	**150**	<0.50	<0.50	<0.50	<1.0	**17**	--
	08/03/11	34.72	18.96	15.76	**230**	<0.50	<0.50	<0.50	<1.0	**44**	--
	02/07/12	34.72	20.00	14.72	97	<0.50	<0.50	<0.50	<1.0	**8.6**	--
	08/09/12	34.72	19.14	15.58	**140**	<0.50	<0.50	<0.50	<1.0	**18**	--

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

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

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

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

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-4	10/19/92	--	--	--	**480**	0.51	2.1	2.8	6.8	--	--
	12/21/92	33.12	19.73	13.39	**220**	ND	ND	0.97	0.74	--	--
	04/28/93	33.12	--	--	ND	ND	ND	ND	ND	--	--
	07/23/93	33.12	18.72	14.40	85	ND	ND	ND	ND	--	--
	10/05/93	32.71	18.74	13.97	**130**	ND	ND	ND	ND	--	--
	01/03/94	32.71	18.93	13.78	**210**	ND	ND	0.76	1.6	--	--
	04/02/94	32.71	18.53	14.18	89	ND	ND	ND	ND	--	--
	07/05/94	32.71	17.67	15.04	**190**	ND	ND	ND	ND	--	--
	10/06/94	32.71	19.25	13.46	**170**	0.85	ND	ND	0.74	--	--
	01/02/95	32.71	17.75	14.96	ND	ND	ND	ND	ND	--	--
	04/03/95	32.71	15.87	16.84	98	ND	ND	ND	ND	--	--
	07/14/95	32.71	17.01	15.70	ND	ND	ND	ND	ND	--	--
	10/10/95	32.71	18.03	14.68	ND	ND	ND	ND	ND	--	**120**
	01/03/96	32.71	18.05	14.66	ND	ND	ND	ND	ND	--	--
	04/10/96	32.71	16.00	16.71	ND	ND	ND	ND	ND	--	**240**
	07/09/96	32.71	16.96	15.75	ND	ND	ND	ND	ND	--	**480**
	01/24/97	32.71	16.04	16.67	ND	ND	ND	ND	ND	--	**270**
	07/23/97	32.71	17.87	14.84	ND	ND	ND	ND	ND	--	**460**
	01/26/98	32.71	16.05	16.66	ND	ND	ND	ND	ND	--	**17**
	07/03/98	32.71	16.95	15.76	ND	ND	ND	ND	ND	--	3.8
	01/14/99	32.71	17.34	15.37	ND	ND	ND	ND	ND	--	**4600**
	07/15/99	32.71	16.36	16.35	ND	ND	ND	ND	ND	--	ND
	01/07/00	32.71	17.81	14.90	ND	ND	ND	ND	ND	--	**450**
	07/19/00	32.71	18.94	13.77	ND	ND	ND	ND	ND	--	ND
	01/02/01	32.71	18.85	13.86	ND	ND	ND	ND	ND	--	ND
	05/23/01	32.71	16.82	15.89	ND	ND	ND	ND	ND	--	ND
	07/30/01	32.71	16.88	15.83	<50	<0.50	<0.50	<0.50	<0.50	--	4.9
	10/15/01	32.71	17.08	15.63	<50	<0.50	<0.50	<0.50	<0.50	--	<5.0
	01/14/02	32.71	14.97	17.74	<50	<0.50	<0.50	<0.50	<0.50	--	**30**
	04/15/02	32.71	15.48	17.23	<50	<0.50	<0.50	<0.50	<0.50	--	**180**
	07/15/02	32.71	15.90	16.81	<50	<0.50	<0.50	<0.50	<1.0	--	**50**
	01/18/03	32.71	15.39	17.32	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
	07/11/03	32.71	16.17	16.54	**200**	<0.50	<0.50	<0.50	<1.0	**52**	--
	02/04/04	32.71	16.12	16.59	**1300**	<10	<10	<10	<20	**1700**	--
	08/11/04	32.71	16.16	16.55	<5000	<50	<50	<50	<100	**6400**	--
	03/31/05	32.71	14.15	18.56	<1300	<0.50	<0.50	<0.50	<1.0	**1600**	--
	09/30/05	32.71	16.91	15.80	**900**	<0.50	<0.50	<0.50	<1.0	**3800**	--
	03/27/06	32.71	13.94	18.77	**870**	<0.50	<0.50	<0.50	<1.0	**2000**	--
	09/27/06	32.71	16.91	15.80	<1000	<10	<10	<10	<10	**1600**	--
	03/27/07	32.71	17.15	15.56	**1500**	<2.5	<2.5	<2.5	<2.5	**1700**	--
	09/28/07	32.71	18.13	14.58	**590**	<5.0	<5.0	<5.0	<5.0	**1400**	--
	03/26/08	32.71	17.66	15.05	**390**	<0.50	<0.50	<0.50	<1.0	**1400**	--
	07/28/08	32.71	18.34	14.37	**480**	<1.0	<1.0	<1.0	<2.0	**950**	--
	01/26/09	32.71	18.80	13.91	**500**	<0.50	<0.50	<0.50	<1.0	**830**	--
	08/03/09	32.72	18.43	14.29	**640**	<5.0	6.6	<5.0	<10	**570**	--
	01/25/10	32.72	18.02	14.70	**190**	<0.50	<0.50	<0.50	<1.0	**400**	--
	08/03/10	32.72	17.83	14.89	58	<0.50	<0.50	<0.50	<1.0	**110**	--
	02/17/11	32.72	17.85	14.87	<50	<0.50	<0.50	<0.50	<1.0	**12**	--
	08/03/11	32.72	17.36	40725.28	<50	<0.50	<0.50	<0.50	<1.0	**12**	--
	02/07/12	32.72	18.38	14.34	<50	<0.50	<0.50	<0.50	<1.0	1.5	--
	08/09/12	32.72	17.55	15.17	<50	<0.50	<0.50	<0.50	<1.0	1.3	--
MW-5	10/19/92	--	--	--	**2700**	**61**	5	**100**	**61**	--	--
	12/21/92	33.25	19.75	13.50	**1700**	**51**	4.7	**83**	**34**	--	--
	04/28/93	33.25	--	--	**6700**	**200**	**190**	**250**	**430**	--	--
	07/23/93	33.25	18.74	14.51	**2000**	**122**	8	**68**	**47**	--	--
	10/05/93	32.95	18.83	14.12	**1700**	**70**	6.2	**54**	**40**	--	--
	01/03/94	32.95	19.05	13.90	**1500**	**44**	ND	**42**	**46**	--	--
	04/02/94	32.95	18.68	14.27	**1800**	**46**	5.1	**38**	**35**	--	--

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-5 cont'd	07/05/94	32.95	17.90	15.05	**2200**	**97**	8.4	**37**	**36**	--	--
	10/06/94	32.95	19.37	13.58	**1600**	**79**	5.7	28	**22**	--	--
	01/02/95	32.95	17.92	15.03	**1700**	**50**	8.6	**30**	**28**	--	--
	04/03/95	32.95	16.15	16.80	**5400**	**190**	**240**	**170**	**420**	--	--
	07/14/95	32.95	17.18	15.77	**3800**	**210**	**100**	**130**	**190**	--	--
	10/10/95	32.95	18.15	14.80	**1300**	**92**	14	15	**39**	--	**1100**
	01/03/96	32.95	18.20	14.75	**630**	**53**	4.4	8.3	13	--	--
	04/10/96	32.95	16.05	16.90	**500**	**25**	18	7	**20**	--	**640**
	07/09/96	32.95	17.11	15.84	**1000**	**44**	20	10	**34**	--	**150**
	01/24/97	32.95	16.36	16.59	**4000**	**190**	**400**	**160**	**430**	--	**600**
	07/23/97	32.95	18.08	14.87	**1700**	**200**	23	18	**45**	--	**2500**
	01/26/98	32.95	16.27	16.68	ND	ND	ND	ND	ND	--	ND
	07/03/98	32.95	17.27	15.68	ND	ND	ND	ND	ND	--	ND
	01/14/99	32.95	17.55	15.40	**330**	**61**	4.1	2.2	2.9	--	**560**
	07/15/99	32.95	16.41	16.54	**1100**	**170**	ND	ND	**27**	--	**660**
	01/07/00	32.95	17.85	15.10	**1000**	**180**	6.3	ND	14	--	**430**
	07/19/00	32.95	18.87	14.08	**2980**	**289**	**57.3**	**65.3**	**43.4**	--	**976**
	01/02/01	32.95	18.47	14.48	**1150**	**87.2**	17.8	7.97	9.32	--	**368**
	05/23/01	32.95	17.38	15.57	**840**	**42**	10	13	7.1	--	**130**
	07/30/01	32.95	17.12	15.83	**1900**	**82**	24	6.9	13	--	**370**
	10/15/01	32.95	17.33	15.62	**26000**	**390**	**230**	**58**	**1300**	--	<500
	01/14/02	32.95	15.33	17.62	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	04/15/02	32.95	15.89	17.06	**310**	**20**	6.7	11	7.7	--	**77**
	07/15/02	32.95	16.21	16.74	**1500**	**40**	22	**60**	**28**	--	**170**
	01/18/03	32.95	15.68	17.27	<50	0.75	<0.50	<0.50	<1.0	--	**81**
	07/11/03	32.95	16.29	16.66	<50	<0.50	<0.50	<0.50	<1.0	3.6	--
	02/04/04	32.95	16.08	16.87	82	**16**	1.6	0.65	<1.0	**16**	--
	08/11/04	32.95	16.38	16.57	**900**	**81**	14	2.8	11	**120**	--
	03/31/05	32.95	14.30	18.65	**5000**	**160**	**84**	**65**	**72**	**140**	--
	09/30/05	32.95	16.19	16.76	**1200**	**26**	5.8	2.4	9.2	**38**	--
	03/27/06	32.95	13.90	19.05	**1100**	**13**	12	4.7	16	**8.8**	--
	09/27/06	32.95	17.06	15.89	**1300**	**20**	11	2.3	15	**21**	--
	03/27/07	32.95	17.43	15.52	**960**	**15**	7.8	2.2	11	**14**	--
	09/28/07	32.95	18.25	14.70	**1300**	**13**	6	2.3	15	**8.4**	--
	03/26/08	32.95	17.82	15.13	**1200**	**7.6**	3.3	1.8	11	2.7	--
	07/28/08	32.95	18.70	14.25	**2000**	**12**	4.9	3.2	17	<0.50	--
	01/26/09	32.95	19.25	13.70	**1400**	**7.4**	3.3	2.5	11	3.3	--
	08/03/09	32.98	18.62	14.36	**1500**	**17**	9	3.5	**22**	**7.3**	--
	01/25/10	32.98	18.34	14.64	**1600**	**7.6**	3.6	2.4	15	1.7	--
	08/03/10	32.98	18.07	14.91	**2200**	**32**	32	10	**48**	**10**	--
	02/17/11	32.98	18.05	14.93	**1800**	**33**	7.4	<0.50	11	**15**	--
	08/03/11	32.98	17.57	15.41	**2500**	**58**	23	12	**34**	**40**	--
	02/07/12	32.98	18.59	14.39	**1600**	**58**	11	3.0	**25**	**10**	--
	08/09/12	32.98	17.73	15.25	**1900**	**81**	18	10	**22**	**19**	--
MW-6	10/19/92	--	--	--	**3900**	**420**	12	**60**	**28**	--	--
	12/21/92	32.42	19.17	13.25	**2300**	**370**	11	**39**	15	--	--
	04/28/93	32.42	--	--	**1200**	**54**	1.5	11	5.3	--	--
	07/23/93	32.42	18.17	14.25	**580**	**19**	0.99	3.4	2.7	--	--
	10/05/93	32.16	18.35	13.81	**1400**	**34**	ND	5.3	7.3	--	--
	01/03/94	32.16	18.54	13.62	**1400**	**57**	ND	8.5	11	--	--
	04/02/94	32.16	18.15	14.01	**5300**	ND	ND	ND	ND	--	--
	07/05/94	32.16	17.25	14.91	ND	ND	ND	ND	ND	--	--
	10/06/94	32.16	18.85	13.31	**11000**	ND	ND	ND	ND	--	--
	01/02/95	32.16	17.51	14.65	**550**	**18**	0.92	2	1.8	--	--
	04/03/95	32.16	15.48	16.68	**6600**	ND	ND	ND	ND	--	--
	07/14/95	32.16	16.63	15.53	ND	ND	ND	ND	ND	--	--
	10/10/95	32.16	17.68	14.48	ND	**81**	ND	ND	ND	--	**75000**
	01/03/96	32.16	17.66	14.50	70	**9.9**	0.58	ND	0.81	--	--
	04/10/96	32.16	15.56	16.60	**300**	**258**	4.7	0.94	2.7	--	**53000**

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-6 cont'd	07/09/96	32.16	16.59	15.57	**1800**	**410**	ND	12	ND	--	**76000**
	01/24/97	32.16	15.69	16.47	ND	0.8	ND	ND	ND	--	**390**
	07/23/97	32.16	17.53	14.63	**5700**	**1100**	**240**	**240**	**700**	--	**16000**
	01/26/98	32.16	15.44	16.72	ND	ND	ND	ND	ND	--	ND
	07/03/98	32.16	16.58	15.58	ND	ND	ND	ND	ND	--	ND
	01/14/99	32.16	17.02	15.14	ND	ND	ND	ND	ND	--	**14**
	07/15/99	32.16	15.95	16.21	ND	ND	ND	ND	ND	--	2.8
	01/07/00	32.16	16.96	15.20	78	**24**	ND	0.66	17	--	**280**
	07/19/00	32.16	18.04	14.12	ND	ND	1.32	ND	0.974	--	ND
	01/02/01	32.16	18.10	14.06	ND	ND	ND	ND	ND	--	ND
	05/23/01	32.16	16.42	15.74	ND	ND	ND	ND	ND	--	ND
	07/30/01	32.16	16.49	15.67	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	10/15/01	32.16	16.67	15.49	<50	<0.50	0.62	<0.50	<0.50	--	<5.0
	01/14/02	32.16	14.60	17.56	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	04/15/02	32.16	15.07	17.09	<50	<0.50	<0.50	<0.50	0.73	--	<5.0
	07/15/02	32.16	15.56	16.60	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50
	01/18/03	32.16	15.80	16.36	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
	07/11/03	32.16	15.74	16.42	<50	<0.50	<0.50	<0.50	<1.0	<2.0	--
	02/04/04	32.16	15.49	16.67	<50	**2.6**	<0.50	<0.50	<1.0	2.4	--
	08/11/04	32.16	15.81	16.35	**7900**	**95**	<50	<50	<100	**9100**	--
	03/31/05	32.16	13.70	18.46	<5000	**2.5**	<0.50	<0.50	<1.0	**7600**	--
	09/30/05	32.16	15.48	16.68	**4300**	**140**	37	28	**41**	**5800**	--
	03/27/06	32.16	13.02	19.14	**7200**	**34**	0.66	0.96	18	**9900**	--
	09/27/06	32.16	16.56	15.60	**1800**	<12	<12	<12	<12	**3300**	--
	03/27/07	32.16	16.73	15.43	**1600**	**2.8**	<2.5	<2.5	<2.5	**1800**	--
	09/28/07	32.16	17.75	14.41	**830**	<5.0	<5.0	<5.0	<5.0	**1600**	--
	03/26/08	32.16	17.31	14.85	**940**	**45**	5.9	2	5.3	**1300**	--
	07/28/08	32.16	18.50	13.66	**500**	<1.0	<1.0	<1.0	<2.0	**750**	--
	01/26/09	32.16	18.46	13.70	**570**	<0.50	<0.50	<0.50	<1.0	**500**	--
	08/03/09	32.19	18.01	14.18	**800**	<5.0	<5.0	<5.0	<10	**690**	--
	01/25/10	32.19	17.64	14.55	**410**	**4.8**	0.63	<0.50	1.4	**390**	--
	08/03/10	32.19	17.48	14.71	**480**	**2**	<0.50	<0.50	<1.0	**520**	--
	02/17/11	32.19	17.48	14.71	**290**	<0.50	<0.50	<0.50	<1.0	**130**	--
	08/03/11	32.19	17.02	15.17	**330**	<0.50	<0.50	<0.50	<1.0	**89**	--
	02/07/12	32.19	18.02	14.17	**450**	<0.50	<0.50	<0.50	<1.0	**29**	--
	08/09/12	32.19	17.17	15.02	**180**	<0.50	<0.50	<0.50	<1.0	**10**	--
MW-7	10/19/92	--	--	--	--	--	--	--	--	--	--
	04/28/93	32.49	--	--	**110**	**2.8**	1.3	1.4	1.7	--	--
	07/23/93	32.49	18.60	13.89	**790**	**23**	3.3	28	5.4	--	--
	10/05/93	32.20	18.76	13.44	**360**	**10**	1.2	0.91	0.99	--	--
	01/03/94	32.20	18.91	13.29	ND	0.93	ND	0.75	1.9	--	--
	04/02/94	32.20	18.50	13.70	**360**	**2**	ND	ND	0.8	--	--
	07/05/94	32.20	17.52	14.68	ND	ND	ND	ND	ND	--	--
	10/06/94	32.20	19.25	12.95	**340**	**5.6**	0.85	ND	1.2	--	--
	01/02/95	32.20	17.67	14.53	ND	ND	ND	ND	ND	--	--
	04/03/95	32.20	15.81	16.39	**570**	**24**	ND	3.4	5.8	--	--
	07/14/95	32.20	17.05	15.15	ND	**14**	ND	ND	ND	--	--
	10/10/95	32.20	18.08	14.12	**740**	**170**	ND	ND	ND	--	**13000**
	01/03/96	32.20	18.02	14.18	**360**	**16**	1.3	2.7	1.4	--	--
	04/10/96	32.20	15.81	16.39	**120**	**4.1**	1.5	ND	0.88	--	**3200**
	07/09/96	32.20	16.99	15.21	ND	ND	ND	ND	ND	--	**3400**
	01/24/97	32.20	16.08	16.12	ND	**16**	ND	ND	ND	--	**6600**
	07/23/97	32.20	17.99	14.21	ND	**16**	ND	ND	0.62	--	**10000**
	01/26/98	32.20	15.56	16.64	ND	ND	ND	ND	0.56	--	ND
	07/03/98	32.20	17.04	15.16	ND	ND	ND	ND	ND	--	ND
	01/14/99	32.20	--	--	--	--	--	--	--	--	--
	07/15/99	32.20	15.72	16.48	ND	ND	ND	ND	ND	--	**290**
	01/07/00	32.20	16.80	15.40	ND	**7.7**	ND	ND	4.4	--	**98**
	07/19/00	32.20	17.88	14.32	ND	ND	1.27	ND	0.979	--	ND

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

Sample Name	Sample Date	TOC (ft MSL)	Depth to Water (ft BTOC)	Groundwater Elevation (ft MSL)		EPA 8260B					8021B
					TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	MTBE (µg/L)
800 Harrison Street											
MW-7 cont'd	01/02/01	32.20	17.97	14.23	ND	ND	ND	ND	ND	--	ND
	05/23/01	32.20	16.81	15.39	ND	ND	ND	ND	ND	--	ND
	07/30/01	32.20	16.79	15.41	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	10/15/01	32.20	16.98	15.22	<50	<0.50	0.58	<0.50	<0.50	--	<5.0
	01/14/02	32.20	14.85	17.35	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	04/15/02	32.20	15.29	16.91	<50	<0.50	<0.50	<0.50	0.7	--	<5.0
	07/15/02	32.20	15.92	16.28	<50	<0.50	<0.50	<0.50	<1.0	--	<0.50
	01/18/03	32.20	15.11	17.09	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
	07/11/03	32.20	15.89	16.31	<50	<0.50	<0.50	<0.50	<1.0	**19**	--
	02/04/04	32.20	15.90	16.30	<50	**3.6**	<0.50	<0.50	<1.0	**3.2**	--
	08/11/04	32.20	16.12	16.08	<5000	**120**	<50	<50	<100	**5100**	--
	03/31/05	32.20	13.99	18.21	<5000	**190**	<50	<50	<100	**8400**	--
	09/30/05	32.20	15.93	16.27	<50	<0.50	<0.50	<0.50	<1.0	<0.50	--
	03/27/06	32.20	13.40	18.80	**2500**	**160**	10	11	**26**	**5600**	--
	09/27/06	32.20	16.96	15.24	**2800**	**180**	<12	15	**44**	**4200**	--
	03/27/07	32.20	17.30	14.90	**920**	**66**	2.9	3.4	4.5	**970**	--
	09/28/07	32.20	18.10	14.10	**4000**	**440**	15	17	**59**	**3300**	--
	03/26/08	32.20	17.64	14.56	**390**	**39**	3.3	0.85	7.5	**96**	--
	07/28/08	32.20	18.50	13.70	64	**3.3**	<0.50	<0.50	<1.0	**8.7**	--
	01/26/09	32.20	18.90	13.30	80	**7.9**	0.58	<0.50	<1.0	**10**	--
	08/03/09	32.22	18.29	13.93	**2100**	**220**	14	10	**31**	**750**	--
	01/25/10	32.22	17.49	14.73	**490**	**25**	3.5	0.54	6.9	**16**	--
	08/03/10	32.22	17.84	14.38	**240**	**45**	1.8	1.2	1.7	**290**	--
	02/17/11	32.22	17.83	14.39	**370**	**53**	2	<0.50	2.1	**12**	--
	08/03/11	32.22	17.42	14.80	**390**	**20**	1.8	<0.50	1.6	**27**	--
	02/07/12	32.22	18.40	13.82	**310**	**25**	2	<0.50	3.2	**9.0**	--
	08/09/12	32.22	17.53	14.69	**280**	**11**	1.2	<0.50	<1.0	**24**	--
MW-8	04/28/93	32.33	--	--	**450**	**18**	1.8	1.8	1.4	--	--
	07/23/93	32.33	18.45	13.88	**260**	**5.1**	ND	0.6	ND	--	--
	10/05/93	32.00	18.57	13.43	**120**	**1.7**	ND	ND	ND	--	--
	01/03/94	32.00	18.73	13.27	ND	ND	ND	ND	ND	--	**51**
	04/02/94	32.00	18.30	13.70	**150**	**1.2**	ND	ND	ND	--	--
	07/05/94	32.00	17.41	14.59	**730**	**17**	ND	1.6	ND	--	--
	10/06/94	32.00	18.98	13.02	**140**	ND	ND	ND	ND	--	--
	01/02/95	32.00	17.58	14.42	**440**	**18**	0.72	2	1.8	--	--
	04/03/95	32.00	15.54	16.46	**960**	**11**	ND	ND	ND	--	--
	07/14/95	32.00	16.81	15.19	**280**	**4.2**	2.6	1.1	3.3	--	--
	10/10/95	32.00	17.85	14.15	**110**	**1.3**	0.62	0.67	ND	--	**170**
	01/03/96	32.00	17.82	14.18	63	ND	0.51	ND	1.8	--	--
	04/10/96	32.00	15.70	16.30	ND	**1.1**	0.61	ND	ND	--	**60**
	07/09/96	32.00	16.78	15.22	72	**1**	ND	ND	ND	--	**140**
	01/24/97	32.00	15.79	16.21	ND	ND	ND	ND	ND	--	**76**
	07/23/97	32.00	17.69	14.31	ND	ND	ND	ND	ND	--	**270**
	01/26/98	32.00	15.50	16.50	ND	ND	ND	ND	0.76	--	2.9
	07/03/98	32.00	16.80	15.20	ND	ND	ND	ND	ND	--	ND
	01/14/99	32.00	17.13	14.87	ND	ND	ND	ND	ND	--	**11**
	07/15/99	32.00	15.85	16.15	ND	ND	ND	ND	ND	--	ND
	01/07/00	32.00	16.94	15.06	ND	ND	ND	ND	ND	--	**11**
	07/19/00	32.00	18.06	13.94	ND	ND	2.99	0.521	ND	--	ND
	01/02/01	32.00	18.12	13.88	ND	ND	ND	ND	ND	--	ND
	05/23/01	32.00	16.96	15.04	ND	ND	ND	ND	ND	--	ND
	07/30/01	32.00	16.52	15.48	<50	<0.50	<0.50	<0.50	<0.50	--	2.7
	10/15/01	32.00	16.72	15.28	<50	<0.50	0.65	<0.50	<0.50	--	<5.0
	01/14/02	32.00	14.53	17.47	<50	<0.50	<0.50	<0.50	<0.50	--	<2.5
	04/15/02	32.00	14.96	17.04	<50	<0.50	<0.50	<0.50	<0.50	--	<5.0
	07/15/02	32.00	15.60	16.40	<50	<0.50	<0.50	<0.50	<1.0	--	**11**
	01/18/03	32.00	14.78	17.22	<50	<0.50	<0.50	<0.50	<1.0	--	<2.0
	02/04/04	32.00	15.65	16.35	52	**2.3**	<0.50	<0.50	<1.0	2.4	--
	08/11/04	32.00	15.86	16.14	**350**	<2.5	<2.5	<2.5	<5.0	**310**	--
	03/31/05	32.00	13.73	18.27	<2000	<0.50	<0.50	<0.50	<1.0	**2100**	--

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

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

Explanation

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

Table 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-2	8/9/2012	6.8	500	<0.44	<0.17	<1.0	15	A01, S01
MW-3	8/9/2012	<0.0010	130	43	<0.17	61	1.4	
MW-4	8/9/2012	--	--	--	--	--	--	
MW-5	8/9/2012	<0.0010	150	19	<0.17	49	2.0	
MW-6	8/9/2012	0.0082	140	<0.44	<0.17	27	1.9	
MW-7	8/9/2012	0.0045	230	<0.44	<0.17	49	3.0	
726 Harrison Street								
MW-1	8/9/2012	1.4	290	<0.44	<0.17	16	5.8	
MW-2	8/9/2012	0.0012	100	66	<0.17	33	0.94	
MW-3	8/9/2012	0.0	150	0.6	<0.17	18	1.4	
MW-4	8/9/2012	0.5	320	<0.44	<0.17	13	3.8	
MW-5	8/9/2012	4.9	570	<0.44	<0.17	4.6	21	
MW-6	8/9/2012	0.0048	190	10.0	<0.17	27	0.64	
800 Harrison Street								
MW-1	8/9/2012	0.026	69	1.9	<0.17	10	1.6	
MW-2	8/9/2012	0.076	190	19	0.38	130	1.4	
MW-3	8/9/2012	6.3	290	<0.44	<0.17	3.5	2.9	A01, S01
MW-4	8/9/2012	0.031	98	4.3	<0.17	22	0.90	
MW-5	8/9/2012	2.9	140	<0.44	<0.17	2.5	1.7	A01
MW-6	8/9/2012	0.18	130	<0.44	<0.17	16	1.0	A01
MW-7	8/9/2012	0.43	180	<0.44	<0.17	17	2.7	A01
MW-8	8/9/2012	0.0041	130	1.3	<0.17	37	1.6	

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

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

SITE LOCATION MAP

ARCADIS

FIGURE
1

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS LD: J. HARRIS PIC: J. VOGELEY PM: K. ABBOTT TM: K. ABBOTT LYR:(Opt)ON=*;OFF=*REF*
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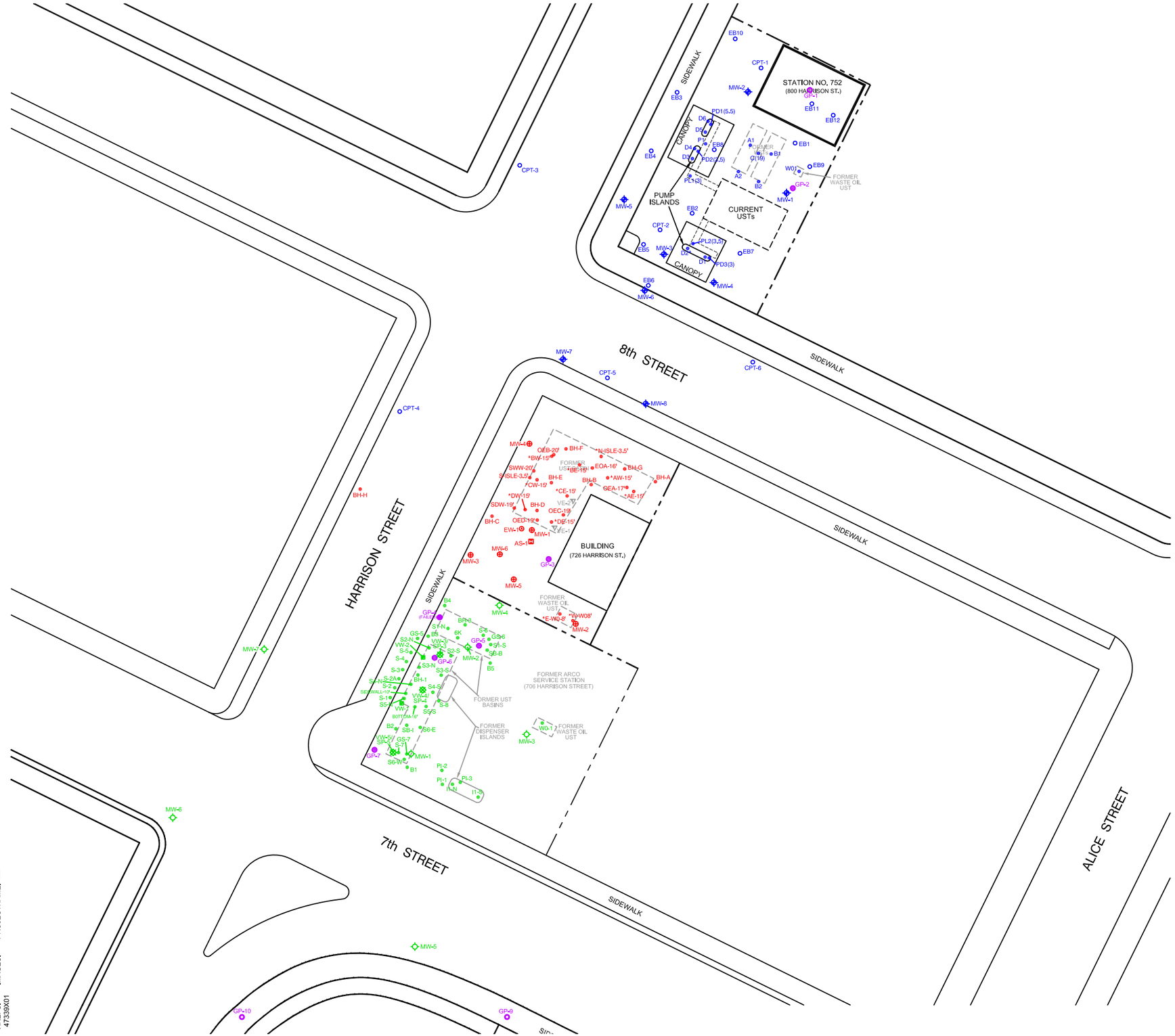
XREFS: IMAGES: PROJECTNAME: ---
Oakland West.jpg



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)

NOTE:

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

0 50' 100'

GRAPHIC SCALE

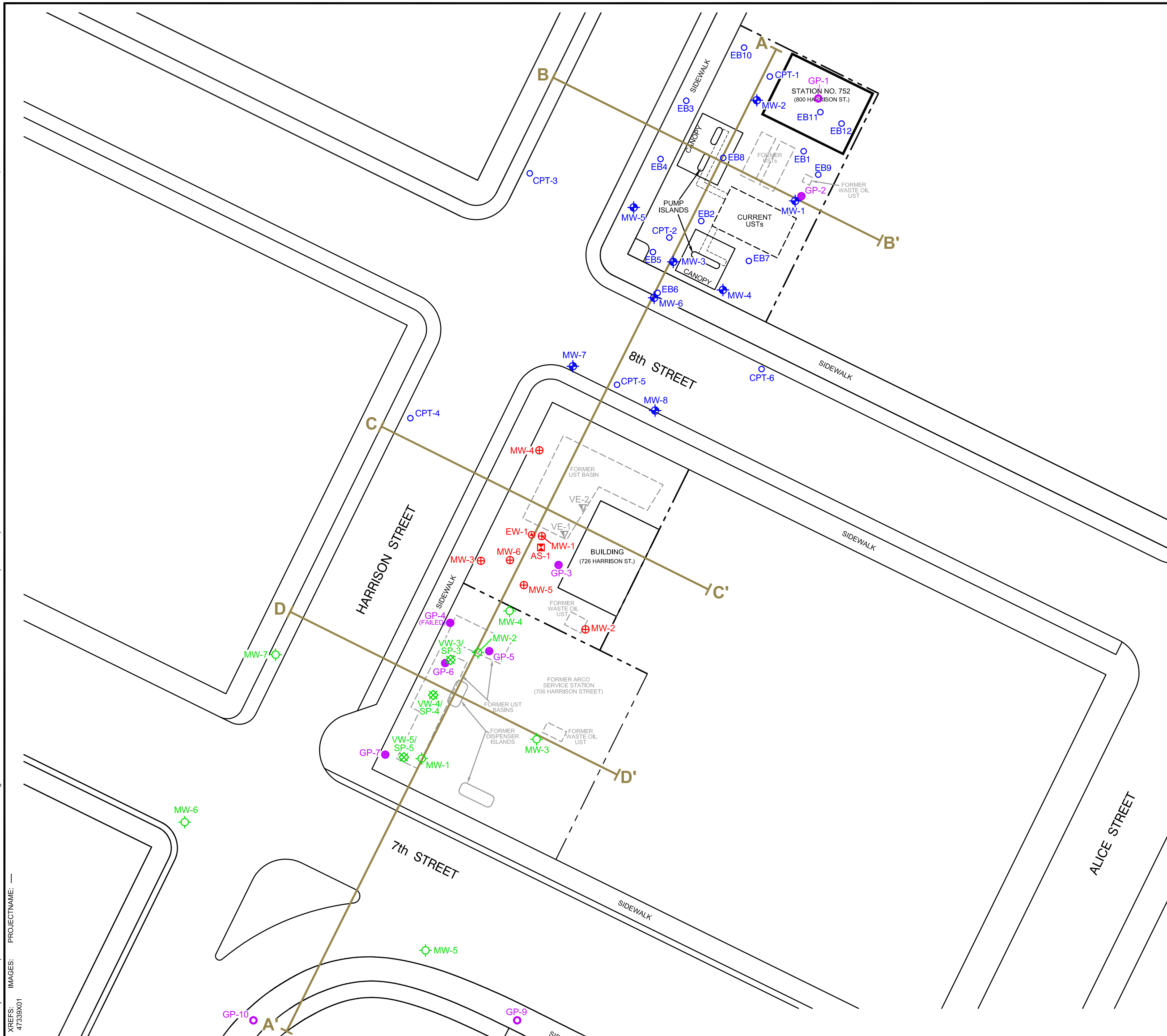
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

SITE PLAN

ARCADIS

FIGURE 2

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENV\CAD\B0047339\2012\00006\DWG\47339B02.dwg LAYOUT: 2 SAVED: 7/20/2012 7:18 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/20/2012 7:18 AM BY: HARRIS, JESSICA
XREFS: 47339X01 IMAGES: PROJECTNAME: ---



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'

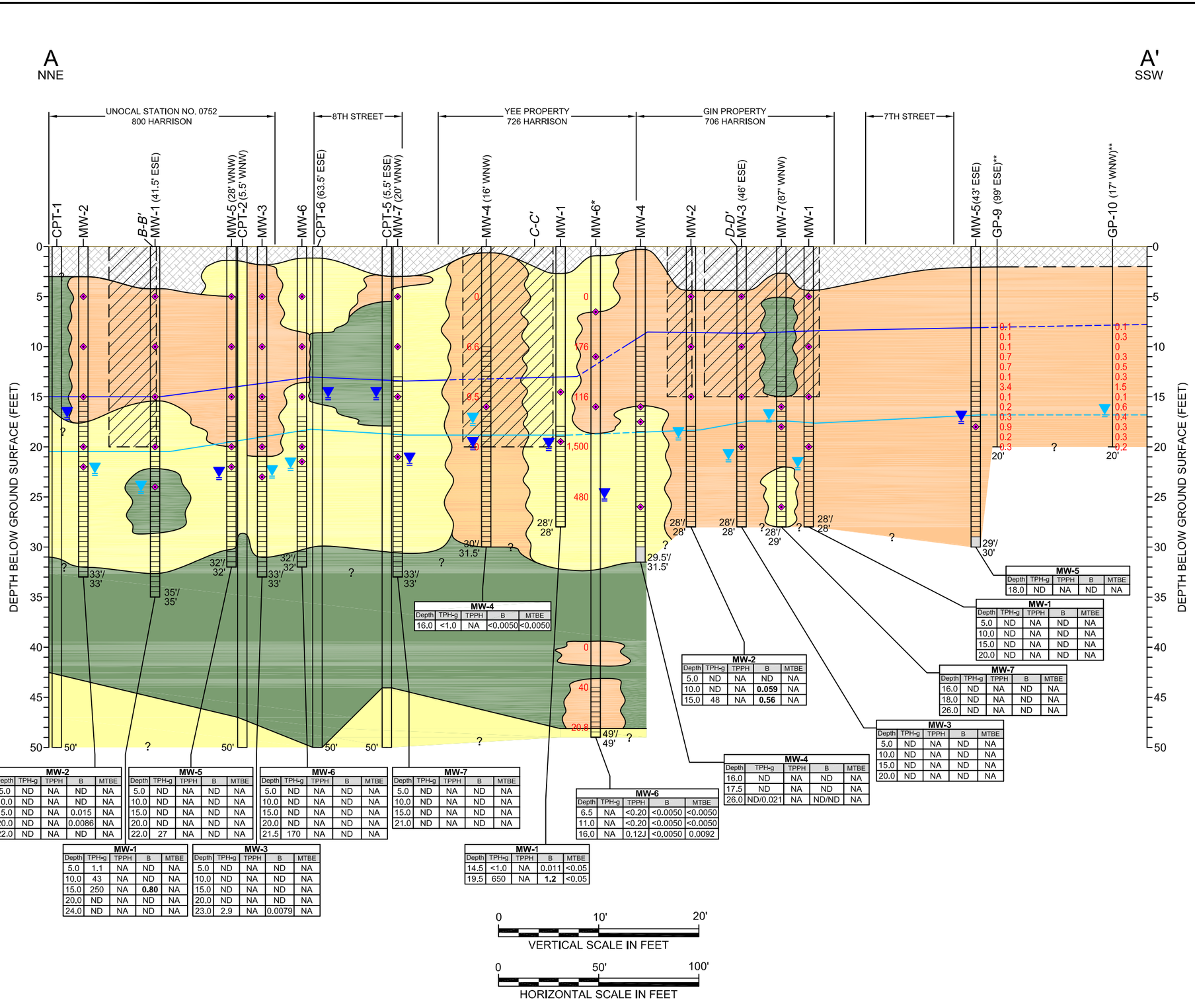
GRAPHIC SCALE

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

GEOLOGIC CROSS SECTION LOCATIONS

ARCADIS

FIGURE 3



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

GEOLOGIC CROSS SECTION A-A'

ARCADIS

FIGURE 4

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
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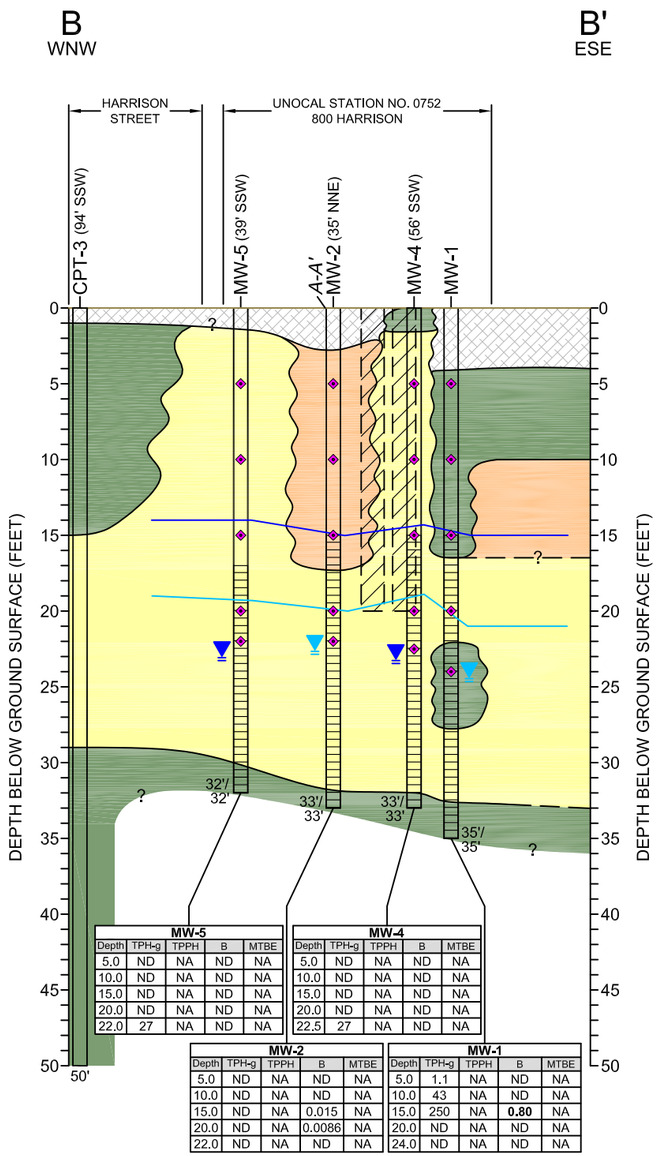
XREFS: 47339X01 IMAGES: PROJECTNAME: ---



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

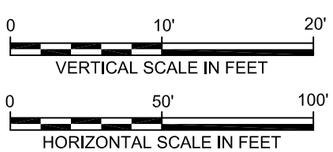
Depth	TPH-g	TPPH	B	MTBE
5.0	ND	NA	ND	NA
10.0	ND	NA	ND	NA
15.0	ND	NA	ND	NA
20.0	ND	NA	ND	NA
22.5	27	NA	ND	NA

MW-2

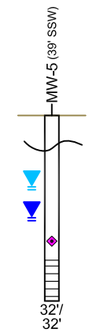
Depth	TPH-g	TPPH	B	MTBE
5.0	ND	NA	ND	NA
10.0	ND	NA	ND	NA
15.0	ND	NA	0.015	NA
20.0	ND	NA	0.0086	NA
22.0	ND	NA	ND	NA

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
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00007\DWG\47339V02.dwg LAYOUT: 5 SAVED: 10/12/2012 3:29 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 10/17/2012 12:55 PM BY: HARRIS, JESSICA
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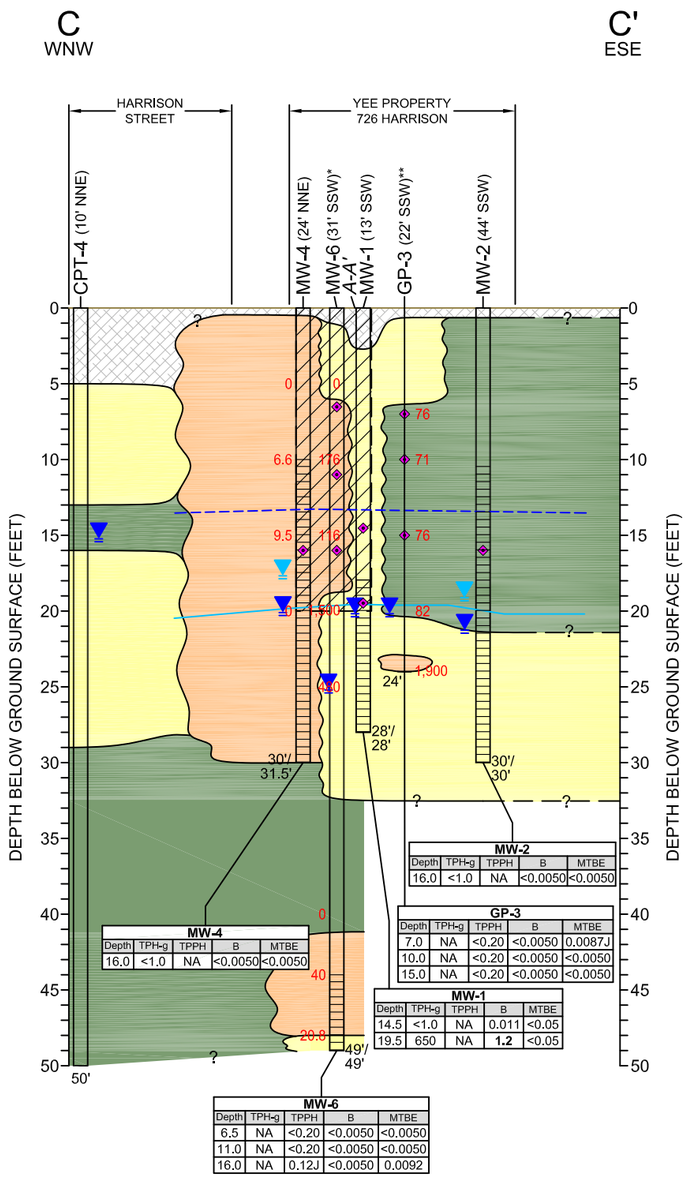

0 10' 20'
VERTICAL SCALE IN FEET

0 50' 100'
HORIZONTAL SCALE IN FEET

LEGEND

- MW-4 (24' NNE) — 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
- 30'/ 31.5' — 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

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00007\DWG\47339V03.dwg LAYOUT: 6 SAVED: 10/12/2012 3:29 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 10/17/2012 12:56 PM BY: HARRIS, JESSICA
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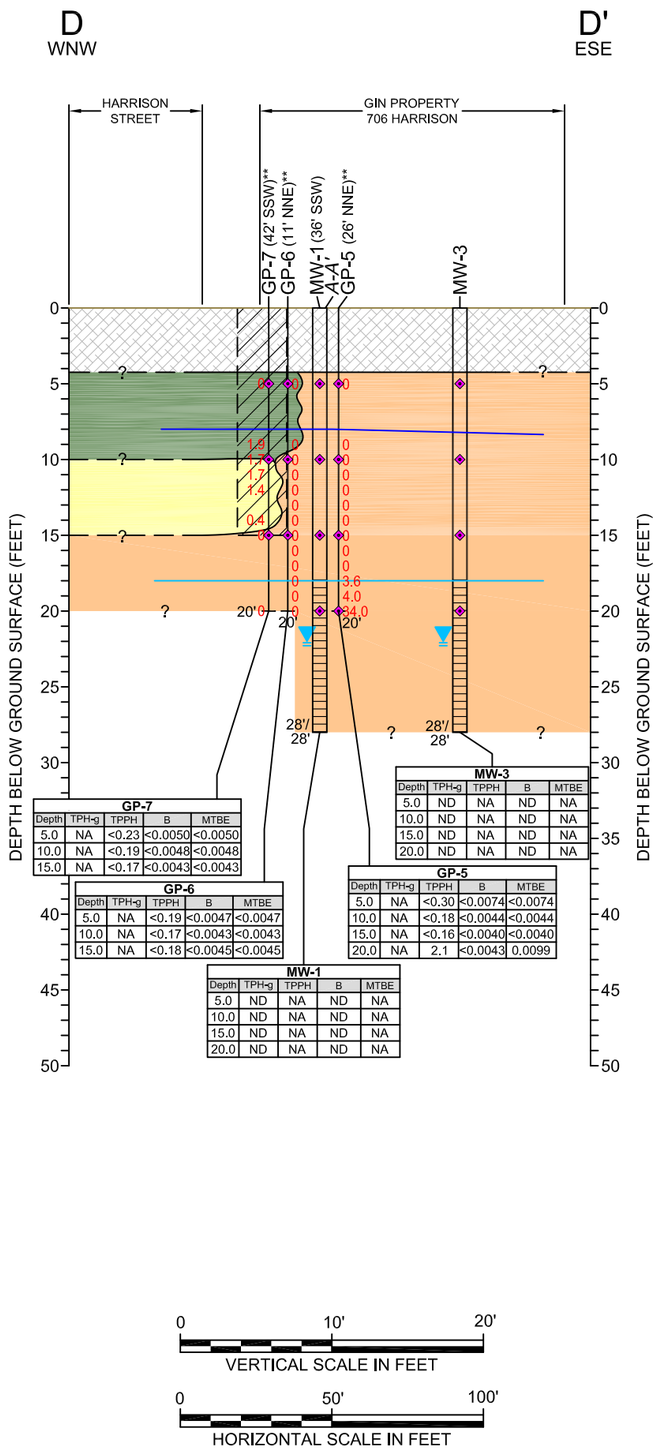

LEGEND

- WELL ID (PROJECTED DISTANCE AND DIRECTION FROM CROSS SECTION) — MW-1 (36' SSW)
- 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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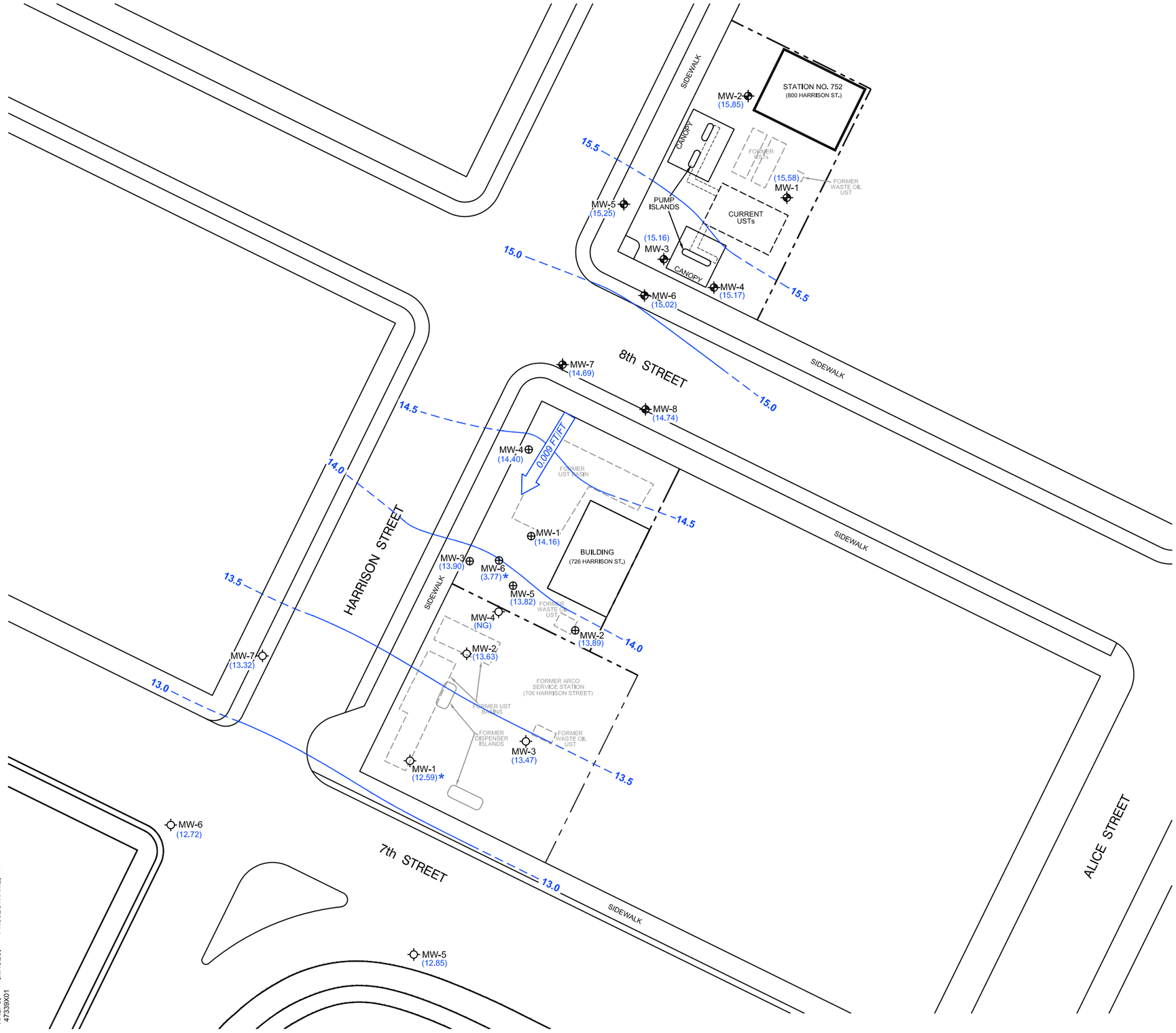

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
- MW-1 ○ GROUNDWATER MONITORING WELL (GIN SITE)
- (15.02) GROUNDWATER ELEVATION CONTOUR IN FEET RELATIVE TO MEAN SEA LEVEL (FT MSL)
- 15.0 GROUNDWATER ELEVATION CONTOUR (FT MSL; DASHED WHERE INFERRED)
- 0.009 FT/FT APPROXIMATE GROUNDWATER FLOW DIRECTION AND GRADIENT (FOOT PER FOOT)
- (NG) NOT GAUGED
- * NOT USED IN GROUNDWATER CONTOURING AND GRADIENT CALCULATION

NOTES:

1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'.
2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
3. MW-1, MW-2 AND MW-4 ON THE GIN SITE ARE NOT USED IN THE GROUNDWATER CONTOURS DUE TO EXCAVATION WORK IN THE AREA.
4. MW-6 IS NOT USED IN THE GROUNDWATER CONTOURS BECAUSE IT IS LOCATED IN A LOWER WATER BEARING ZONE.

0 50' 100'

GRAPHIC SCALE

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

GROUNDWATER ELEVATION CONTOUR MAP AUGUST 2012

ARCADIS

FIGURE 8

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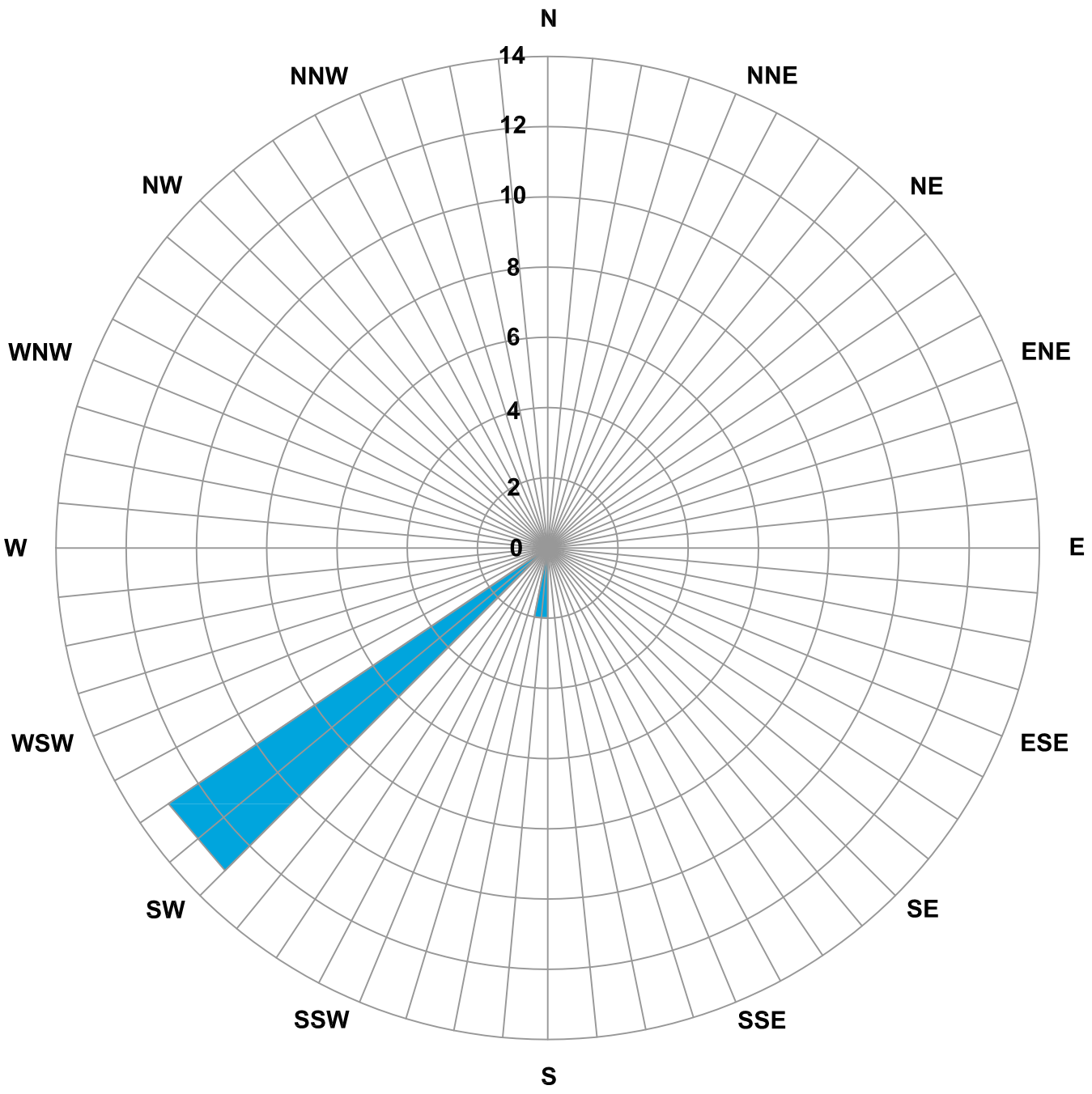


LEGEND

CONCENTRIC CIRCLES REPRESENT 15 SEMIANNUAL MONITORING EVENTS CONDUCTED BETWEEN THE FIRST QUARTER 2004 THROUGH THE FIRST QUARTER 2012.

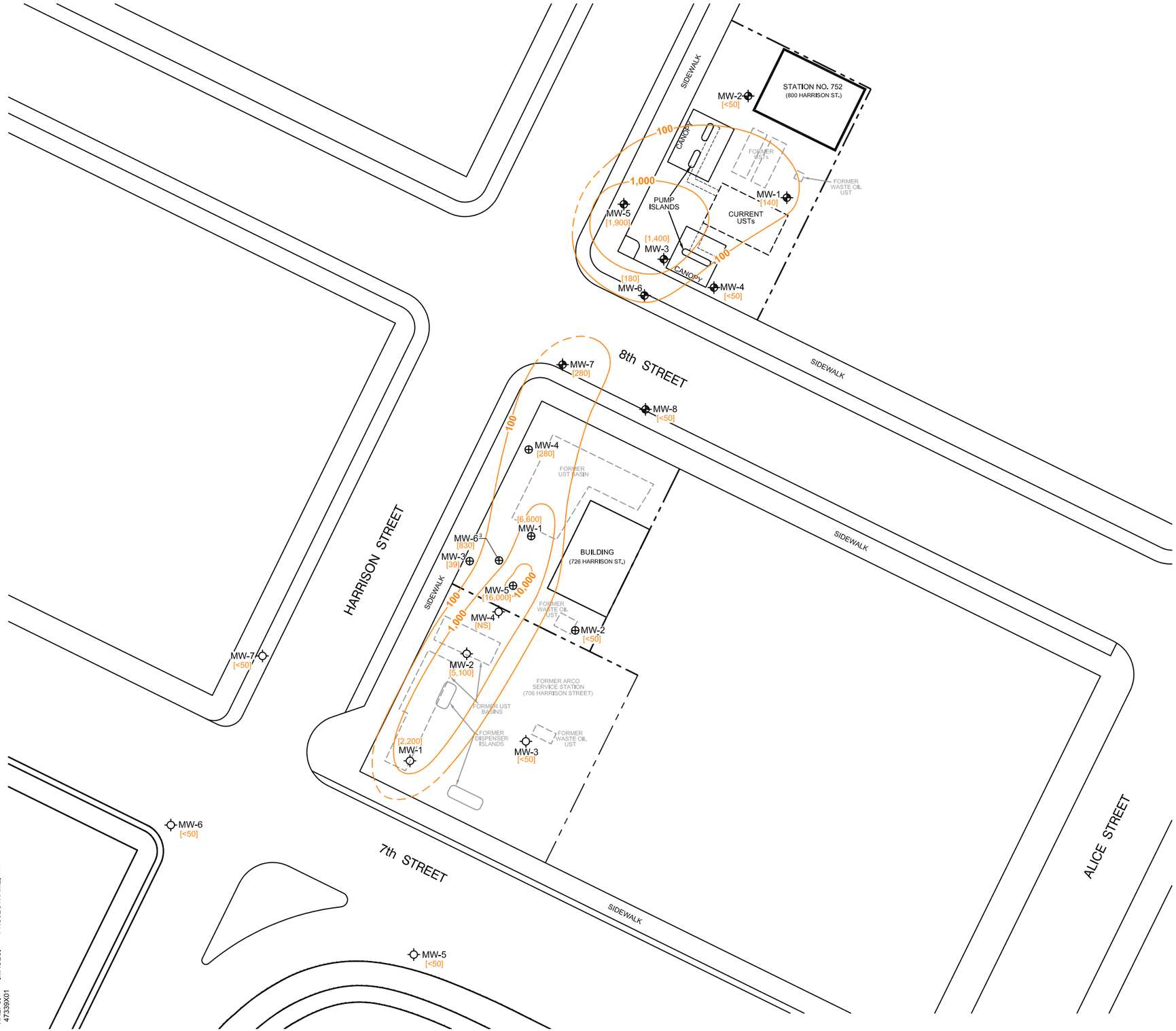
GROUNDWATER FLOW DIRECTION

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

GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

ARCADIS

FIGURE
9



LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
- MW-1 ○ GROUNDWATER MONITORING WELL (GIN SITE)
- [TPH-g] TOTAL PETROLEUM HYDROCARBONS AS GASOLINE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- 100 TPH-g ISOCONCENTRATION CONTOUR (µg/L; DASHED WHERE INFERRED)
- < DENOTES LESS THAN LABORATORY REPORTING LIMIT
- [NS] NOT SAMPLED; CAR PARKED AT TIME OF SAMPLING EVENT

NOTES:

1. BASE MAP PROVIDED BY MID COAST ENGINEERS, DATED 06/29/11, AT A SCALE OF 1"=50'. ADDITIONAL SITE FEATURES PROVIDED BY STANTEC, INC., DATED 03/05/10, AT A SCALE OF 1"=50'.
2. COORDINATES ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83.
3. MW-6 AT 726 HARRISON 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

TPH-g ISOCONCENTRATION CONTOUR MAP AUGUST 2012

ARCADIS

FIGURE 10

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00007\DWG\47339C01.dwg LAYOUT: 10 SAVED: 10/17/2012 12:48 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 10/21/2012 4:32 PM BY: HARRIS, JESSICA
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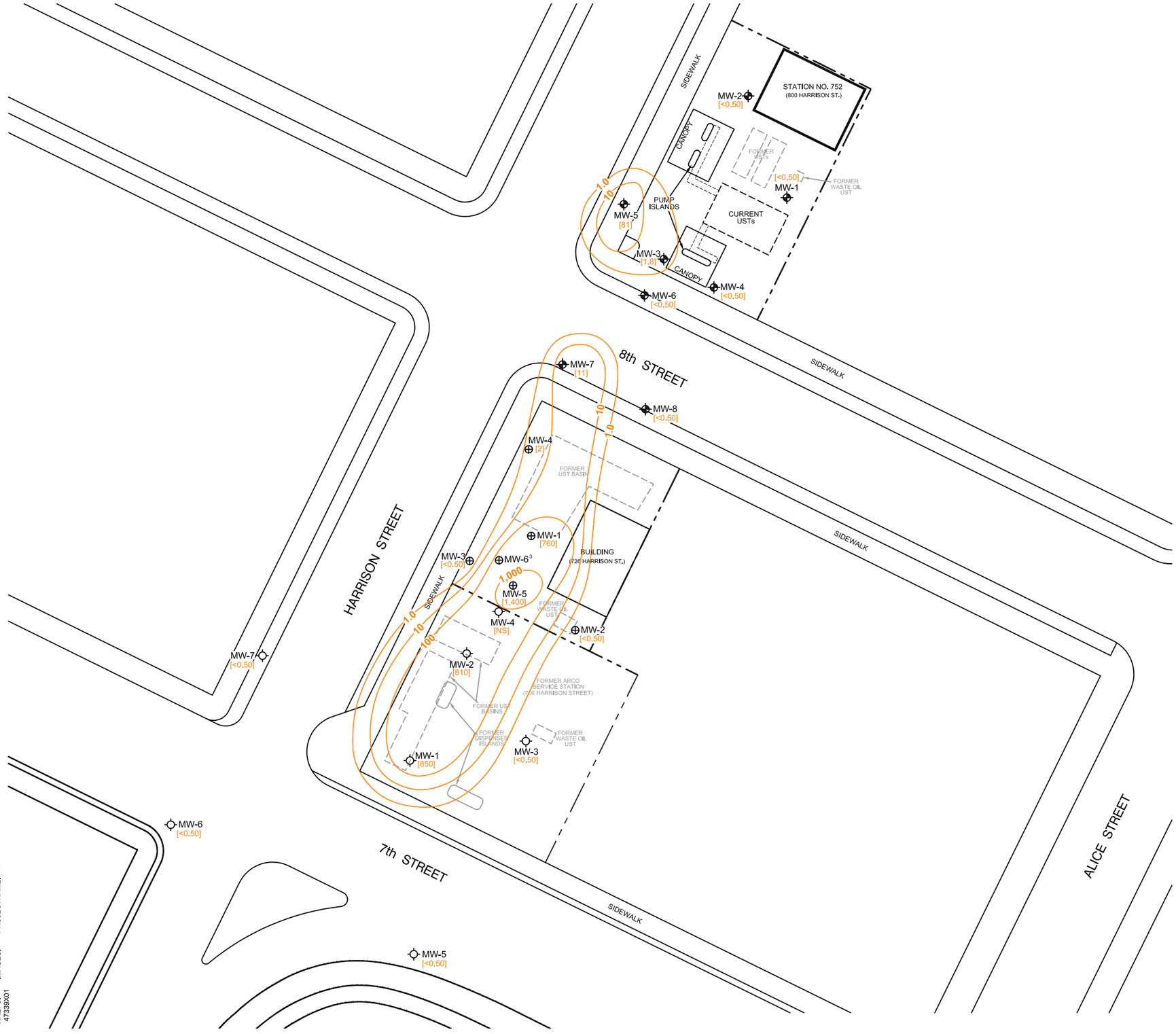

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
- MW-1 ○ GROUNDWATER MONITORING WELL (GIN SITE)
- [BENZ] 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; CAR PARKED AT TIME OF SAMPLING EVENT

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 ISOCONCENTRATION CONTOUR MAP AUGUST 2012

ARCADIS

FIGURE 11

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCADIB\00473392012\000007\DWG\47339C02.dwg LAYOUT: 11 SAVED: 10/17/2012 12:48 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 10/17/2012 12:49 PM BY: HARRIS, JESSICA
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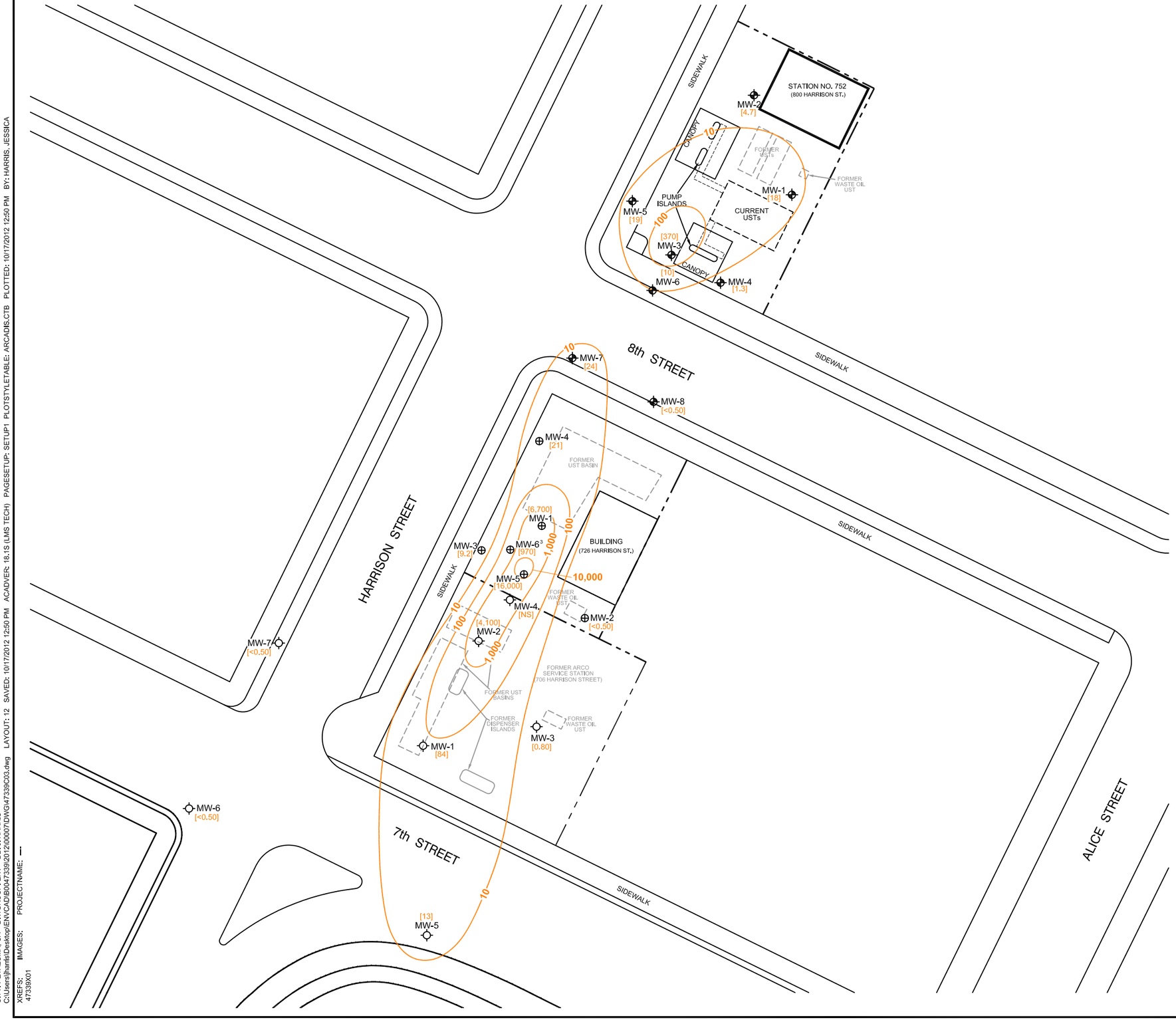

LEGEND

- PROPERTY BOUNDARY
- PRODUCT PIPING
- MW-1 ⊕ GROUNDWATER MONITORING WELL (UNOCAL SITE)
- MW-1 ⊕ GROUNDWATER MONITORING WELL (YEE SITE)
- MW-1 ○ GROUNDWATER MONITORING WELL (GIN SITE)
- [MTBE] METHYL TERTIARY BUTYL ETHER CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- 100 MTBE ISOCONCENTRATION CONTOUR (µg/L; DASHED WHERE INFERRED)
- < DENOTES LESS THAN LABORATORY REPORTING LIMIT
- [NS] NOT SAMPLED; CAR PARKED AT TIME OF SAMPLING EVENT

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 AUGUST 2012

ARCADIS

FIGURE 12

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
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XREFS: 47339X01 IMAGES: PROJECTNAME: ---

ARCADIS

Appendix **A**

Agency Correspondence

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

July 9, 2012

RO0000231 Responsible Parties:
Roya Kambin
Chevron Environmental Management Company
6101 Bollinger Canyon Road, 5th Floor
San Ramon, CA 94583-5186
(Sent via E-mail to: RKLG@chevron.com)

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

Muhammad Usman
800 Harrison Street
Oakland, CA 94607

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

RO0000321 Responsible Parties:
Peter Yee
1000 San Antonio Avenue
Alameda, CA 94501

Kin Chan
4328 Edgewood Avenue
Oakland, CA 94602-1316

RO0000484 Responsible Parties:
Bo Gin
342 Lester Avenue
Oakland, CA 94606-1317

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

Dear Responsible Parties:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case files for the above referenced sites including the document entitled, "*Site Assessment Addendum Report, 800, 726, and 706 Harrison Street, Oakland, California*," dated May 11, 2012 (Report) and "*First Quarter 2012 Semiannual Status Summary Report, 800, 726, and 706 Harrison Street, Oakland, California*," dated April 6, 2012 (Monitoring Report). Both reports were prepared on your behalf by ARCADIS. The Report presents the results from three soil borings advanced to address data gaps within the area of a commingled plume that affects three adjacent sites at 800, 726, and 706 Harrison Street. The three borings were proposed in a Work Plan Addendum dated November 4, 2011 to address deviations from a previous Work Plan. Unfortunately, the proposed scope of work in the Work Plan Addendum dated November 4, 2011 was not

completed. We request that you address the technical comments below, perform the proposed work, and send us the reports requested below.

TECHNICAL COMMENTS

1. **Boring GP-10.** Boring GP-10 was advanced to a depth of 20 feet bgs but a grab groundwater sample could not be collected. The text of the Report states that no groundwater recharge was observed in GP-10 between approximately 20 and 25 feet bgs. However, the boring log for GP-10 indicates that the total depth of GP-10 was only 20 feet bgs. We are disappointed that additional attempts do not appear to have been made to either collect a grab groundwater sample from the GP-10 boring or to advance an adjacent boring to collect a grab groundwater sample for the following reasons:
    - Boring GP-10 is directly downgradient from the plume and is the key location to defining downgradient plume extent.
    - A significant amount of time and resources went into the planning, reviewing, revision of the location, permitting, and gaining access to advance GP-10.
    - The boring log for GP-10 indicates silty sands to 20 feet bgs which is consist with other borings in the area that have yielded grab groundwater samples.
    - Additional grab groundwater sampling or boring attempts do not appear to have been made.
    - Soil screening parameters and observations on the boring logs did not indicate obvious evidence of contamination. However, a groundwater sample was needed to confirm this conclusion.

2. **Conclusions Regarding Plume Extent.** We do not concur with the conclusion that the additional investigation addressed the data gap regarding the downgradient extent of the plume. Three downgradient borings were originally proposed for collection of grab groundwater samples to define downgradient plume extent. The number of proposed borings was reduced from three to two in the Work Plan Addendum dated November 4, 2011. Only one of the two proposed grab groundwater samples was collected in March 2012. Although a grab groundwater sample from GP-9 did not contain petroleum constituents at concentrations above the reporting limit, boring GP-9 is located in more of a cross gradient location than GP-10. Therefore, the downgradient plume extent remains a data gap that will need to be addressed at a future date. However, in order to move the case forward, we do not object to the recommendation to prepare a Feasibility Study at this time. Confirmation of the downgradient plume extent could be conducted concurrently with a Feasibility Study or during a future phase of work.

3. **Groundwater Monitoring.** Groundwater monitoring is to be continued on a semi-annual basis during the first and third quarters. Please present the results in the reports requested below.

TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **October 23, 2012** – Feasibility Study Report
- **October 30, 2012** – Semi-Annual Groundwater Monitoring Report – Third Quarter 2012

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

Sincerely,

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

Attachment: Responsible Party(ies) Legal Requirements/Obligations

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

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

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

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

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

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

GeoTracker, eFile

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

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 UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). 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, 6835, 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, later 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 SLIC)	**REVISION DATE:** July 20, 2010
	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 (LOP and SLIC) 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 deh.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 ftp://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 deh.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.

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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 and 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 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.

706 Harrison Street (Former ARCO)

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.

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Appendix **C**

Hydrocarbon Mass Remaining Calculations

Appendix C
Hydrocarbon Mass Remaining Calculations
Union Oil of California

706/726/800 Harrison Street
Oakland, California

Isoconcentration Contour (µg/L)	Sample Date	EPA 8260B Average Concentration (µg/L)	Area ft^2	Thickness ft	Volume ft^3*	Volume liters	Groundwater Mass kg	COC Mass per Interval kg
TPH-g								
100 to 1,000	8/9/2012	342	10,800	12	45,360	1,284,459	1,284,459	0.439
1,000 to 10,000	8/9/2012	3,440	4,025	12	16,905	478,699	478,699	1.647
10,000 to 16,000	8/9/2012	13,000	145	12	609	17,245	17,245	0.224
Benzene								
1 to 10	8/9/2012	1.9	7,615	12	31,983	905,663	905,663	0.002
10 to 100	8/9/2012	46	6,916	12	29,047	822,530	822,530	0.038
100 to 1000	8/9/2012	807	5,045	12	21,189	600,009	600,009	0.484
1000 to 1400	8/9/2012	1,200	400	12	1,680	47,573	47,573	0.057
MTBE								
10 to 100	8/9/2012	27	18,475	12	77,595	2,197,258	2,197,258	0.059
100 to 1,000	8/9/2012	670	4,360	12	18,312	518,541	518,541	0.347
1,000 to 10,000	8/9/2012	5,400	1,052	12	4,418	125,116	125,116	0.676
10,000 to 16,000	8/9/2012	13,000	57	12	239	6,779	6,779	0.088

Explanations

TPH-g	Total petrolem hydrocarbons as gasoline
MTBE	Methyl tertiary butyl ether
µg/L	Microgram per liter
COC	Constituent of Concern

	Groundwater Mass kg
Total	7,003,870

	COC Total Mass kg
TPH-g	2.310
Benzene	0.581
MTBE	1.171

	COC Total Mass lbs
TPH-g	5.09
Benzene	1.28
MTBE	2.58

Explanations for Calculations:

Volume (ft^3)= Area x Thickness x Porosity

Volume (liters)= Volume (ft^3) x 28.317

Mass per Interval= Average TPH-g (µg/L) x Groundwater Mass (kg)

1 µg/L= 10^{-9} kg

1 kg= 2.204 lbs

* assumes aquifer porosity is 35% (0.35)

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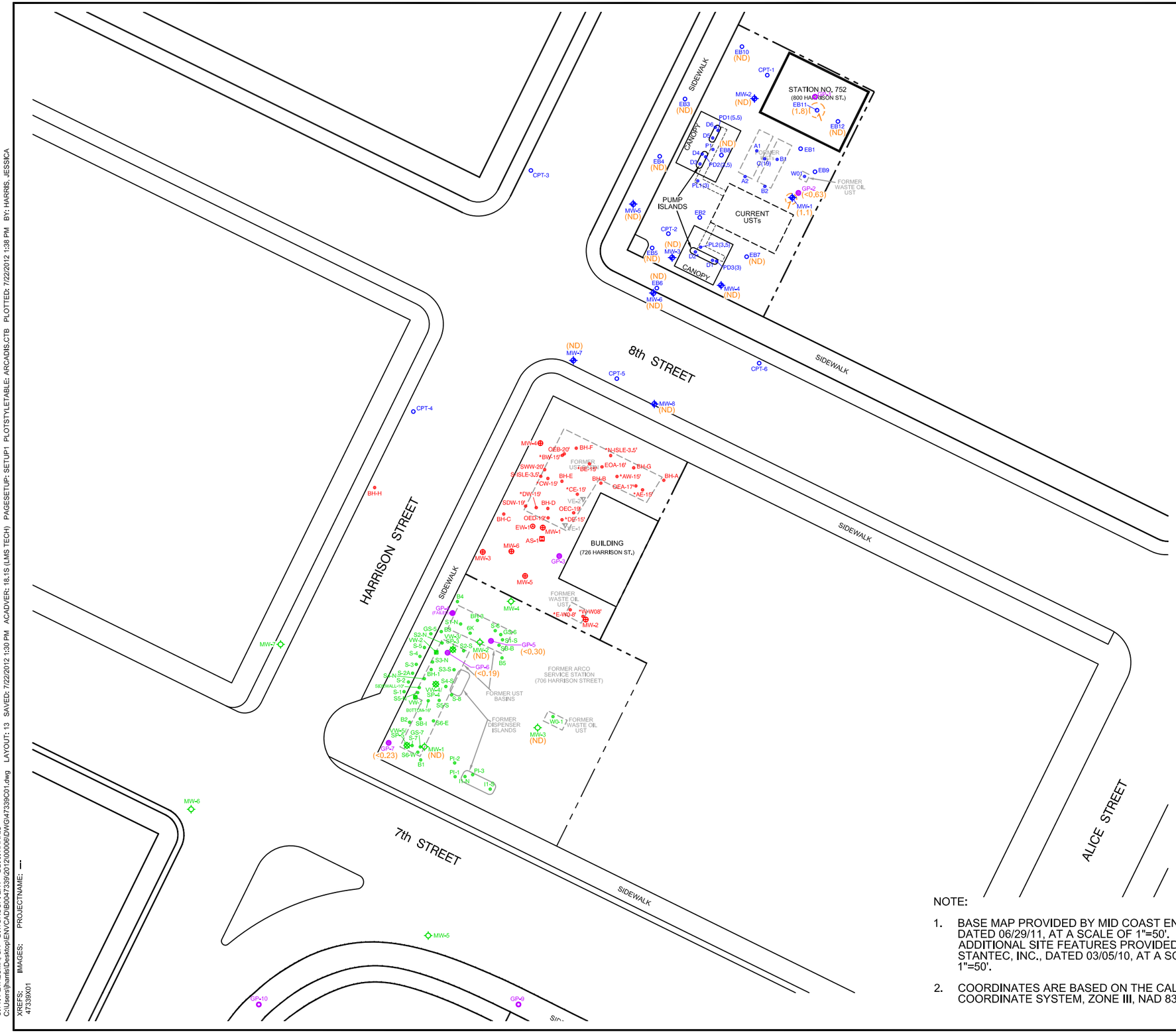
Appendix **D**

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)

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FIGURE 13

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
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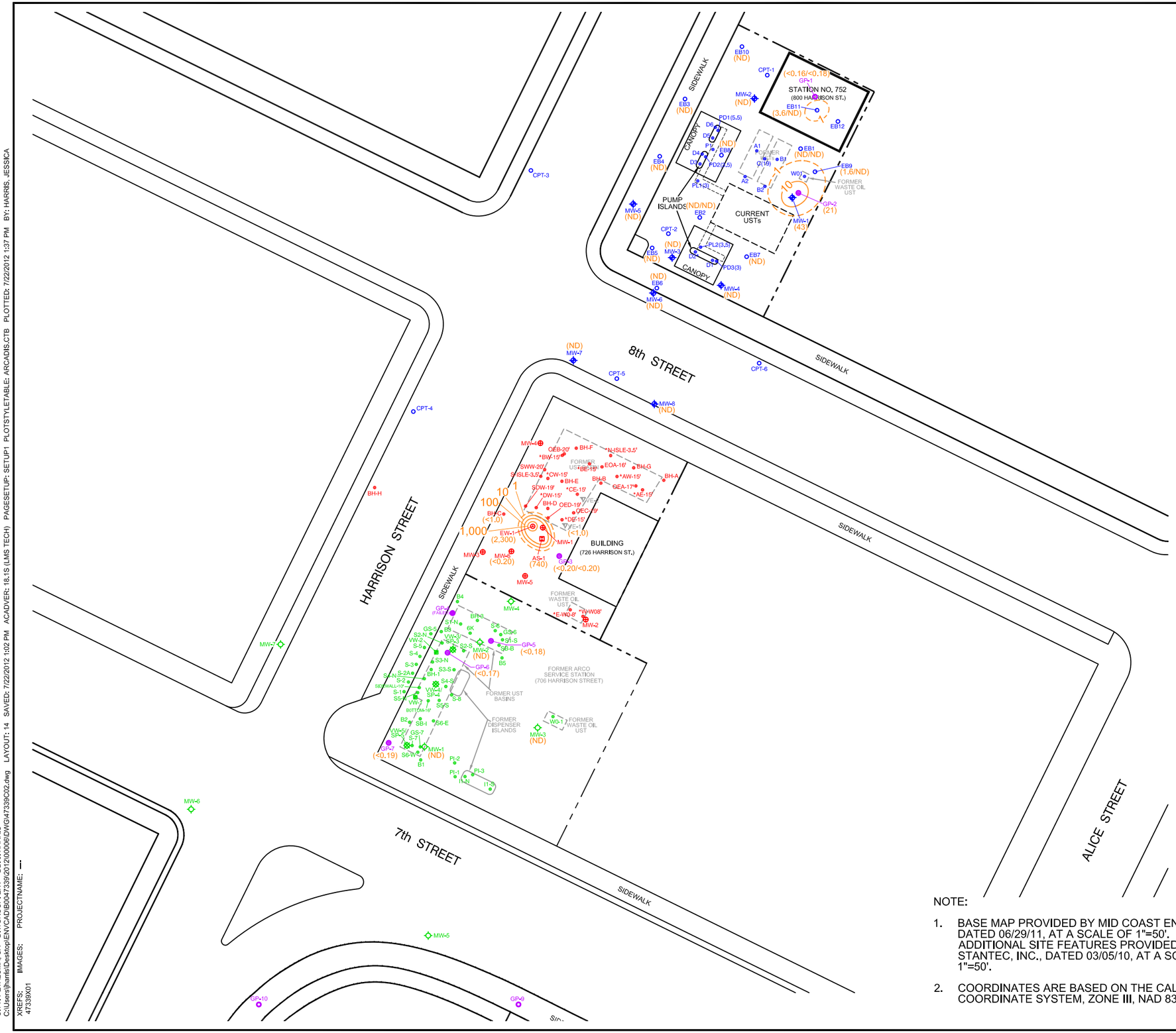
47339X01



LEGEND

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- 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:

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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)

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FIGURE 14

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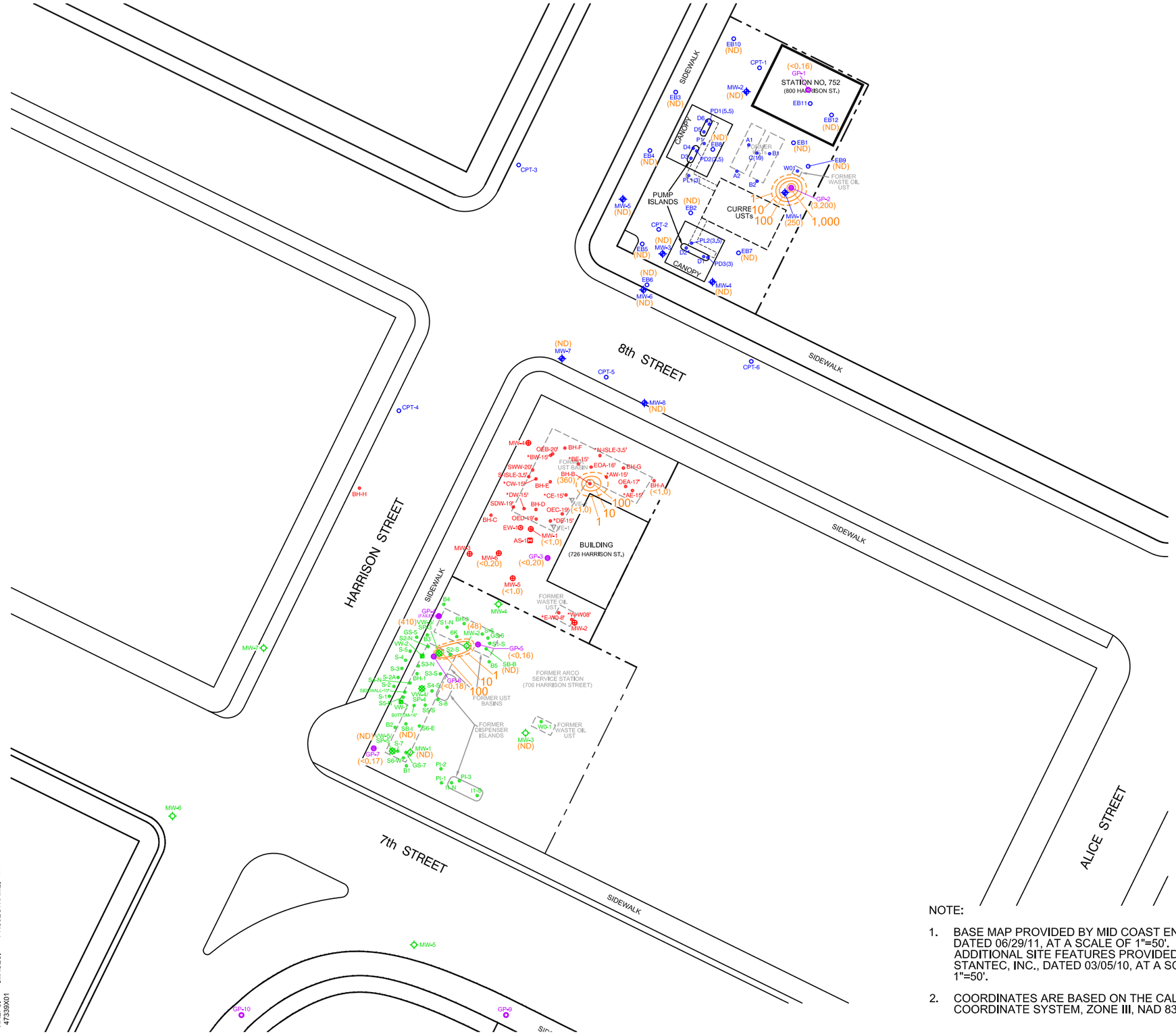

LEGEND

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- MW-1 GROUNDWATER MONITORING WELL (YEE)
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- 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

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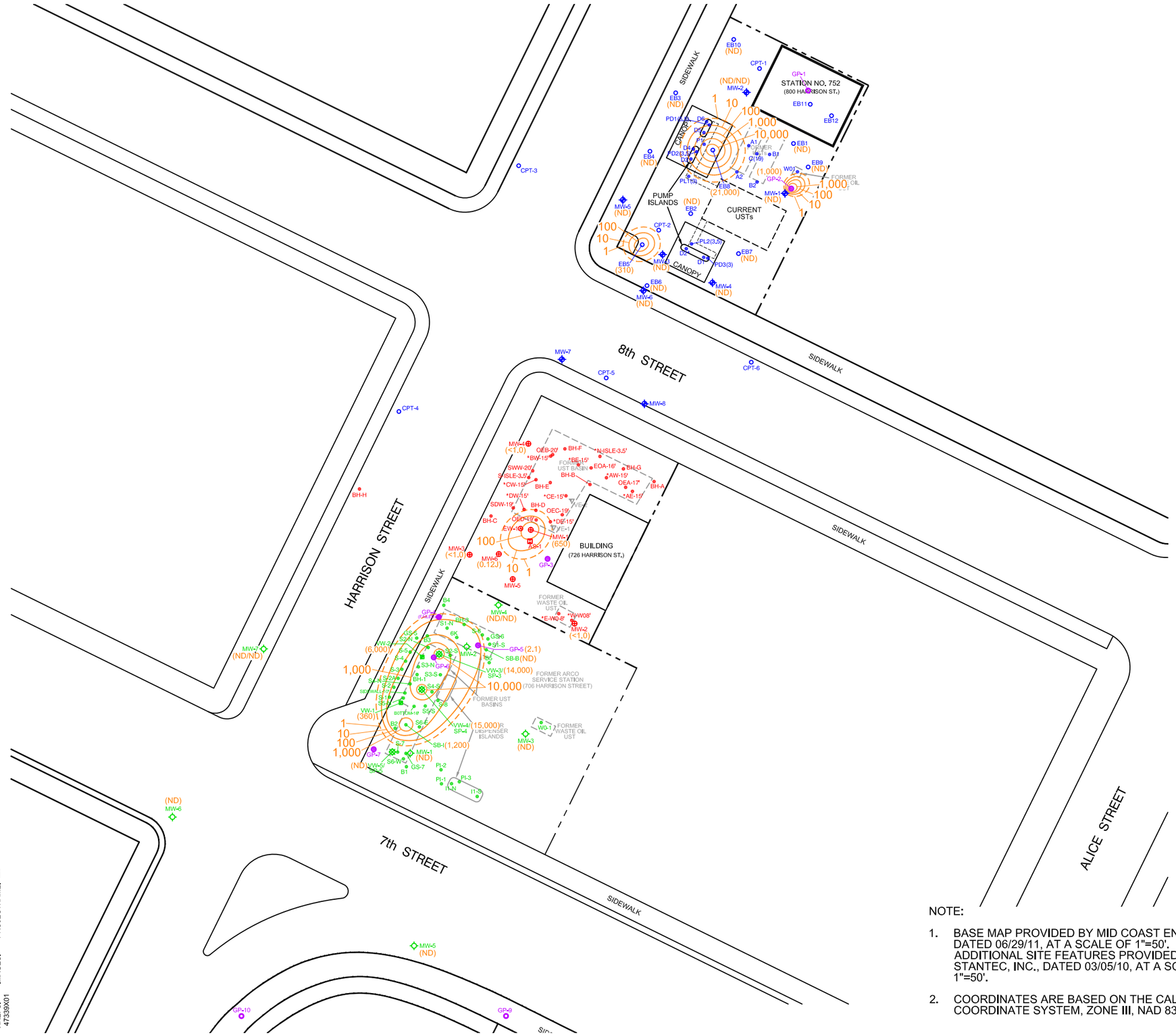

LEGEND

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- MW-1 GROUNDWATER MONITORING WELL (YEE)
- MW-1 GROUNDWATER MONITORING WELL (GIN)
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- 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: —
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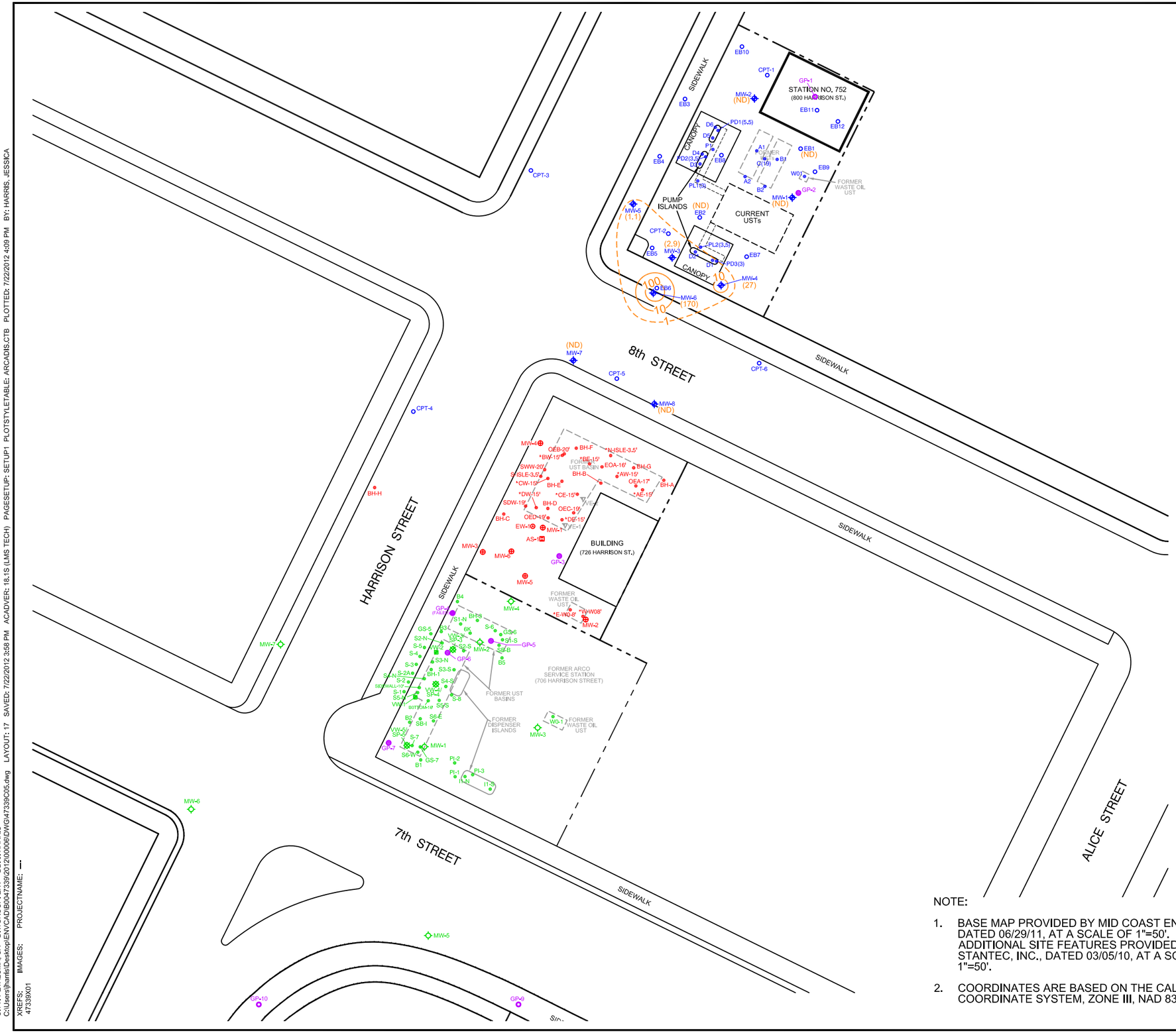

LEGEND

- 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)
- (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\ENV\CAD\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
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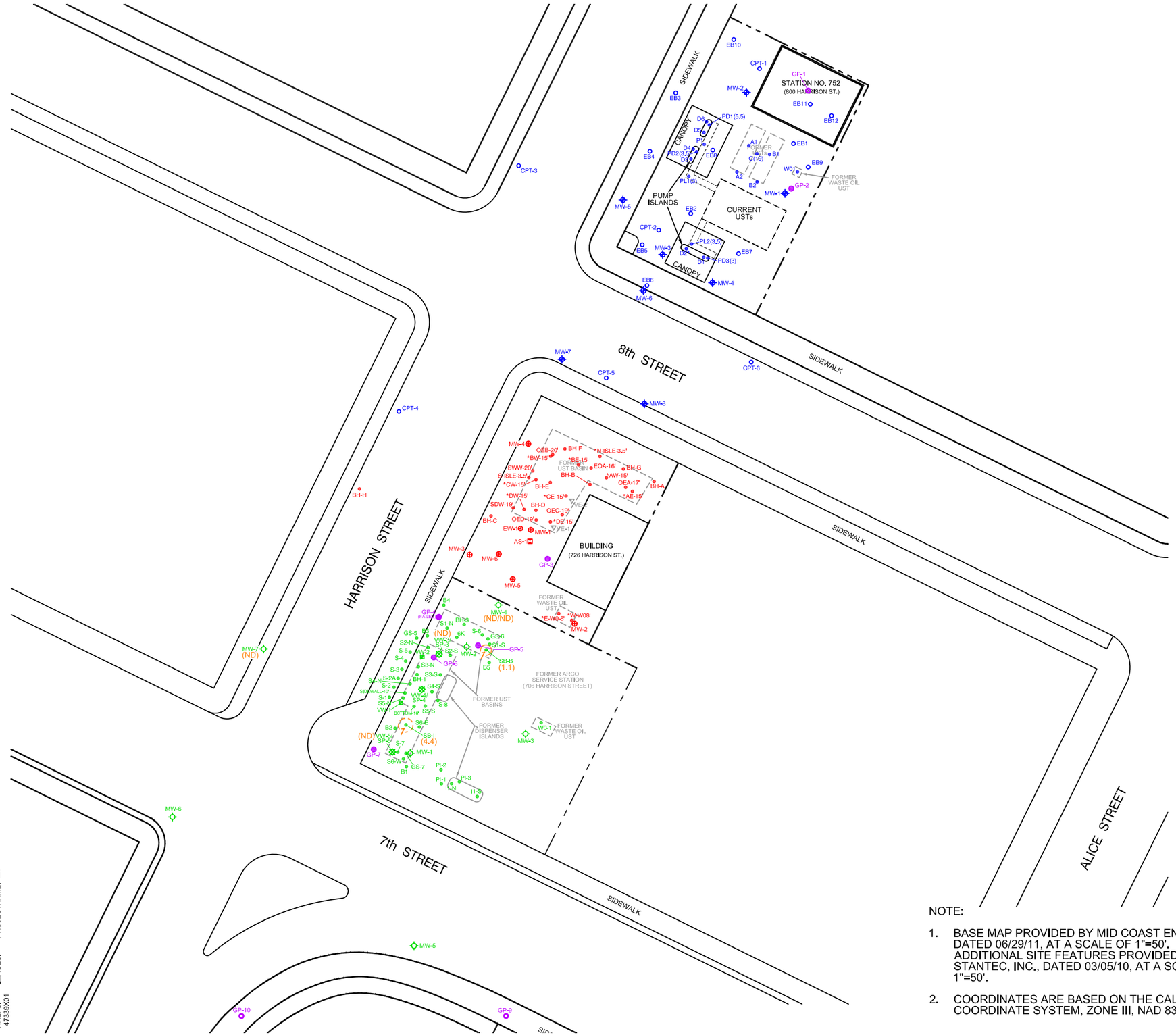

LEGEND

— — —	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)
(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
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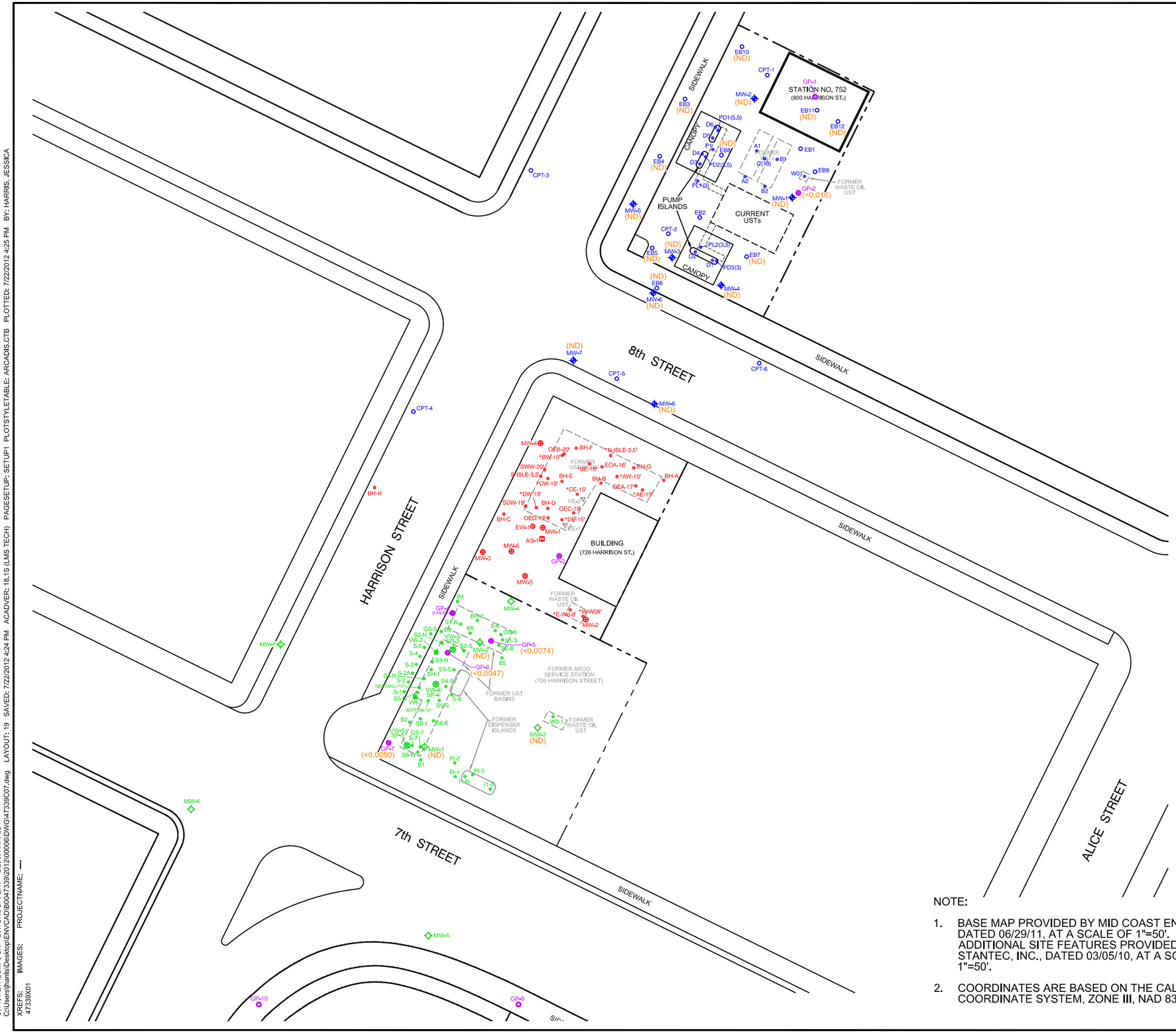


LEGEND

- 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)
- (<0.016) 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.

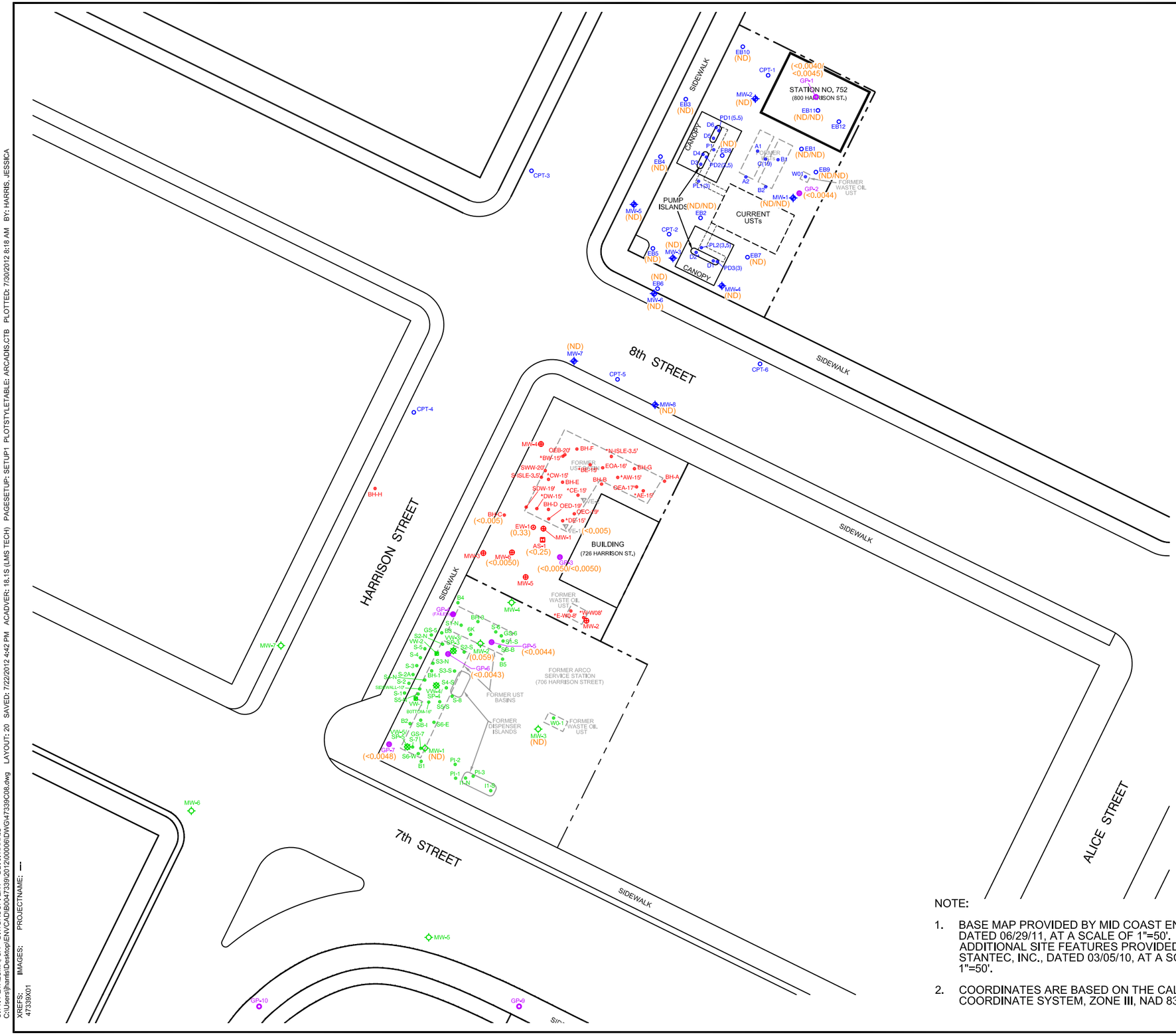
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

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

ARCADIS

FIGURE 19

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
XREFS: IMAGES: PROJECTNAME: ---
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
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)
- (0.33) 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
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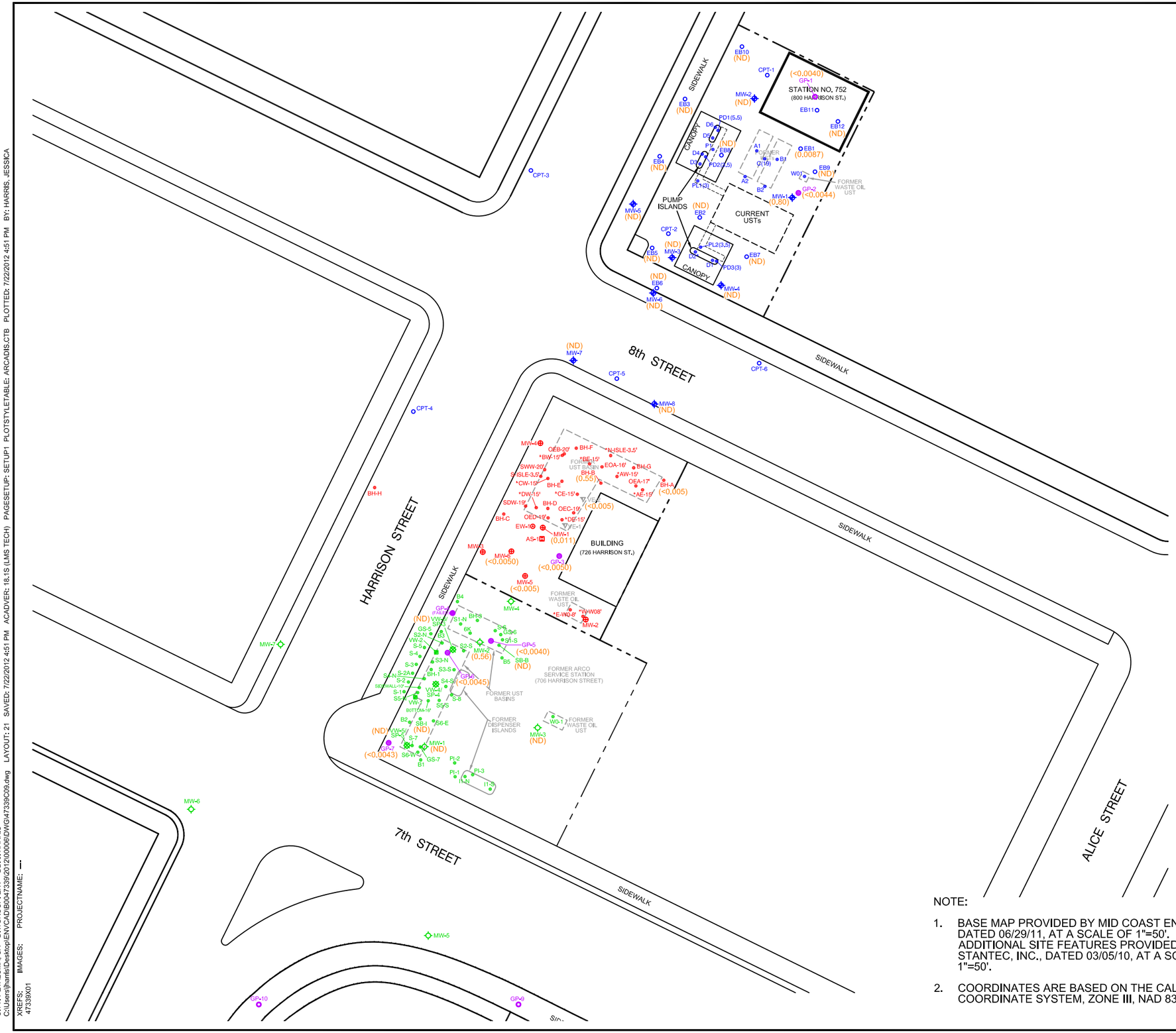

LEGEND

- 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\ENVCAD\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
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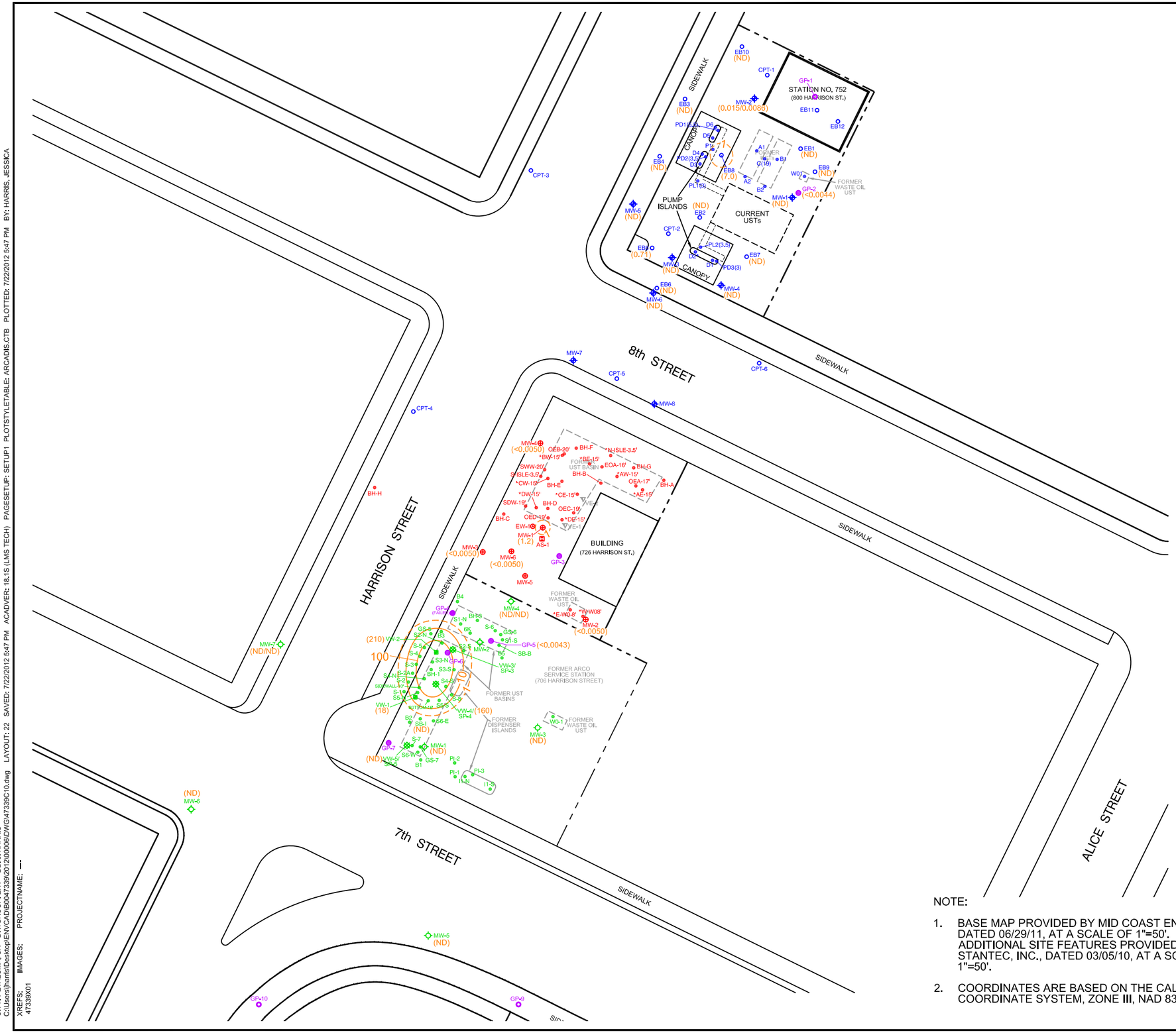

UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

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

ARCADIS

FIGURE 22

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\000006\DWG\47339C10.dwg LAYOUT: 22 SAVED: 7/22/2012 5:47 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/22/2012 5:47 PM BY: HARRIS, JESSICA
XREFS: IMAGES: PROJECTNAME: —
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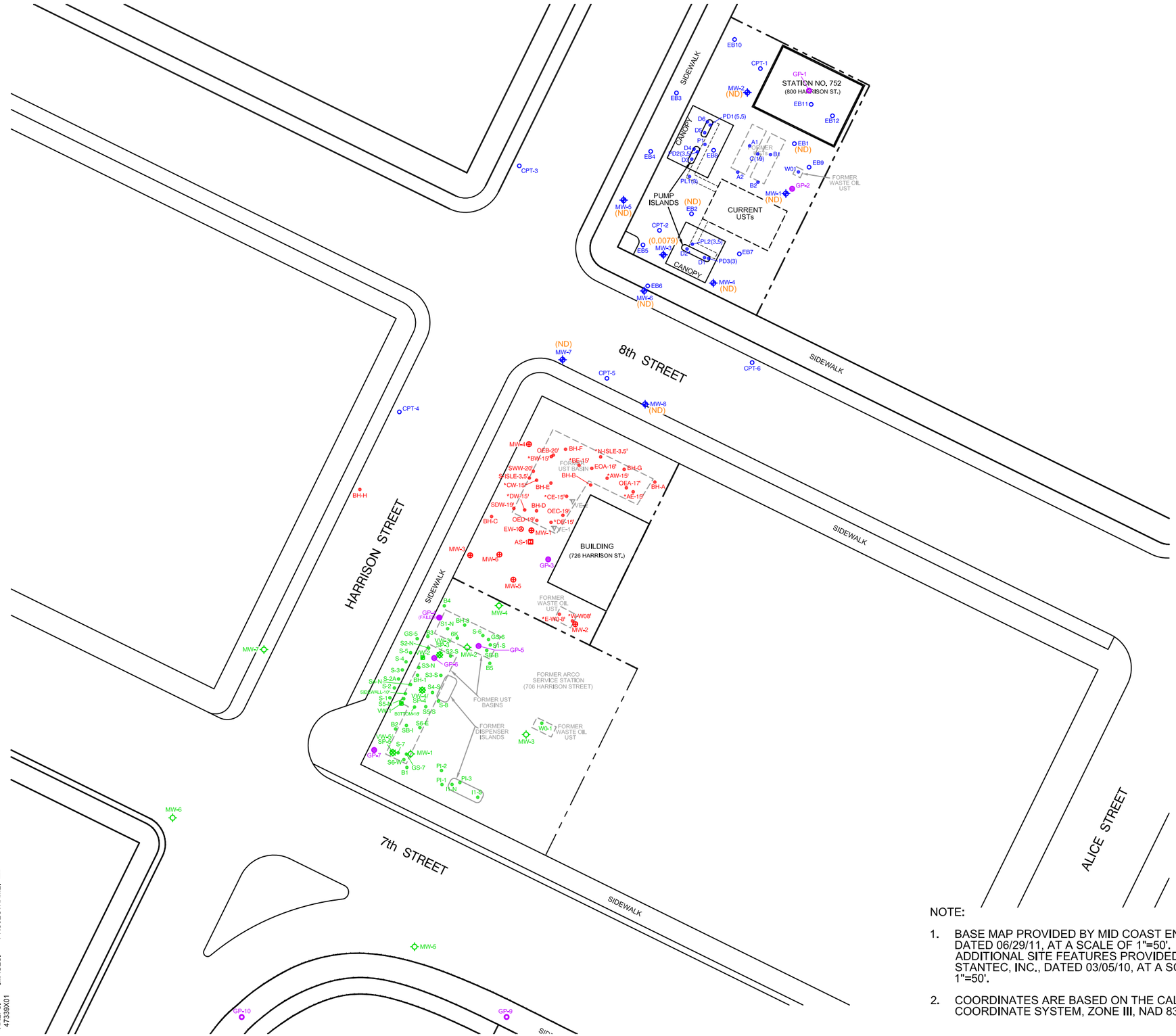

LEGEND

- 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)
- (0.0079) BENZENE CONCENTRATION (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 (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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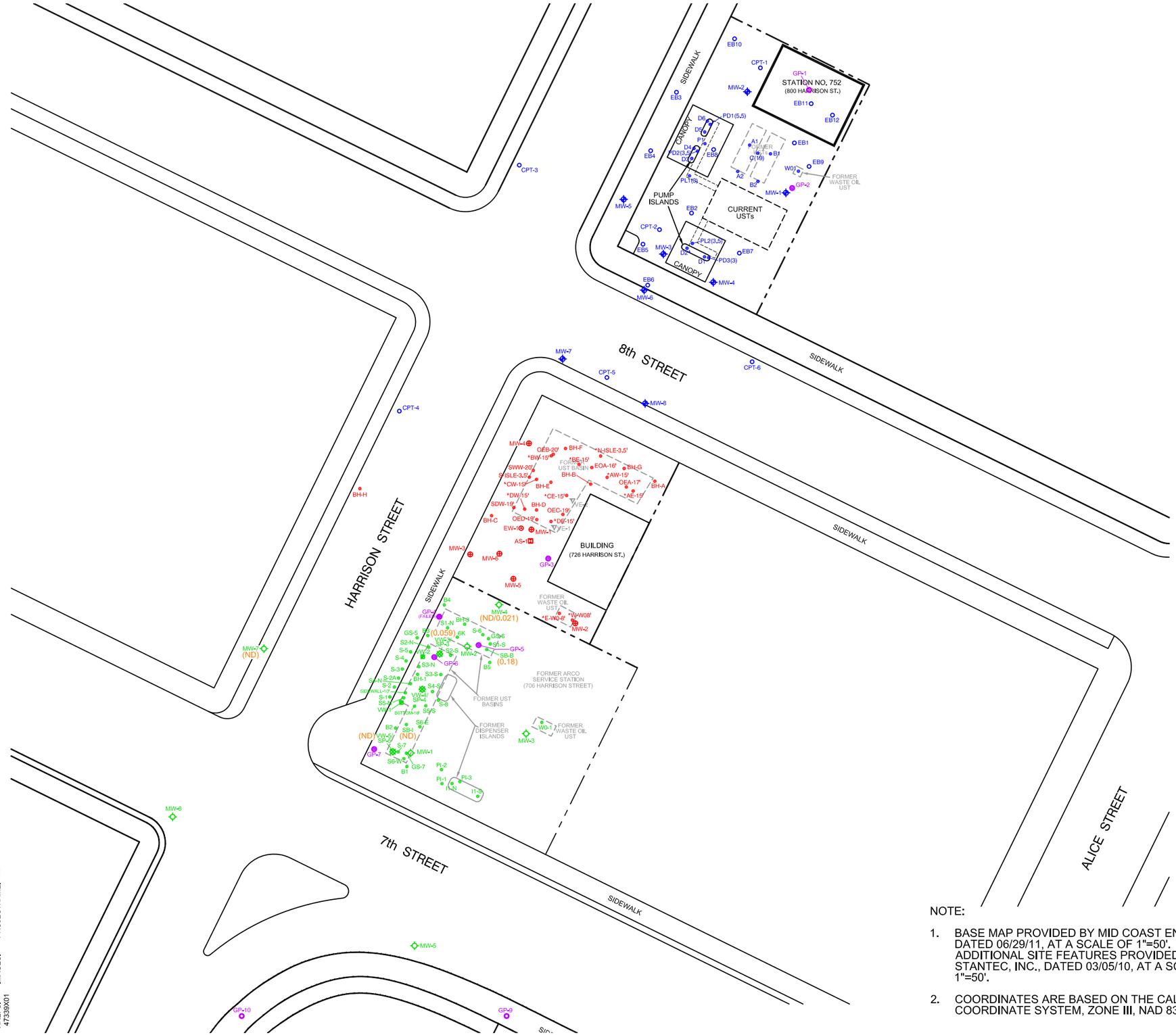

LEGEND

- 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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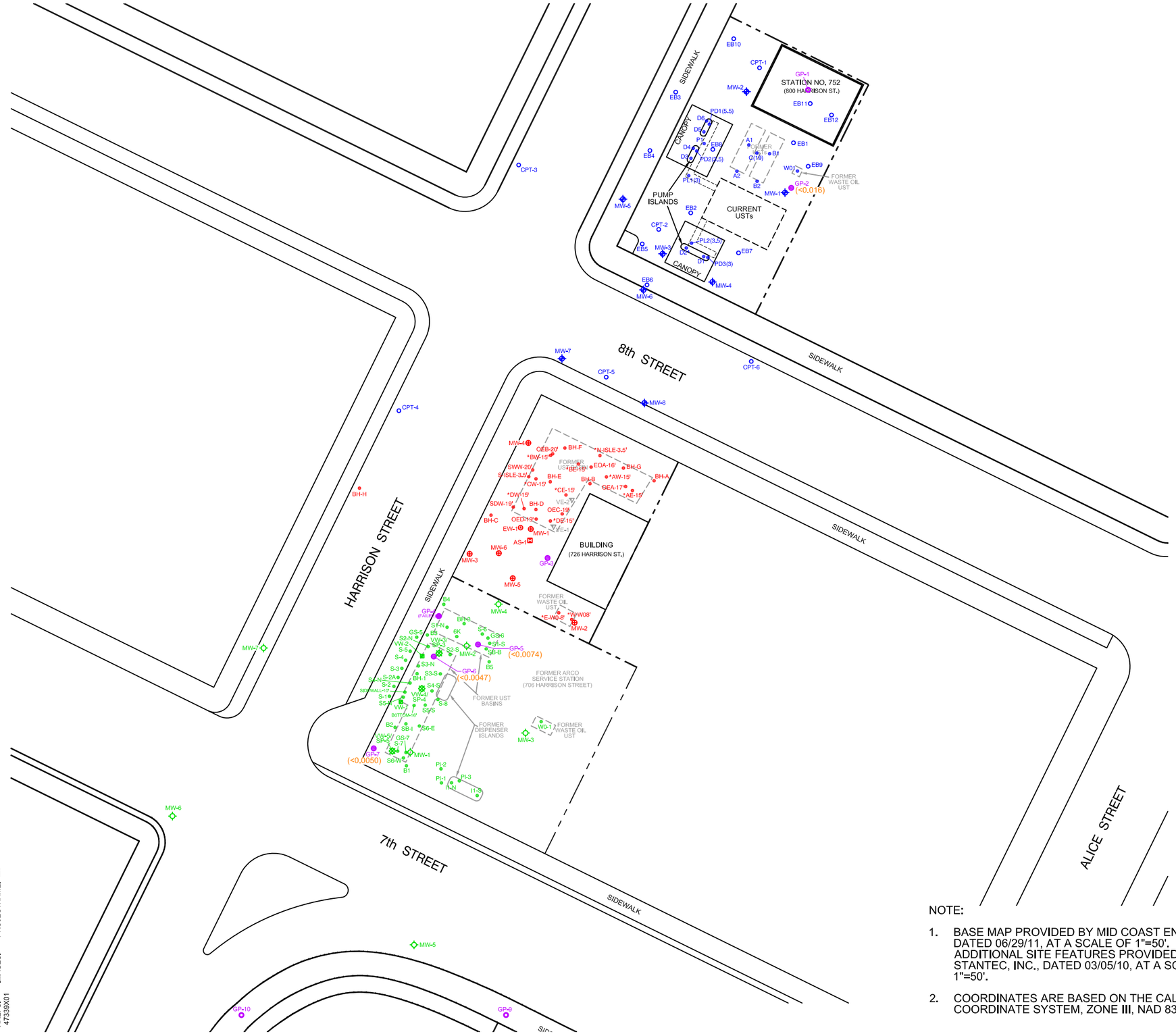

LEGEND

- 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

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 (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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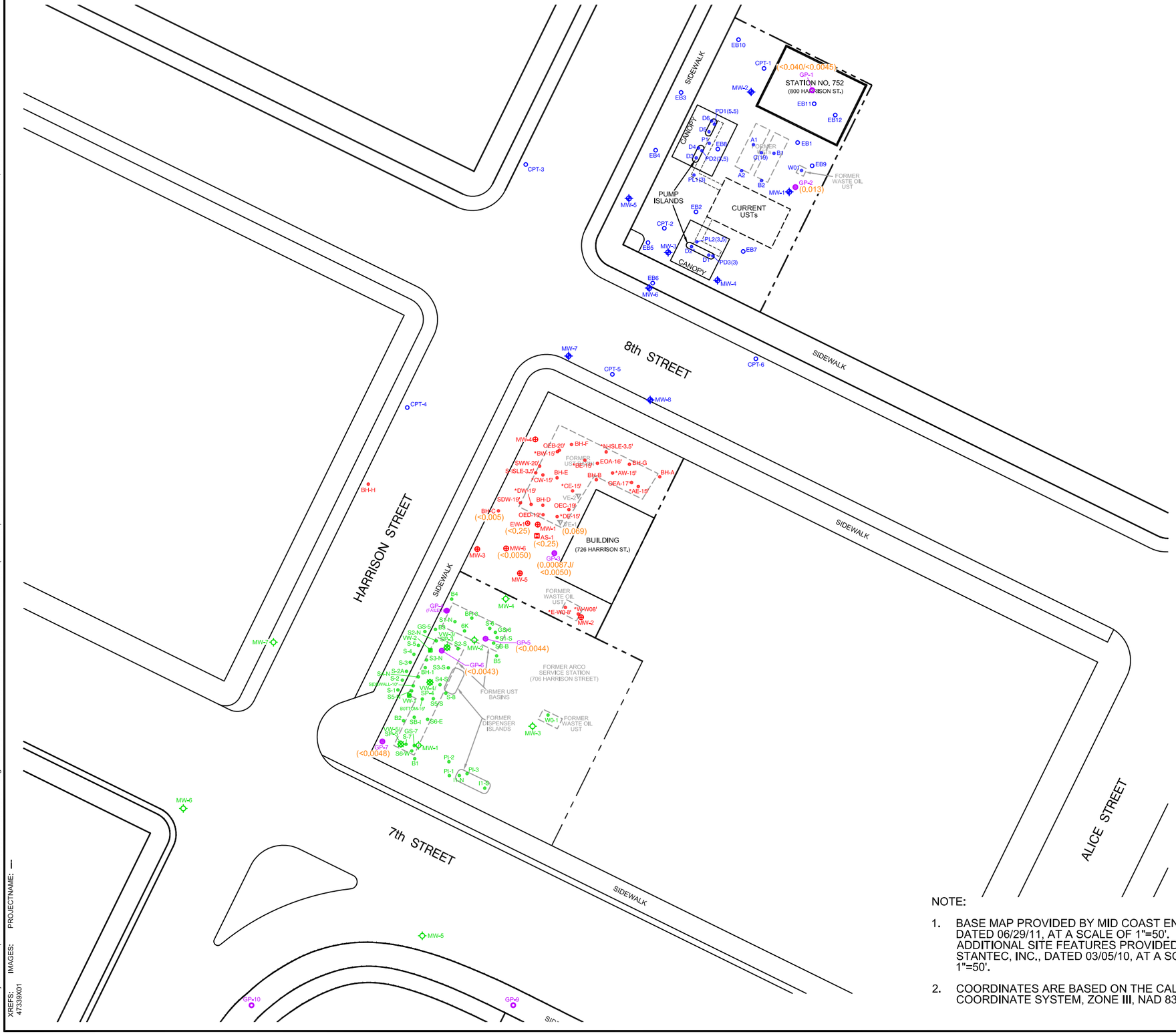


LEGEND

- 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-8 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

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.

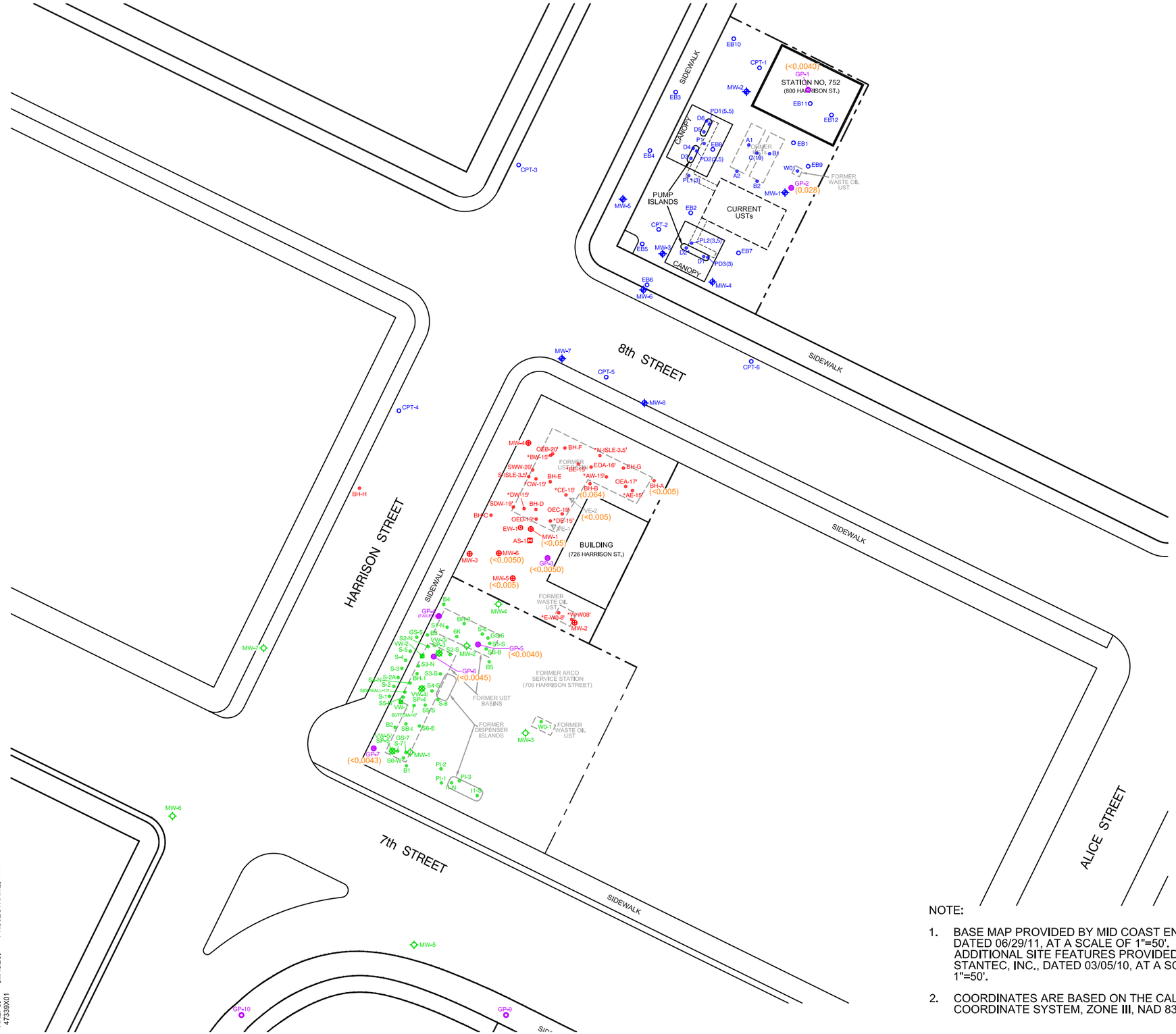
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

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

ARCADIS

FIGURE 26

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS
C:\Users\jharris\Desktop\ENVCAD\B0047339\2012\00006\DWG\47339C14.dwg LAYOUT: 26 SAVED: 7/23/2012 6:08 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: SETUP1 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 7/23/2012 6:11 AM 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)
(0.028)	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.

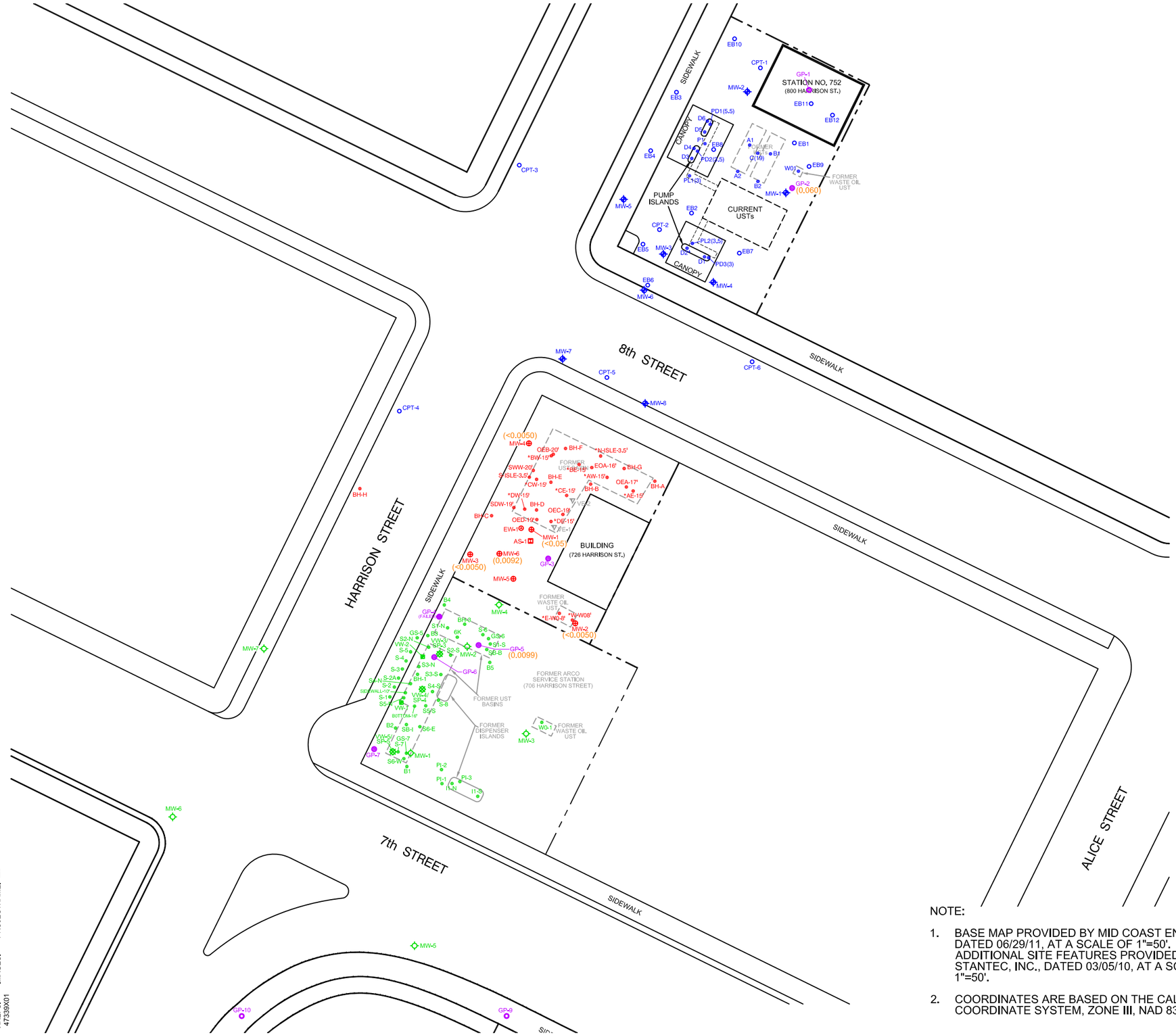
UNION OIL OF CALIFORNIA
STATION NO. 0752/YEE/GIN COMMINGLED
706/726/800 HARRISON STREET
OAKLAND, CALIFORNIA

MTBE SOIL ISOPLETH CONTOUR MAP (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: ---
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)
- (0.060) 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: 47339X01 IMAGES: PROJECTNAME: ---

ARCADIS

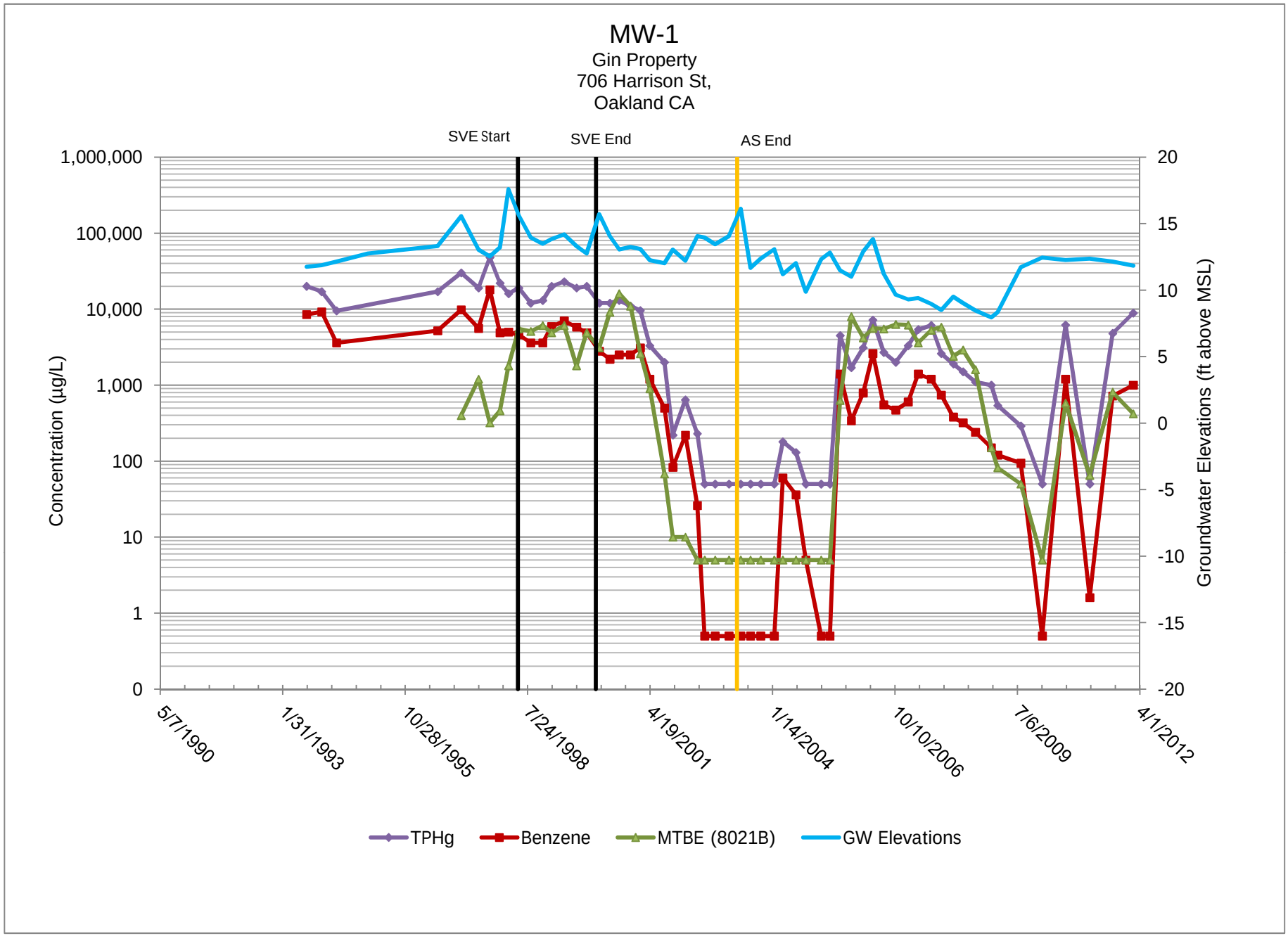
Appendix **E**

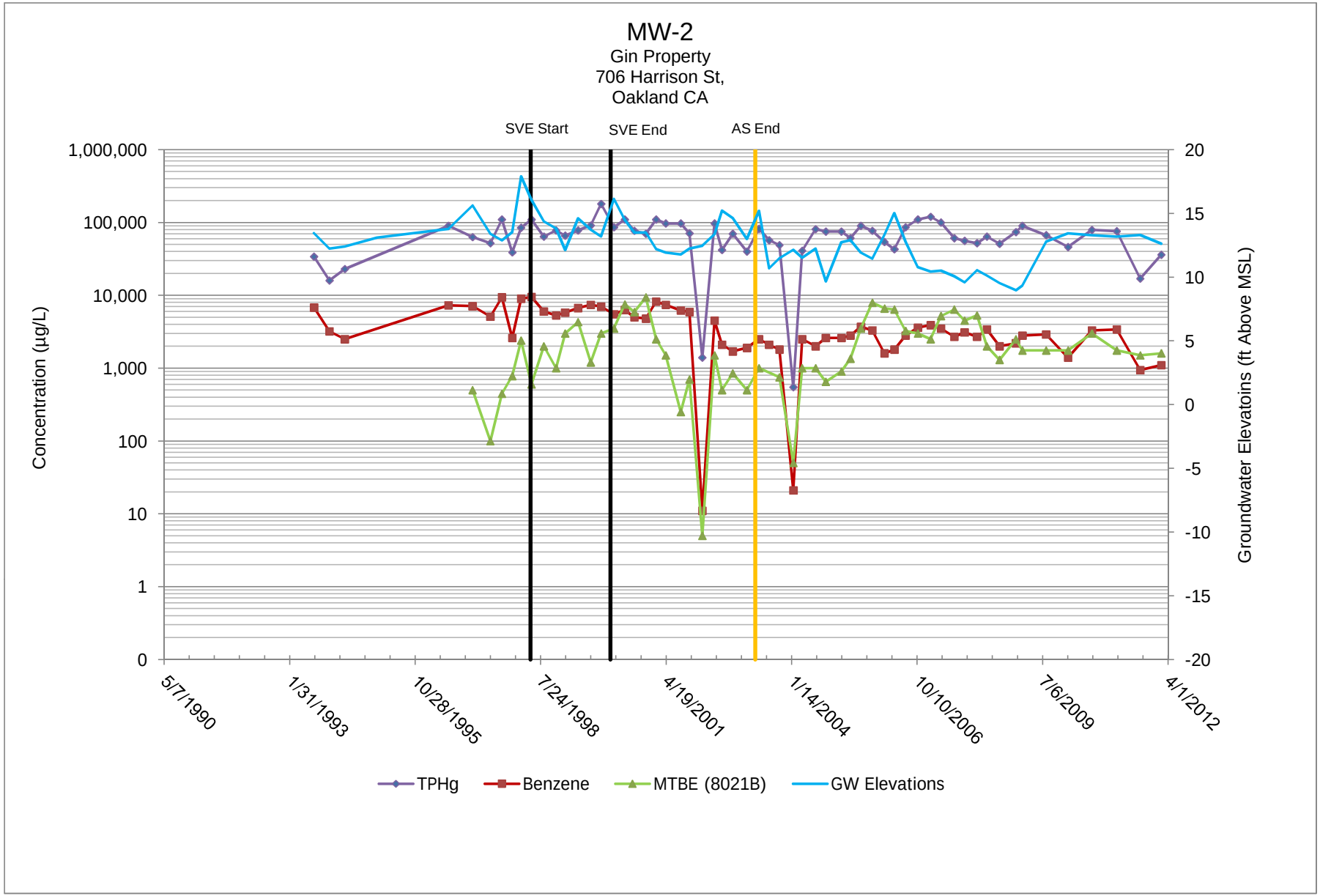
Hydrographs

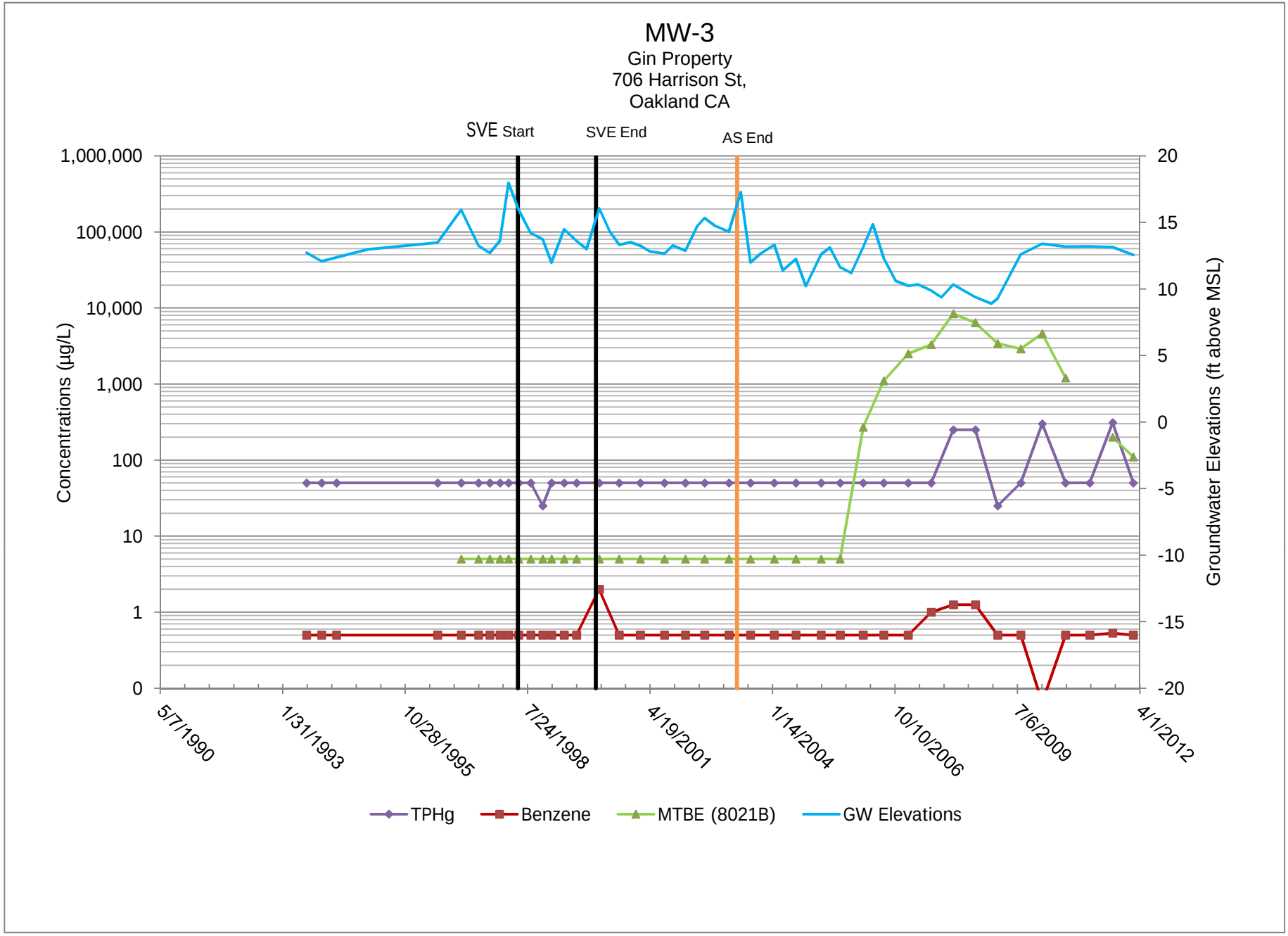
ARCADIS

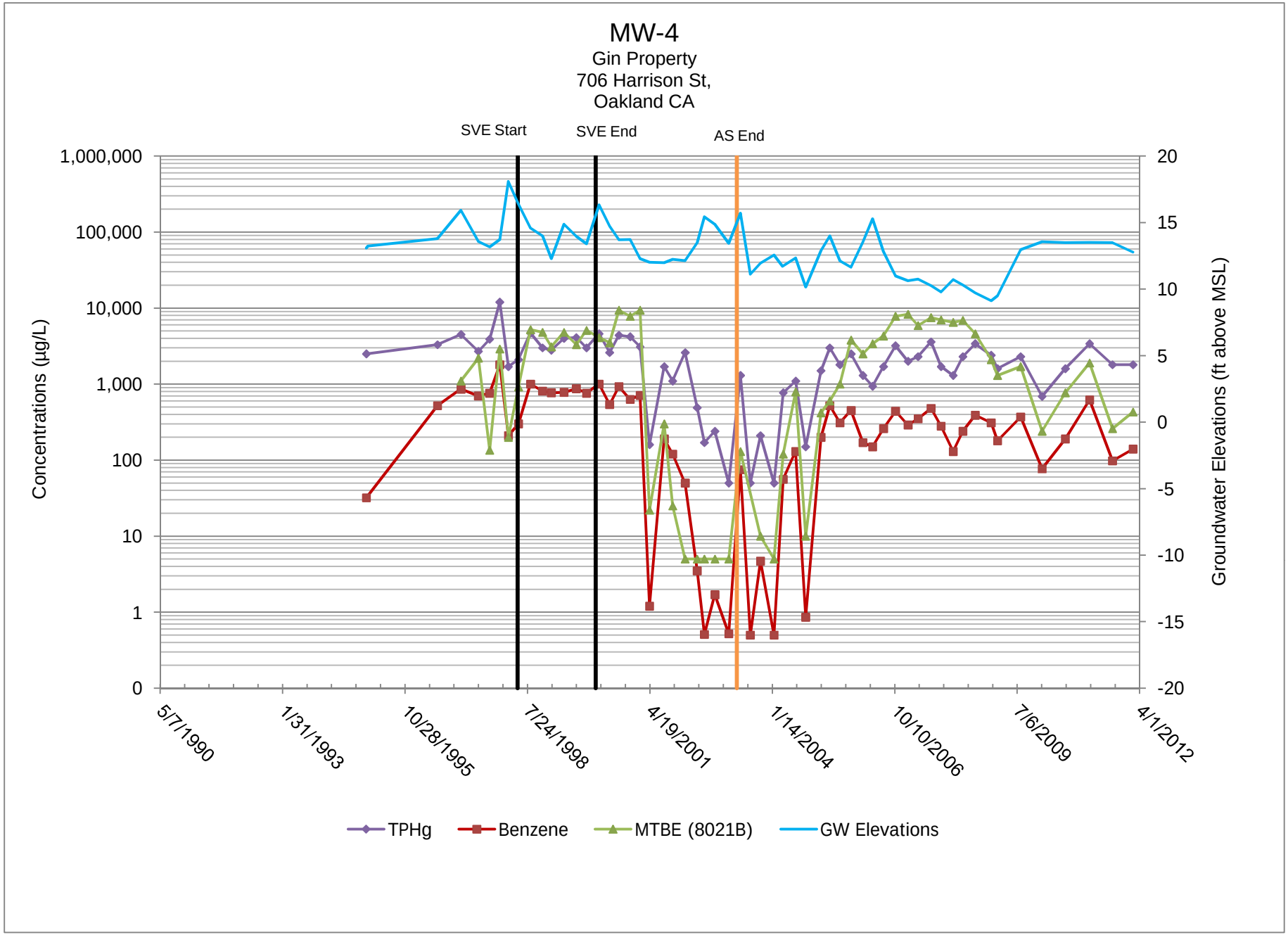
Hydrographs

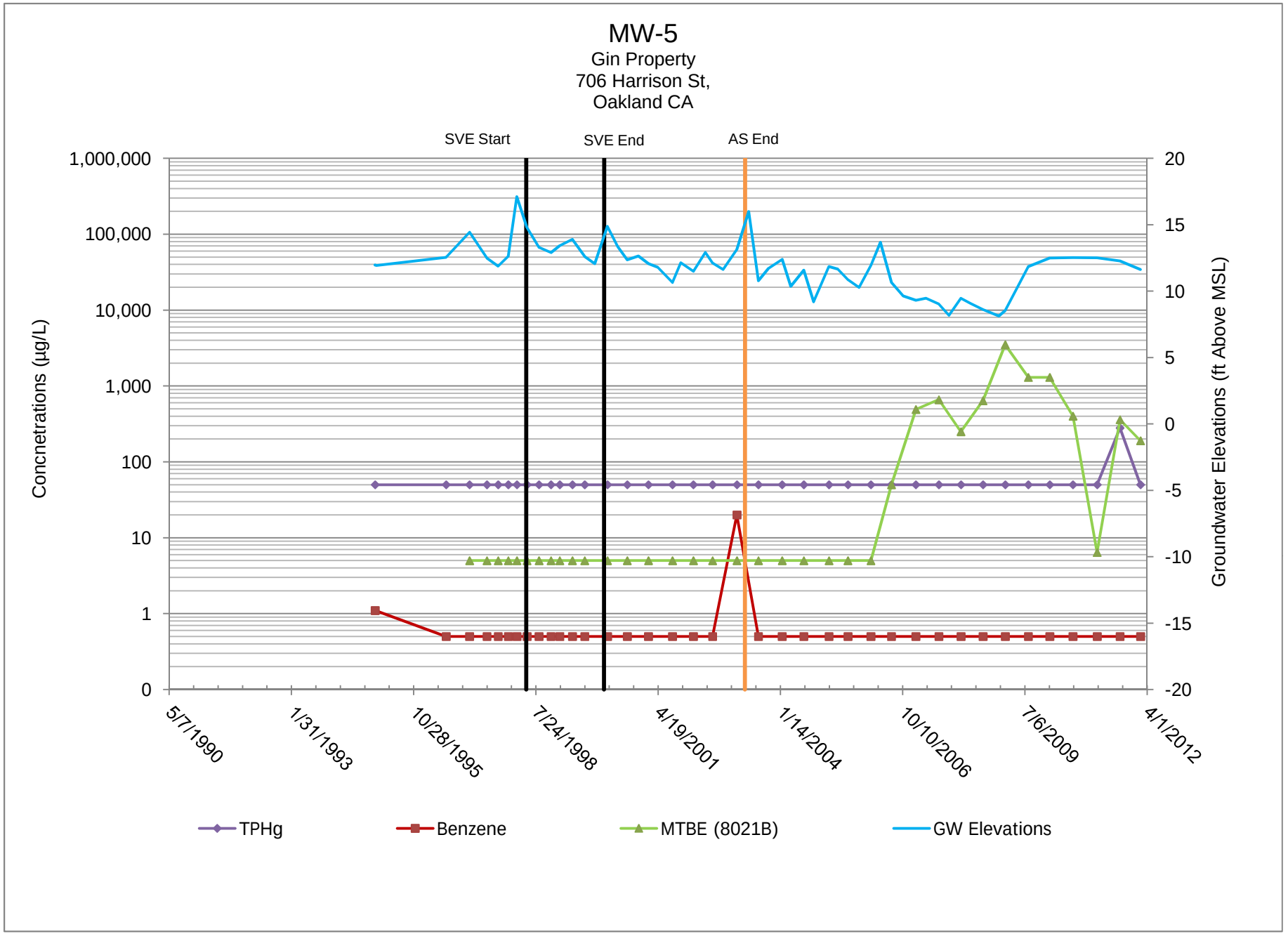
706 Harrison Street: MW-1 through MW-7

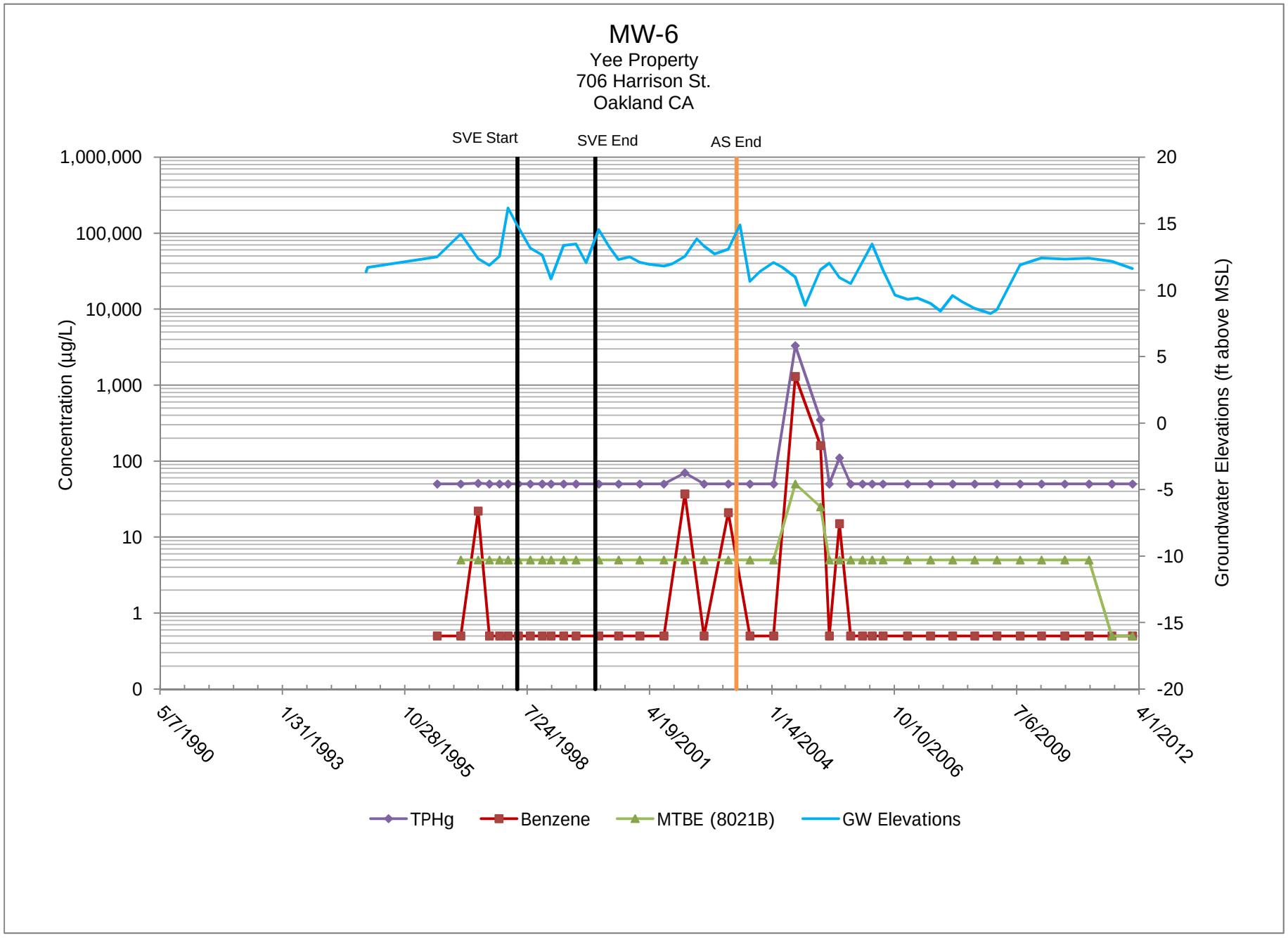

MW-1
Gin Property
706 Harrison St,
Oakland CA
SVE Start
SVE End
AS End
1,000,000
100,000
10,000
1,000
100
10
1
0
Concentration (µg/L)
20
15
10
5
0
-5
-10
-15
-20
Groundwater Elevations (ft above MSL)
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
TPHg
Benzene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

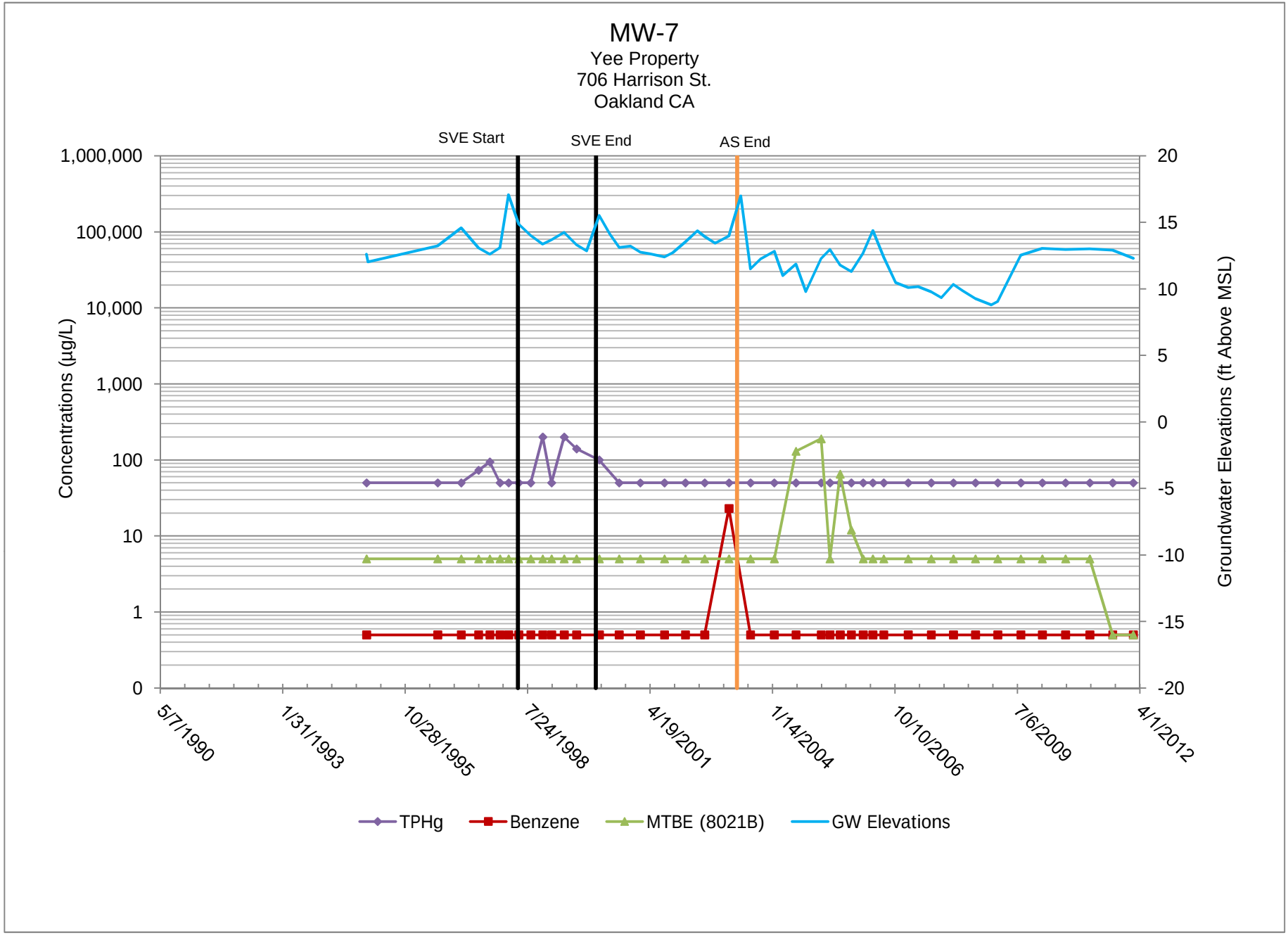

MW-2
Gin Property
706 Harrison St,
Oakland CA
SVE Start
SVE End
AS End
Concentration (µg/L)
Groundwater Elevatoins (ft Above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-3
Gin Property
706 Harrison St,
Oakland CA
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
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-4
Gin Property
706 Harrison St,
Oakland CA
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
TPHg
Benzene
MTBE (8021B)
GW Elevations


MW-5
Gin Property
706 Harrison St,
Oakland CA
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
10/10/2006
7/6/2009
4/1/2012
TPHg
Benzene
MTBE (8021B)
GW Elevations

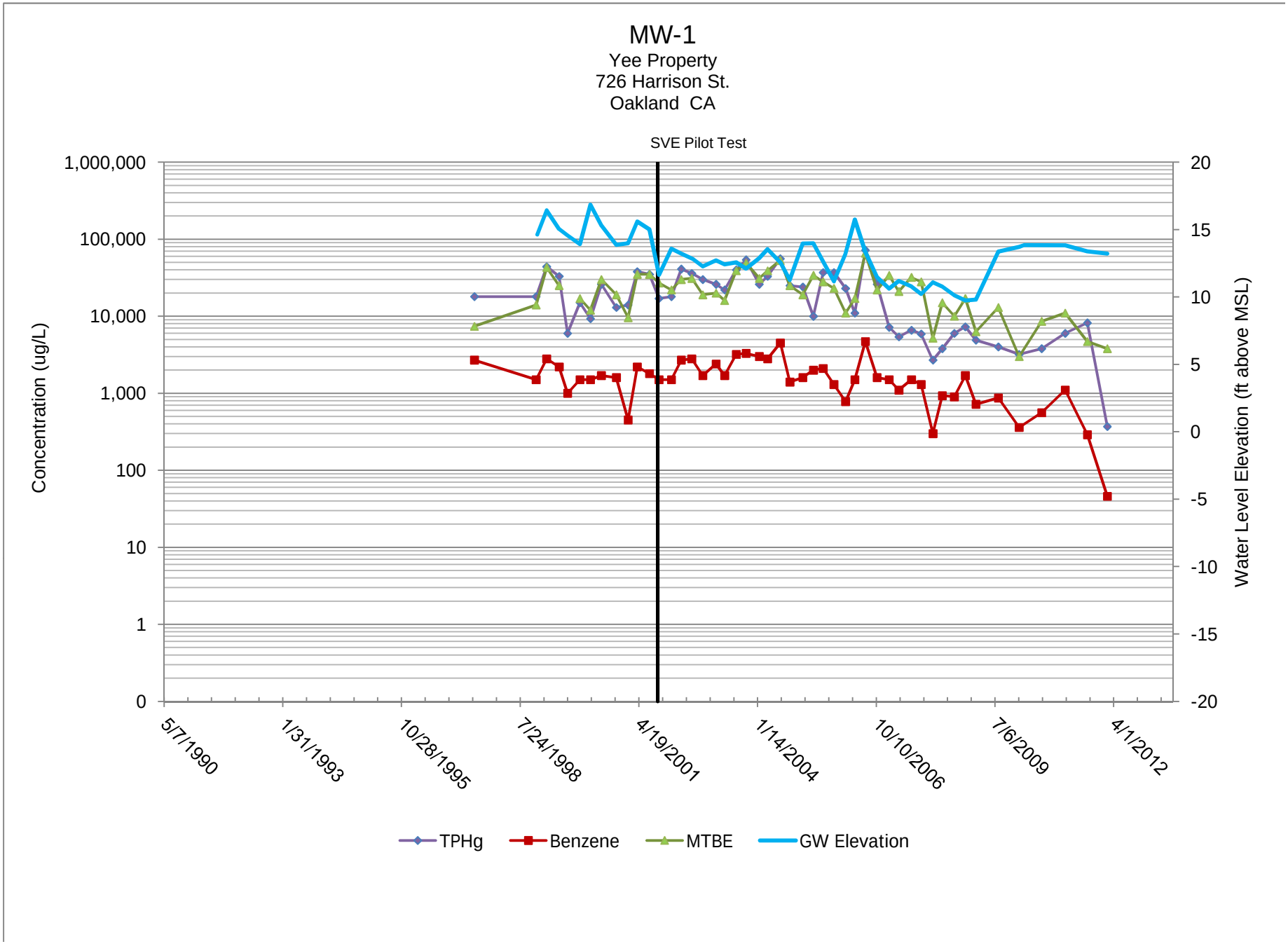

MW-6
Yee Property
706 Harrison St.
Oakland CA
SVE Start
SVE End
AS End
Concentration (µg/L)
Groundwater Elevations (ft above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
TPHg
Benzene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


MW-7
Yee Property
706 Harrison St.
Oakland CA
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
TPHg
Benzene
MTBE (8021B)
GW Elevations

ARCADIS

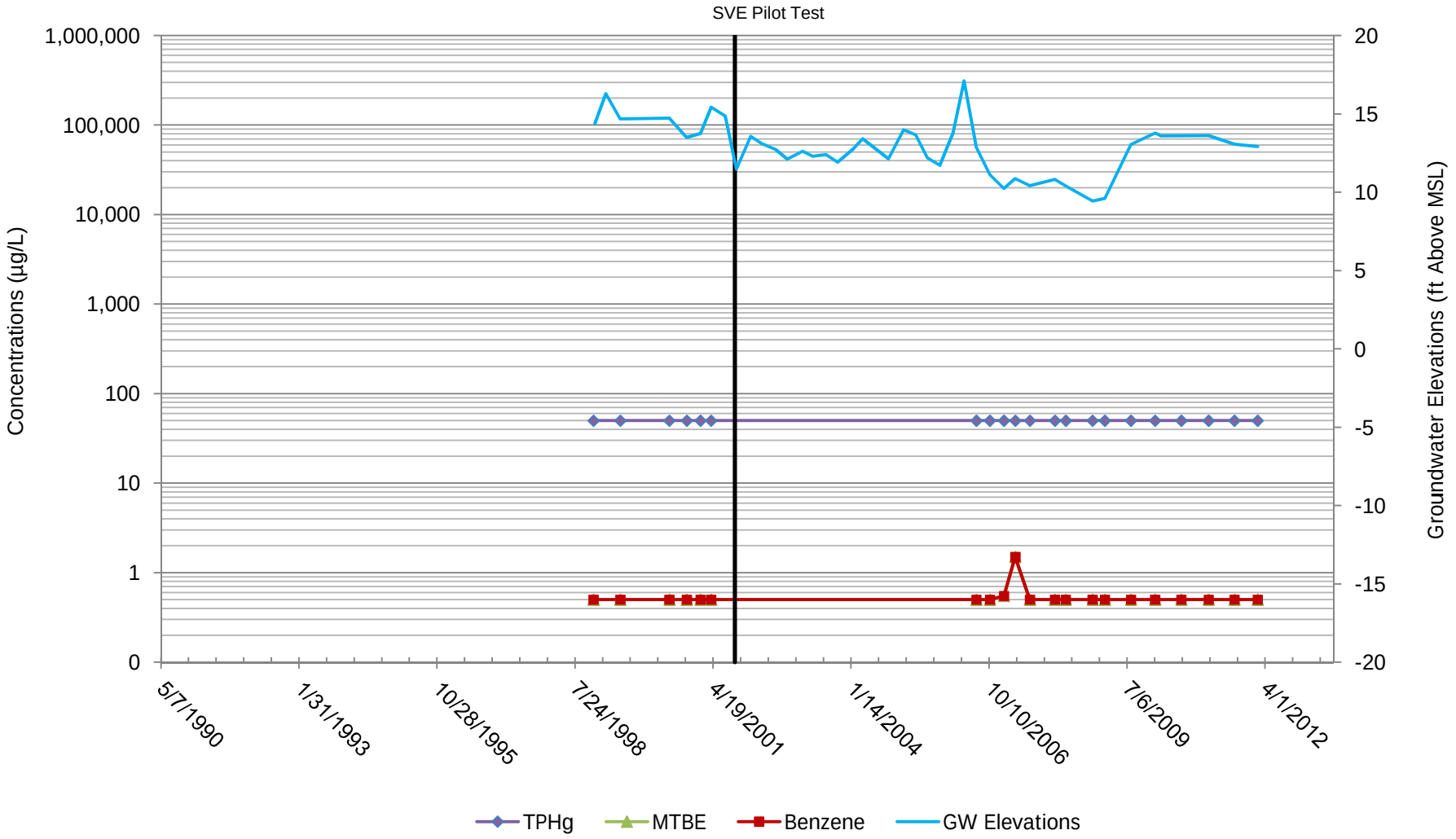
Hydrographs

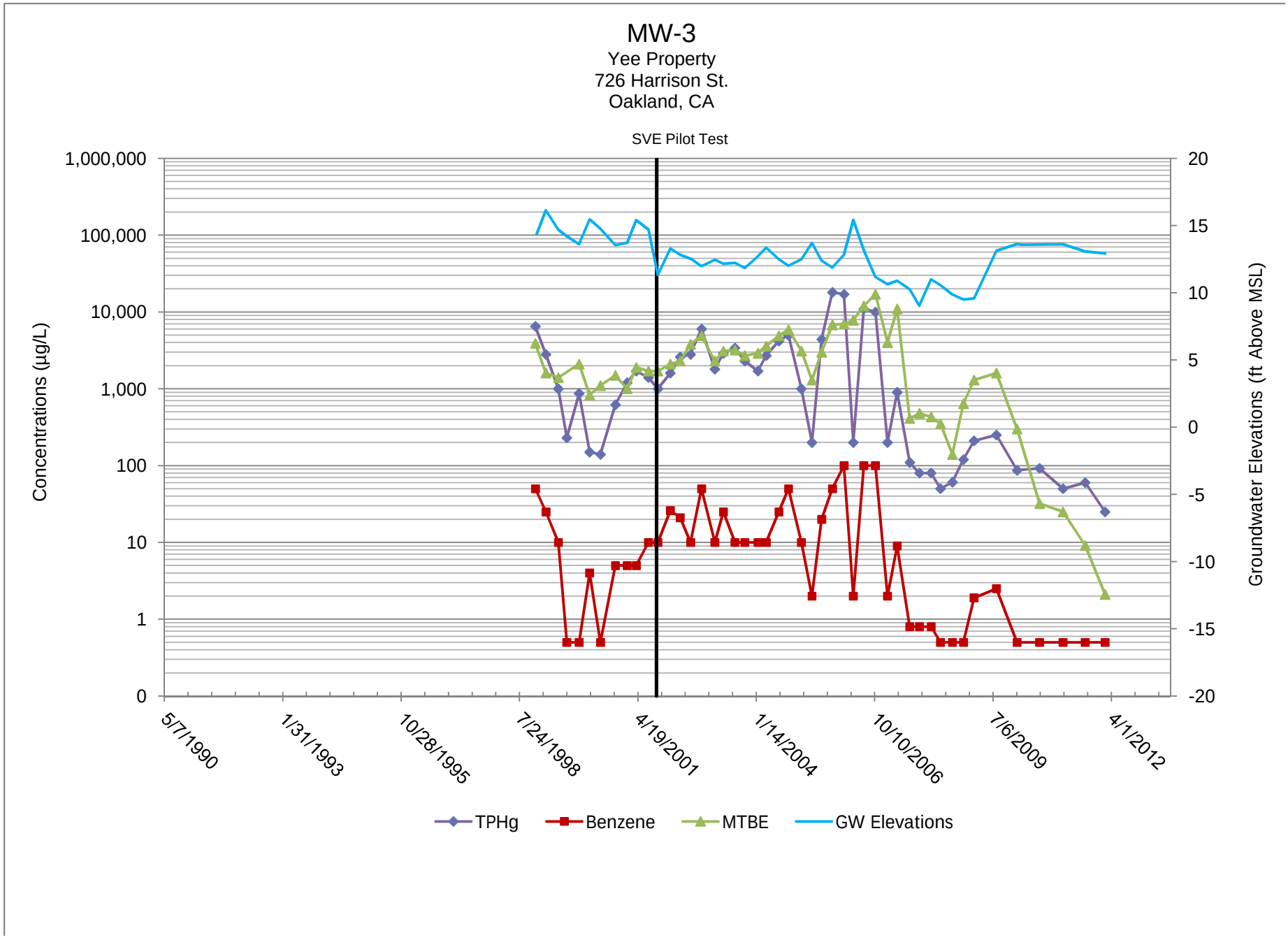
726 Harrison Street: MW-1 through MW-6

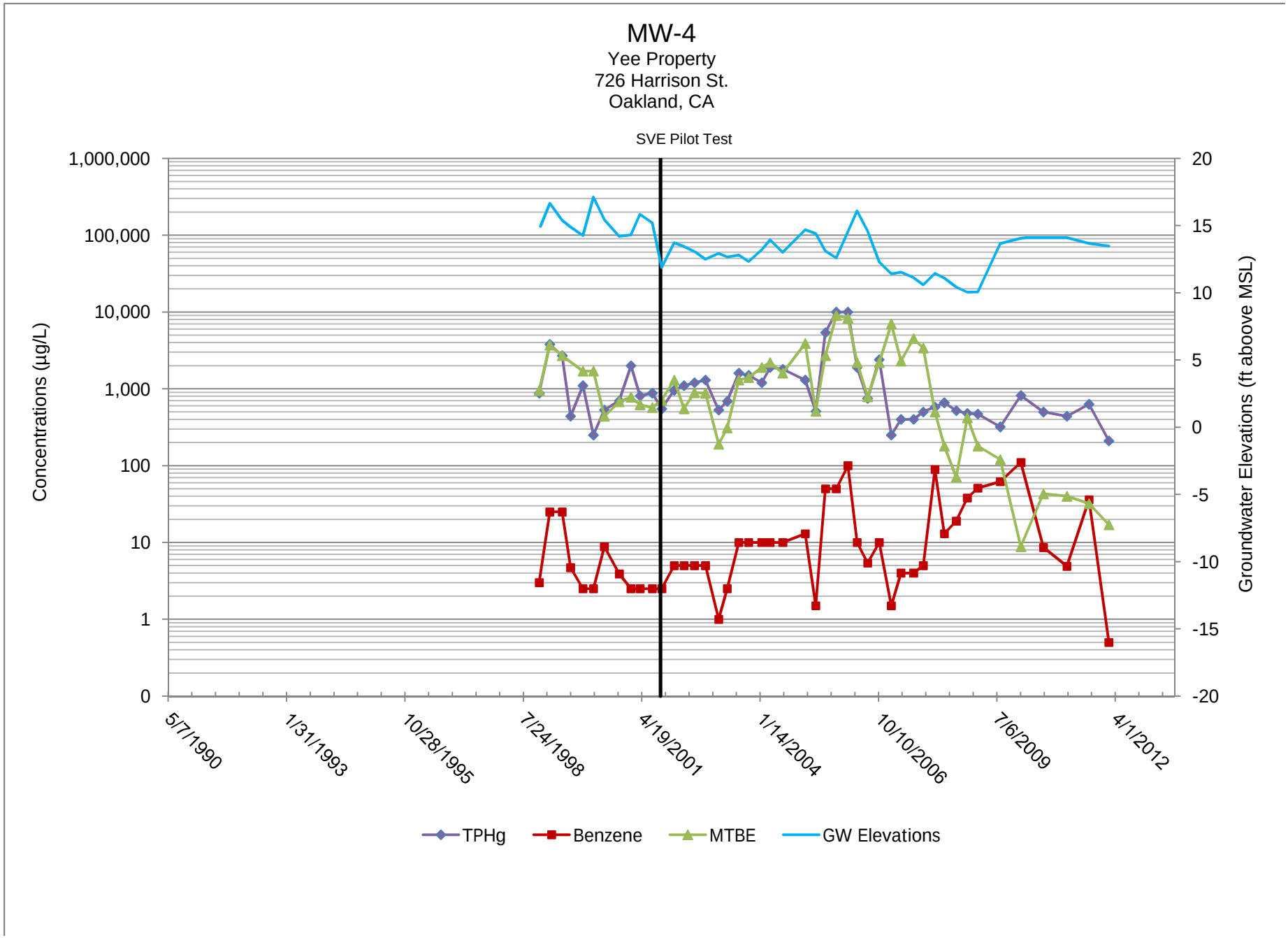

MW-1
Yee Property
726 Harrison St.
Oakland CA
SVE Pilot Test
Concentration (ug/L)
Water Level Elevation (ft above MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
TPHg
Benzene
MTBE
GW Elevation

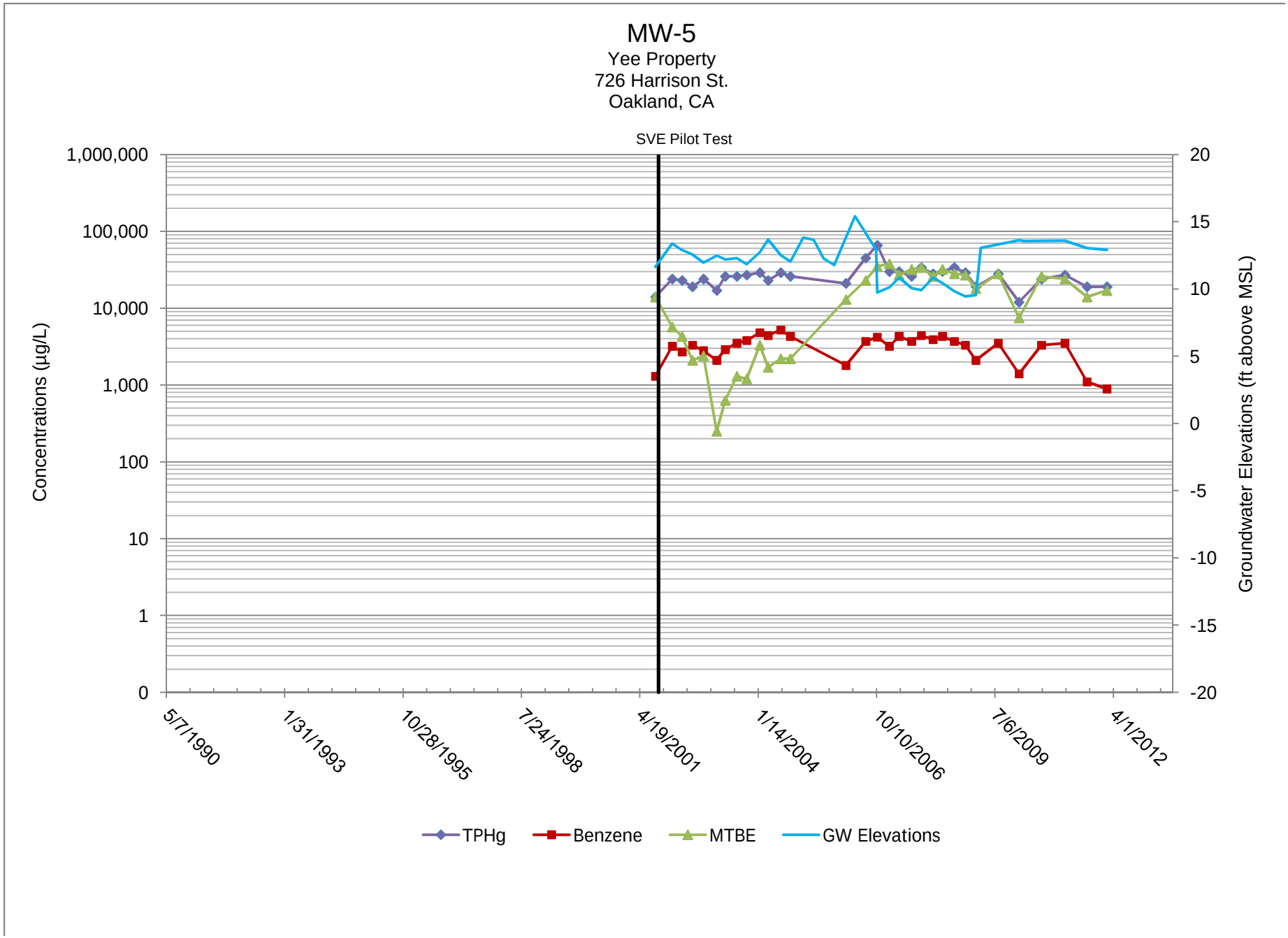
MW-2

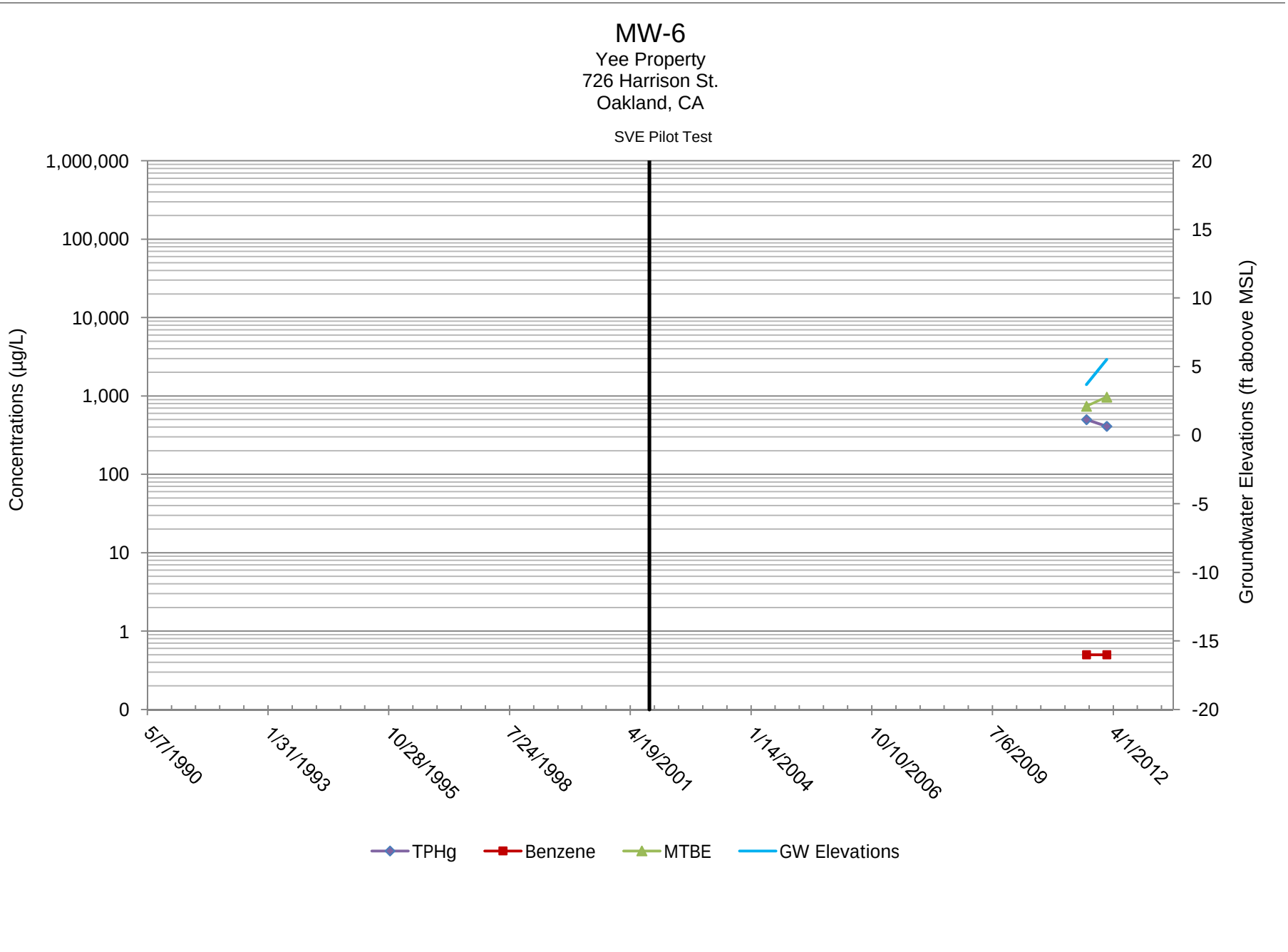
Yee Property
726 Harrison St.
Oakland, CA




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
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
1/14/2004
10/10/2006
7/6/2009
4/1/2012
TPHg
Benzene
MTBE
GW Elevations

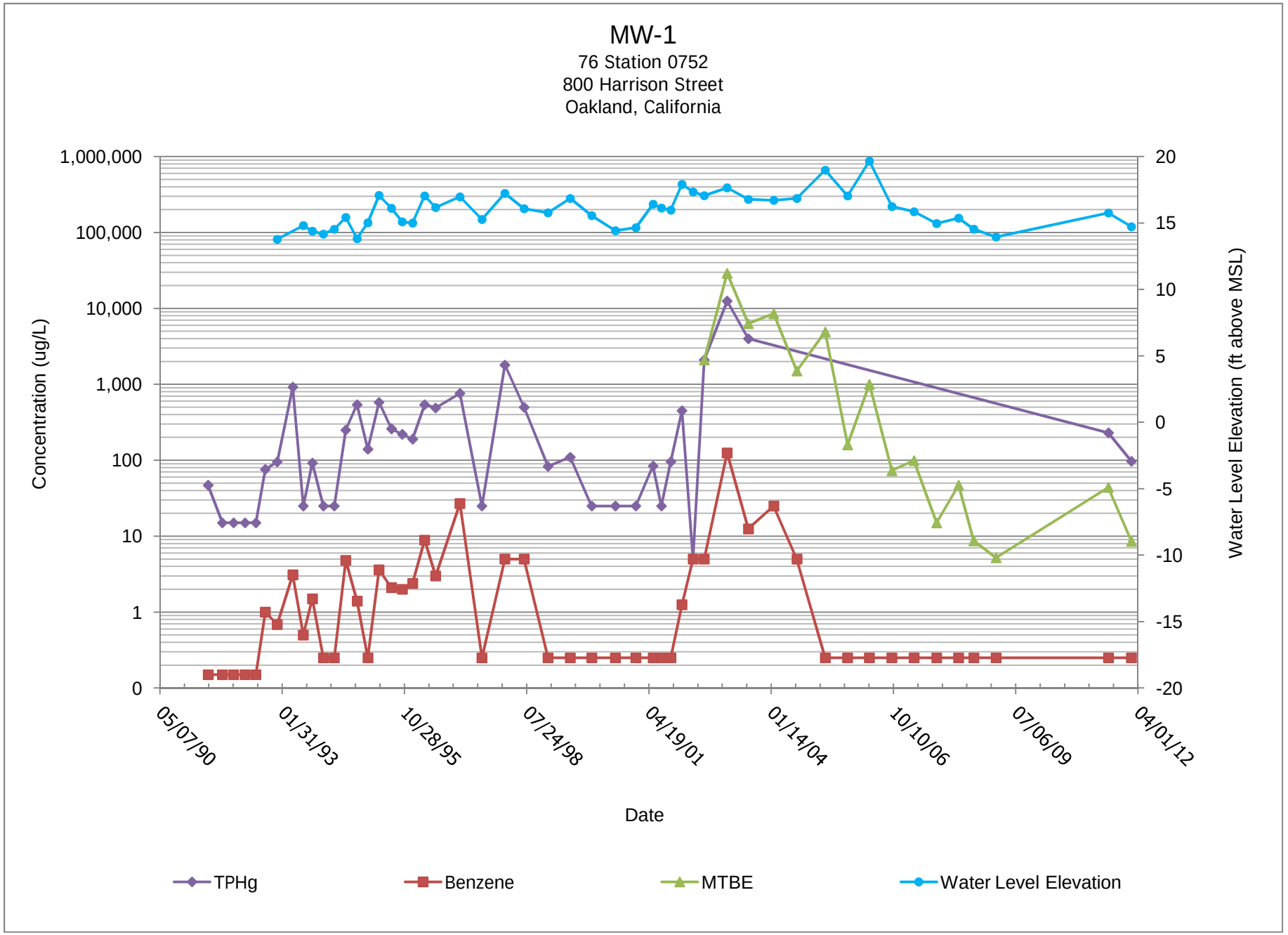

MW-5
Yee Property
726 Harrison St.
Oakland, CA
SVE Pilot Test
Concentrations (µg/L)
Groundwater Elevations (ft aboove MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
TPHg
Benzene
MTBE
GW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

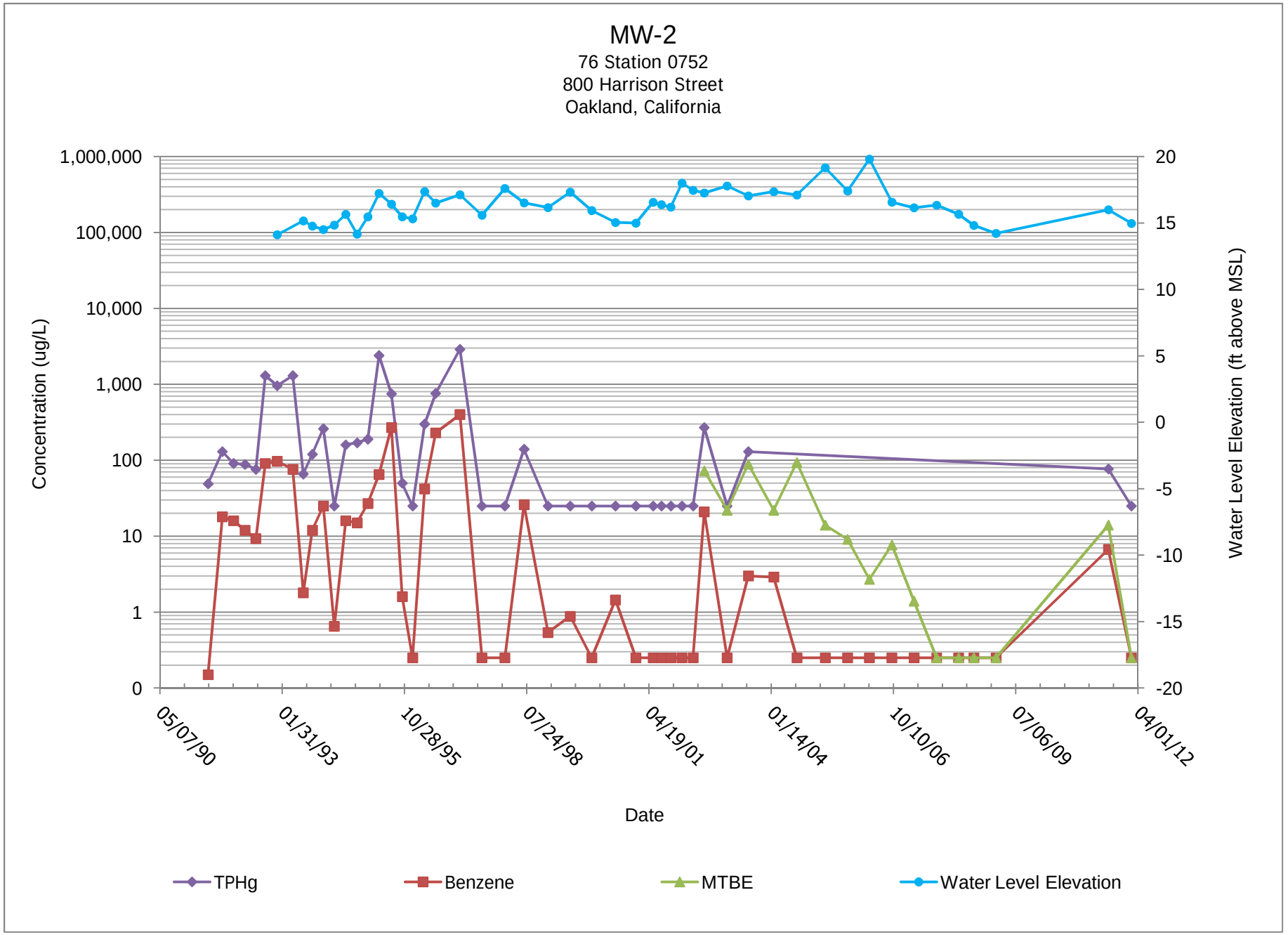

MW-6
Yee Property
726 Harrison St.
Oakland, CA
SVE Pilot Test
Concentrations (µg/L)
Groundwater Elevations (ft aboove MSL)
1,000,000
100,000
10,000
1,000
100
10
1
0
20
15
10
5
0
-5
-10
-15
-20
5/7/1990
1/31/1993
10/28/1995
7/24/1998
4/19/2001
1/14/2004
10/10/2006
7/6/2009
4/1/2012
TPHg
Benzene
MTBE
GW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

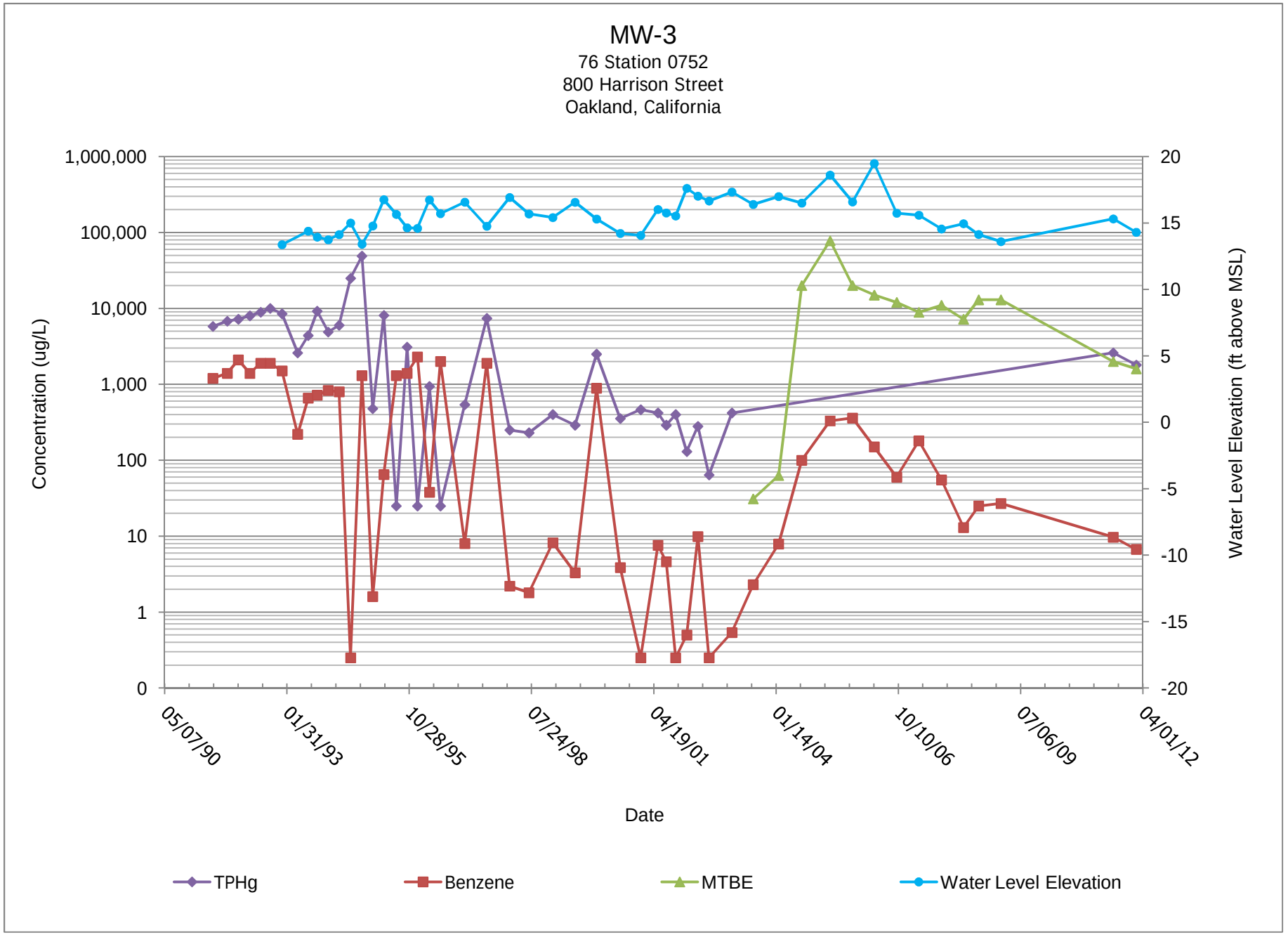
ARCADIS

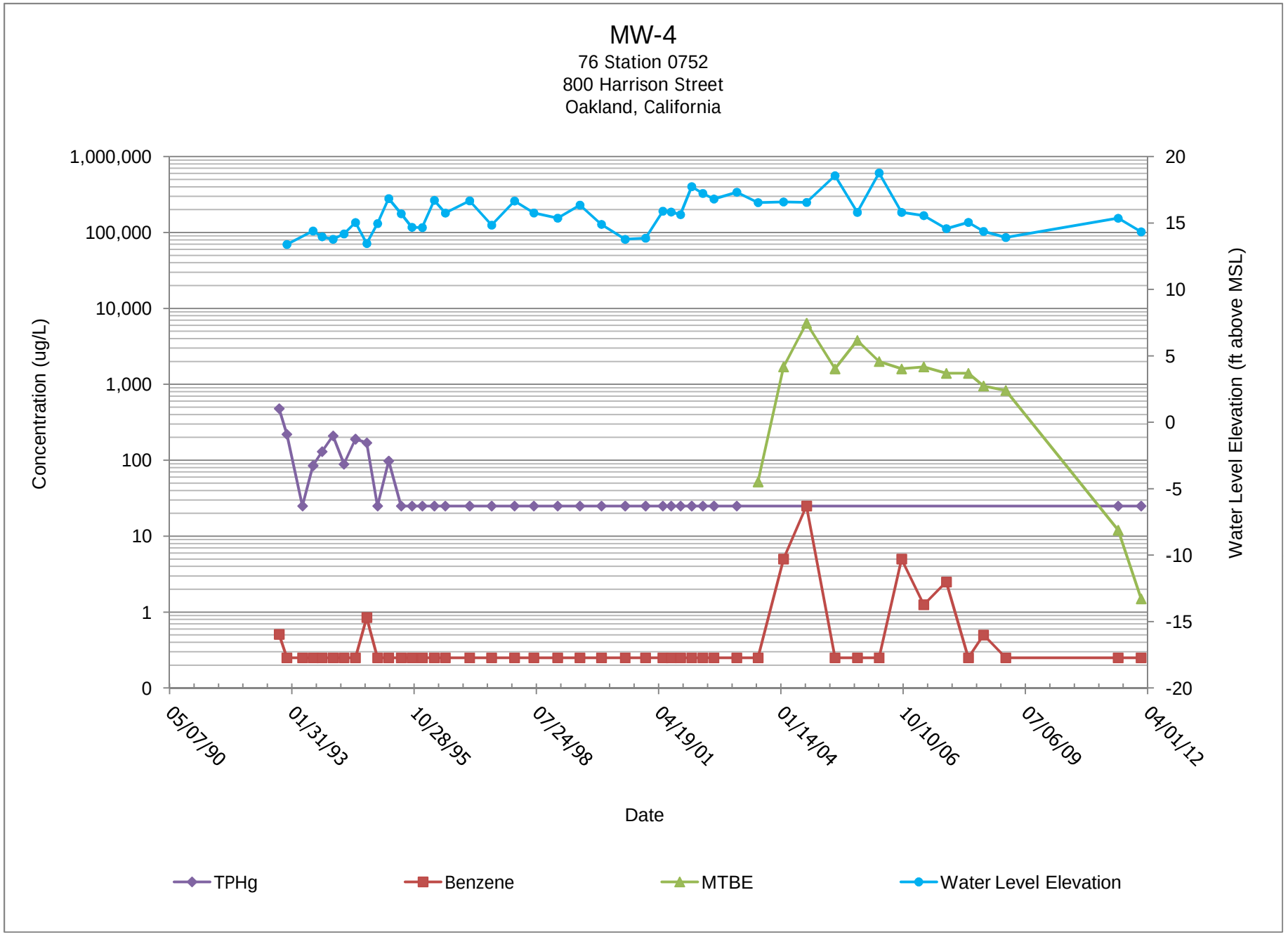
Hydrographs

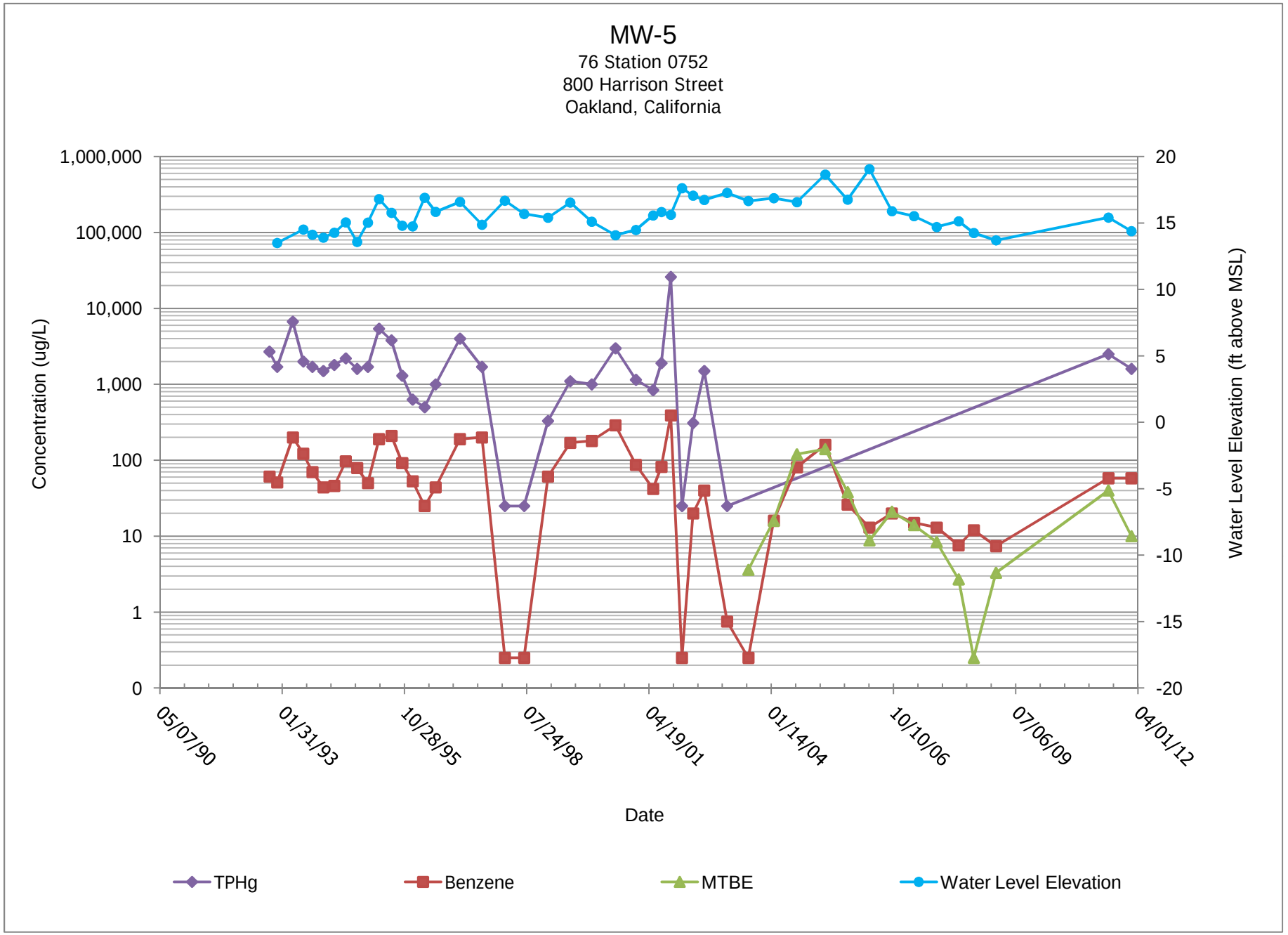
800 Harrison Street: MW-1 through MW-8

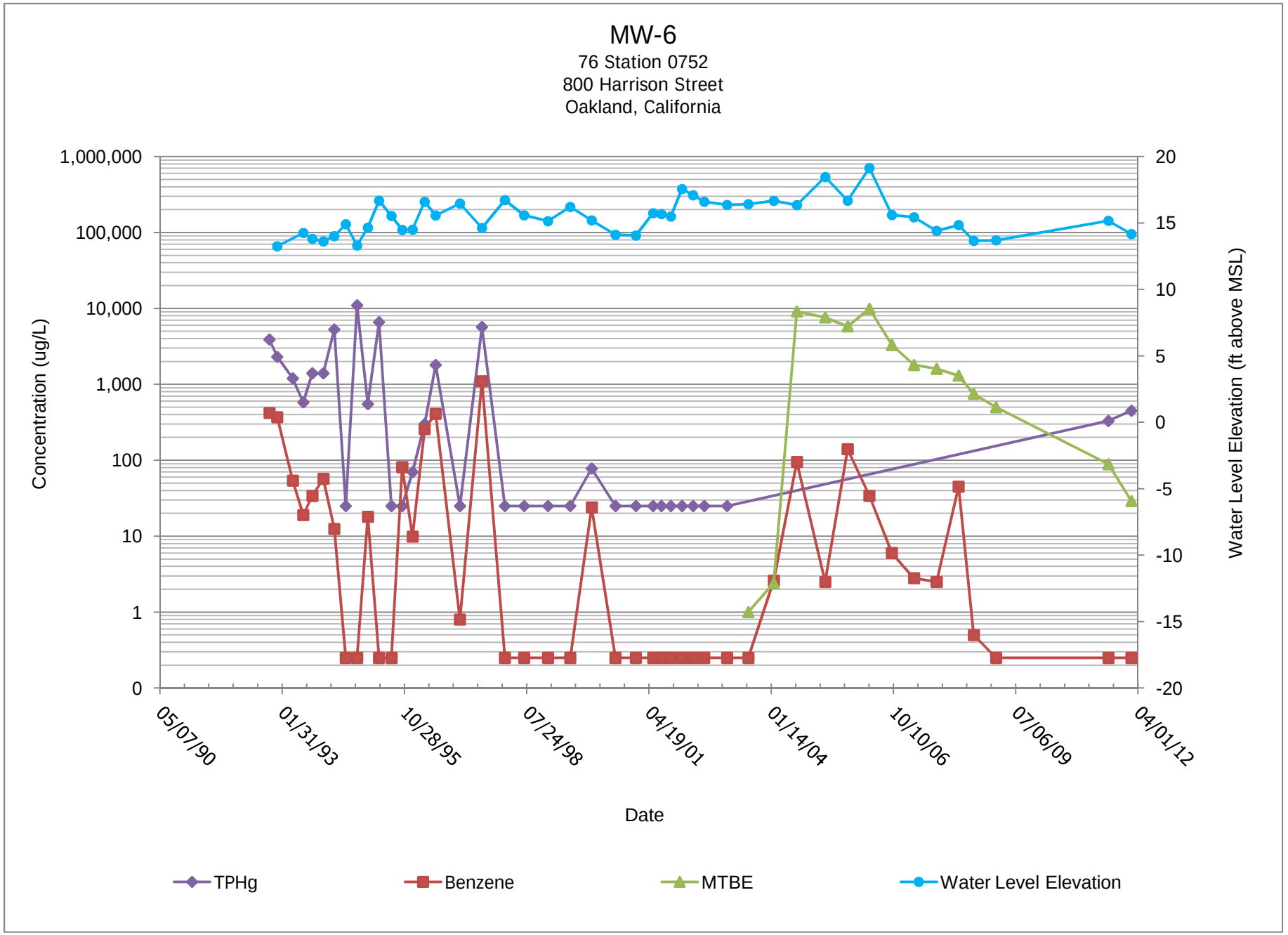

MW-1
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
05/07/90
01/31/93
10/28/95
07/24/98
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
Date
TPHg
Benzene
MTBE
Water Level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

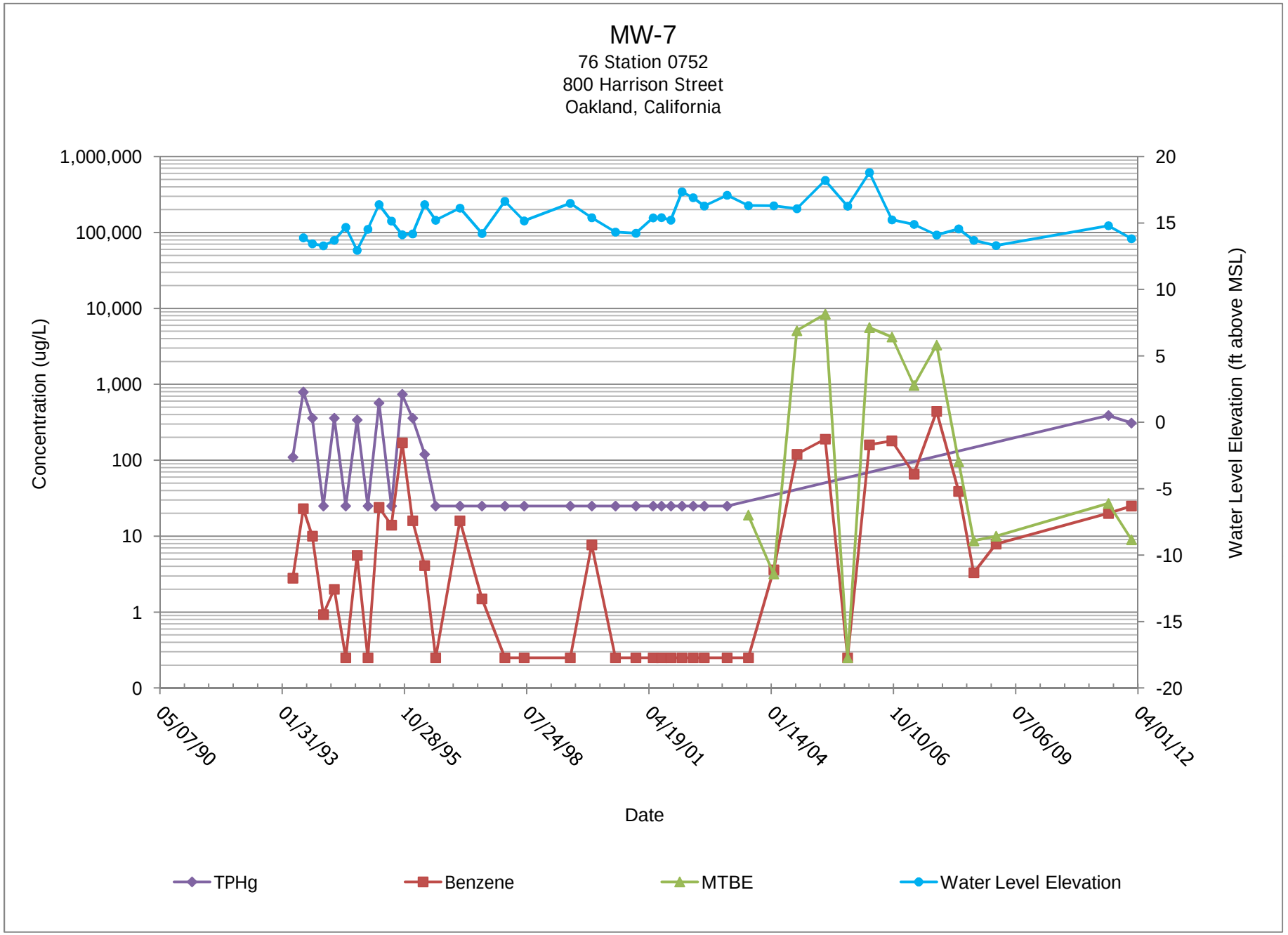

MW-2
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
05/07/90
01/31/93
10/28/95
07/24/98
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
Date
TPHg
Benzene
MTBE
Water Level Elevation

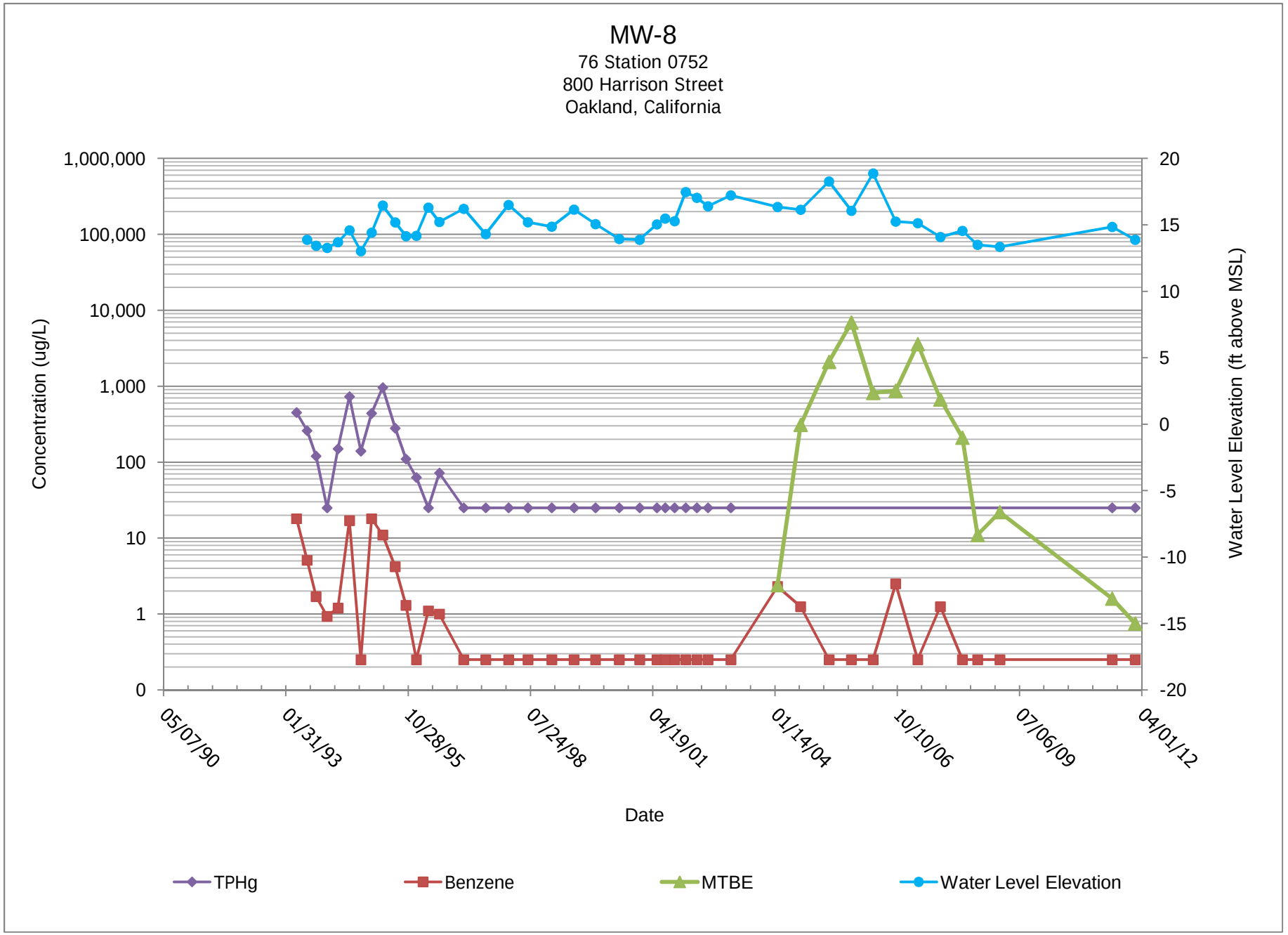

MW-3
76 Station 0752
800 Harrison Street
Oakland, California
Concentration (ug/L)
1,000,000
100,000
10,000
1,000
100
10
1
0
Water Level Elevation (ft above MSL)
20
15
10
5
0
-5
-10
-15
-20
05/07/90
01/31/93
10/28/95
07/24/98
04/19/01
01/14/04
10/10/06
07/06/09
04/01/12
Date
TPHg
Benzene
MTBE
Water Level 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
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
Date
TPHg
Benzene
MTBE
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
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
Date
TPHg
Benzene
MTBE
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
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
Date
TPHg
Benzene
MTBE
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
Date
TPHg
Benzene
MTBE
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
Date
TPHg
Benzene
MTBE
Water Level Elevation

ARCADIS

Appendix **F**

Summary of Statistical Analysis and Linear Regression

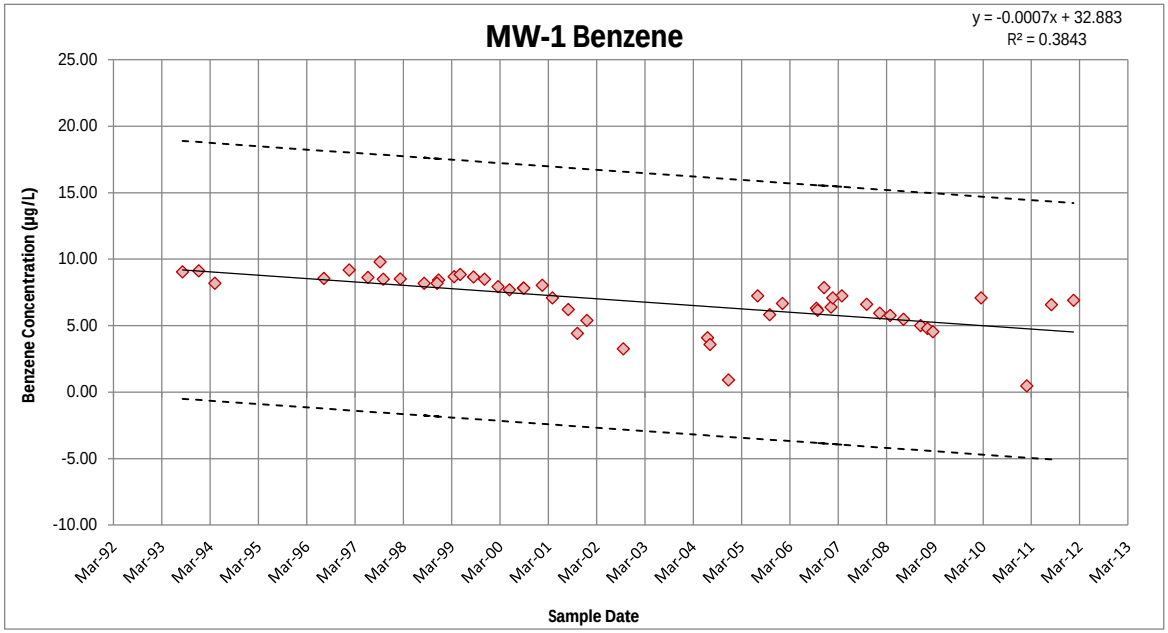
ARCADIS

Summary of Statistical Analysis and Linear Regression

706 Harrison Street

Location: 706 Harrison Street
Well ID: MW-1
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	LN Concentration
08/13/93	**8,500**	9.05
12/14/93	**9,200**	9.13
04/15/94	**3,600**	8.19
07/19/96	**5,200**	8.56
01/27/97	**9,800**	9.19
06/18/97	**5,600**	8.63
09/18/97	**18,000**	9.80
10/12/97	**4,900**	8.50
02/18/98	**5,000**	8.52
12/05/98	**4600**	8.43
08/18/98	**3,600**	8.19
11/24/98	**3,600**	8.19
04/02/99	**5,900**	8.68
05/18/99	**7,000**	8.85
08/27/99	**5,800**	8.67
11/18/99	**4,900**	8.50
02/29/00	**2,800**	7.94
05/25/00	**2,200**	7.70
09/08/00	**2,500**	7.82
09/11/00	**2,500**	7.82
01/29/01	**3,100**	8.04
04/16/01	**1,200**	7.09
08/14/01	**500**	6.21
10/22/01	**83**	4.42
01/02/02	**220**	5.39
10/05/02	**26**	3.26
07/04/04	**60**	4.09
07/23/04	**36**	3.58
12/10/04	**2.5**	0.92
07/19/05	**1,400**	7.24
10/18/05	**340**	5.83
01/23/06	**790**	6.67
12/04/06	**2,600**	7.86
10/07/06	**550**	6.31
10/16/06	**470**	6.15
01/26/07	**600**	6.40
04/18/07	**1,400**	7.24
02/08/07	**1,200**	7.09
10/23/07	**740**	6.61
01/30/08	**380**	5.94
04/18/08	**320**	5.77
07/28/08	**240**	5.48
12/05/08	**150**	5.01
01/26/09	**120**	4.79
03/08/09	**94**	4.54
03/08/10	**1,200**	7.09
02/17/11	**1.6**	0.47
08/23/11	**720**	6.58
02/07/12	**1,000**	6.91



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.619880462
R Square	0.384251787
Adjusted R Square	0.371150761
Standard Error	1.611297961
Observations	49

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	32.882697
Slope	-0.000693
Date Objective is Reached	03/04/2020

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	76.14866772	76.14866772	29.3299008	2.03711E-06
Residual	47	122.0252127	2.596281121		
Total	48	198.1738804			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	32.8826969	4.821089946	6.820593948	1.52986E-08	23.1839151	42.58147871	24.79326125	40.97213255
X Variable 1	-0.000692523	0.000127873	-5.415708707	2.03711E-06	-0.00094977	-0.000435276	-0.000907085	-0.000477962

Abbreviations:

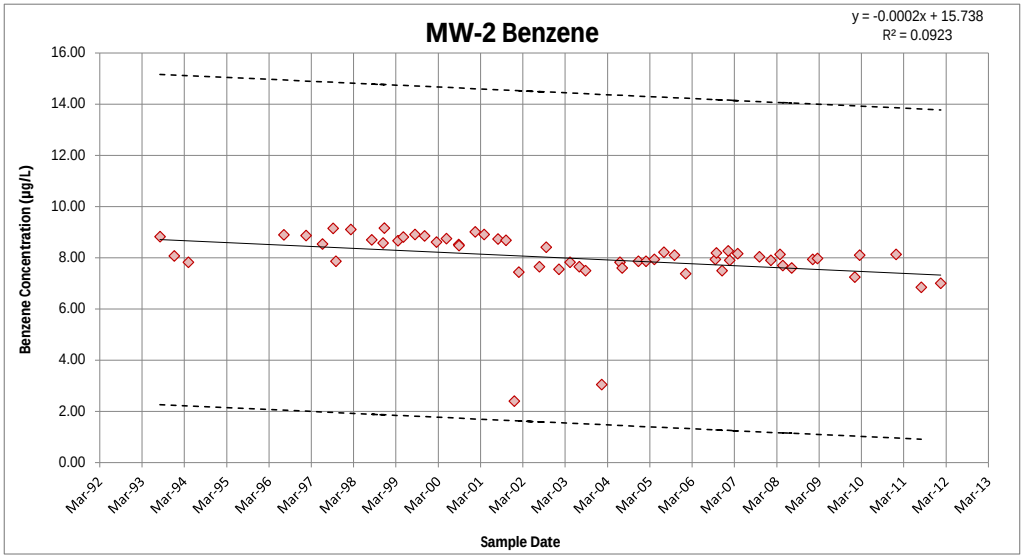
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 706 Harrison Street
Well ID: MW-2
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	LN Concentration
08/13/93	**6,800.00**	8.82
12/14/93	**3,200.00**	8.07
04/15/94	**2,500.00**	7.82
07/19/96	**7,300.00**	8.90
01/27/97	**7,100.00**	8.87
06/18/97	**5,100.00**	8.54
09/18/97	**9,400.00**	9.15
10/12/97	**2,600.00**	7.86
02/18/98	**9,000.00**	9.10
12/05/98	**9,500.00**	9.16
08/18/98	**6,000.00**	8.70
11/24/98	**5,300.00**	8.58
04/02/99	**5,800.00**	8.67
05/18/99	**6,700.00**	8.81
08/27/99	**7,400.00**	8.91
11/18/99	**7,000.00**	8.85
02/29/00	**5,500.00**	8.61
05/25/00	**6,300.00**	8.75
09/08/00	**5,000.00**	8.52
09/11/00	**4,800.00**	8.48
01/29/01	**8,200.00**	9.01
04/16/01	**7,400.00**	8.91
08/14/01	**6,200.00**	8.73
10/22/01	**5,900.00**	8.68
01/02/02	**11.00**	2.40
10/05/02	**4,500.00**	8.41
08/07/02	**2,100.00**	7.65
02/10/02	**1,700.00**	7.44
01/23/03	**1,900.00**	7.55
04/29/03	**2,500.00**	7.82
07/18/03	**2,100.00**	7.65
09/10/03	**1,800.00**	7.50
01/28/04	**21.00**	3.04
07/04/04	**2,500.00**	7.82
07/23/04	**2,000.00**	7.60
12/10/04	**2,600.00**	7.86
02/14/05	**2,600.00**	7.86
04/27/05	**2,800.00**	7.94
07/19/05	**3,700.00**	8.22
10/18/05	**3,300.00**	8.10
01/23/06	**1,600.00**	7.38
12/04/06	**1,800.00**	7.50
10/07/06	**2,800.00**	7.94
10/16/06	**3,600.00**	8.19
01/26/07	**3,900.00**	8.27
04/18/07	**3,500.00**	8.16
02/08/07	**2,700.00**	7.90
10/23/07	**3,100.00**	8.04
01/30/08	**2,700.00**	7.90
04/18/08	**3,400.00**	8.13
07/28/08	**2,000.00**	7.60
05/12/08	**2,200.00**	7.70
01/26/09	**2,800.00**	7.94
03/08/09	**2,900.00**	7.97
01/25/10	**1,400.00**	7.24
03/08/10	**3,300.00**	8.10
01/17/11	**3,400.00**	8.13
08/23/11	**940.00**	6.85
02/07/12	**1,100.00**	7.00



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.303834798
R Square	0.092315585
Adjusted R Square	0.076391297
Standard Error	1.097627451
Observations	59

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	15.738398
Slope	-0.000205
Date Objective is Reached	08/22/2076

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6.984332728	6.984332728	5.79715618	0.019311215
Residual	57	68.67280315	1.20478602		
Total	58	75.65713588			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	15.7383984	3.222065425	4.884568227	8.7736E-06	9.286323729	22.19047307	10.35101193	21.12578487
X Variable 1	-0.00020542	8.53169E-05	-2.40772843	0.01931121	-0.000376264	-3.4576E-05	-0.00034807	-6.2768E-05

Abbreviations:

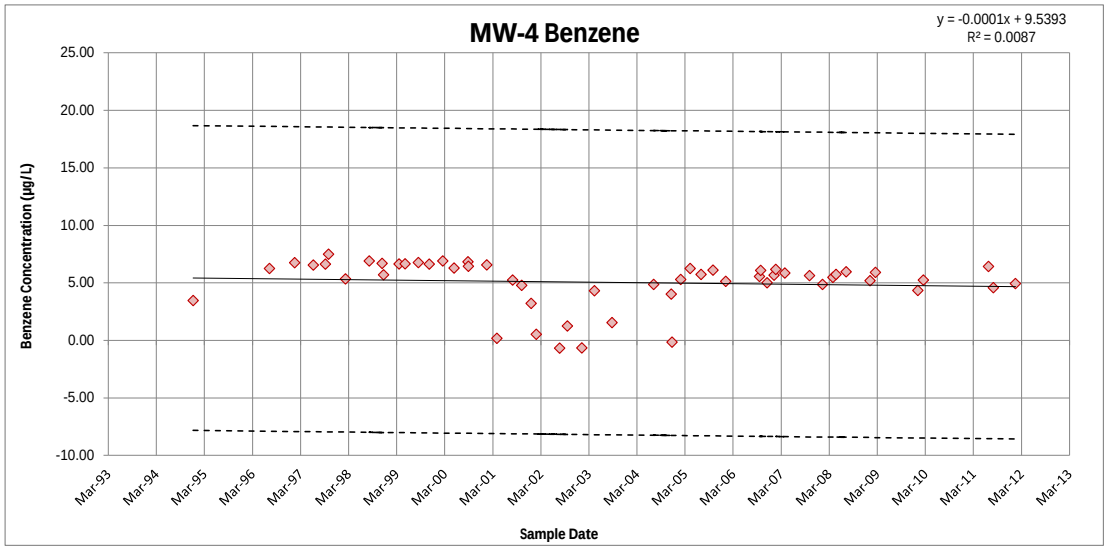
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 706 Harrison Street
Well ID: MW-4
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	LN Concentration
12/16/94	**32**	3.47
07/19/96	**520**	6.25
01/27/97	**860**	6.76
06/18/97	**700**	6.55
09/18/97	**760**	6.63
10/12/97	**1,800**	7.50
02/18/98	**210**	5.35
12/05/98	**300**	5.70
08/18/98	**1,000**	6.91
11/24/98	**810**	6.70
04/02/99	**770**	6.65
05/18/99	**780**	6.66
08/27/99	**870**	6.77
11/18/99	**760**	6.63
02/29/00	**1,000**	6.91
05/25/00	**540**	6.29
09/08/00	**930**	6.84
09/11/00	**630**	6.45
01/29/01	**710**	6.57
04/16/01	**1.2**	0.18
08/14/01	**190**	5.25
10/22/01	**120**	4.79
01/02/02	**25**	3.22
10/05/02	**3.5**	1.25
08/07/02	**0.51**	-0.67
02/10/02	**1.7**	0.53
01/23/03	**0.52**	-0.65
04/29/03	**75**	4.32
09/10/03	**4.7**	1.55
12/04/04	**56**	4.03
07/23/04	**130**	4.87
12/10/04	**0.86**	-0.15
02/14/05	**200**	5.30
04/27/05	**520**	6.25
07/19/05	**310**	5.74
10/18/05	**450**	6.11
01/23/06	**170**	5.14
12/04/06	**150**	5.01
10/07/06	**260**	5.56
10/16/06	**440**	6.09
01/26/07	**290**	5.67
04/18/07	**350**	5.86
02/08/07	**480**	6.17
10/23/07	**280**	5.63
01/30/08	**130**	4.87
04/18/08	**240**	5.48
07/28/08	**390**	5.97
05/12/08	**310**	5.74
01/26/09	**180**	5.19
03/08/09	**370**	5.91
01/25/10	**77**	4.34
03/08/10	**190**	5.25
07/17/11	**620**	6.43
08/23/11	**98**	4.58
02/07/12	**140**	4.94



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.093184066
R Square	0.00868327
Adjusted R Square	-0.010020819
Standard Error	2.063228667
Observations	55

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	9.539340
Slope	-0.000119
Date Objective is Reached	07/29/2062

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.976248144	1.976248144	0.46424448	0.498613439
Residual	53	225.6163642	4.256912532		
Total	54	227.5926123			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	9.539339857	6.606795577	1.44386787	0.154661687	-3.712213605	22.79089332	-1.521203894	20.59988361
X Variable 1	-0.000118799	0.000174357	-0.681354885	0.498613439	-0.000468515	0.000230917	-0.000410693	0.000173095

Abbreviations:

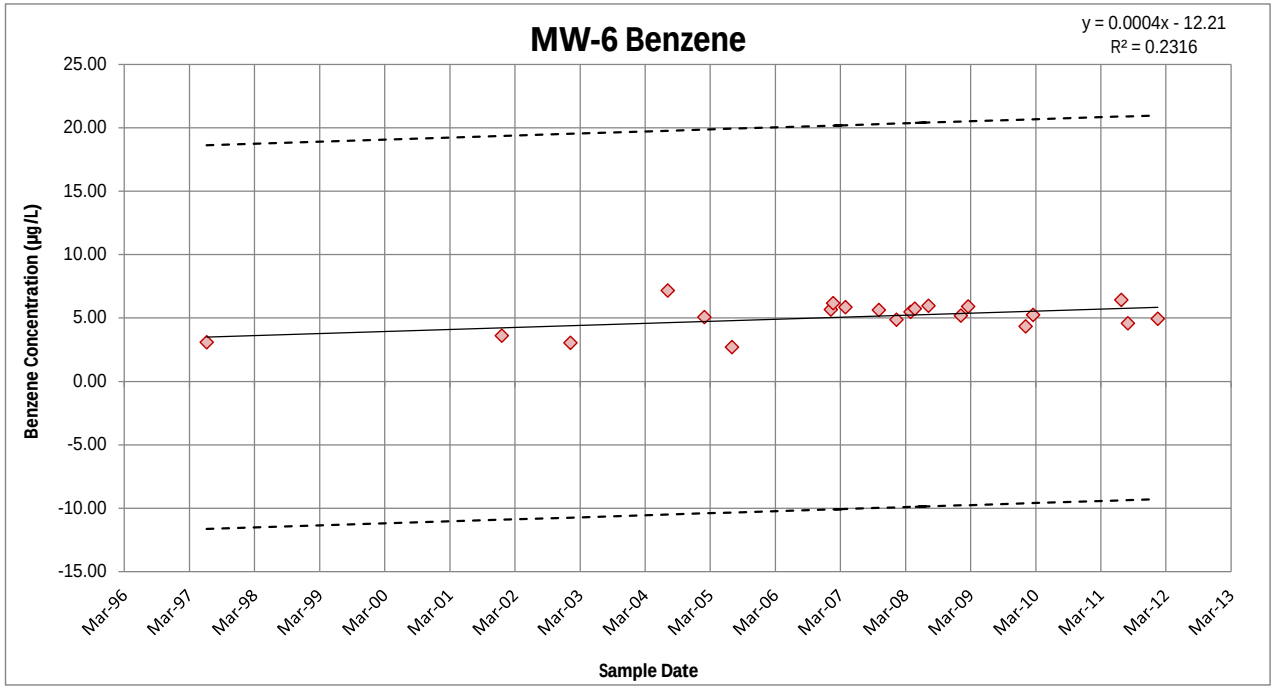
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 706 Harrison Street
Well ID: MW-6
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	LN Concentration
06/18/97	**22**	3.09
01/02/02	**37**	3.61
01/23/03	**21**	3.04
07/23/04	**1,300**	7.17
02/14/05	**160**	5.08
07/19/05	**15**	2.71
01/26/07	**290**	5.67
04/18/07	**350**	5.86
02/08/07	**480**	6.17
10/23/07	**280**	5.63
01/30/08	**130**	4.87
04/18/08	**240**	5.48
07/28/08	**390**	5.97
05/12/08	**310**	5.74
01/26/09	**180**	5.19
03/08/09	**370**	5.91
01/25/10	**77**	4.34
03/08/10	**190**	5.25
07/17/11	**620**	6.43
08/23/11	**98**	4.58
02/07/12	**140**	4.94



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.481210703
R Square	0.231563741
Adjusted R Square	0.191119727
Standard Error	1.054508779
Observations	21

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	-12.209955
Slope	0.000441
Date Objective is Reached	N/A

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6.366734039	6.366734039	5.725538102	0.027208738
Residual	19	21.12778652	1.111988764		
Total	20	27.49452056			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-12.20995522	7.230667361	-1.688634618	0.10763467	-27.3439159	2.924005467	-24.71273926	0.292828829
X Variable 1	0.000441069	0.000184331	2.392809667	0.027208738	5.52598E-05	0.000826878	0.000122336	0.000759802

Abbreviations:

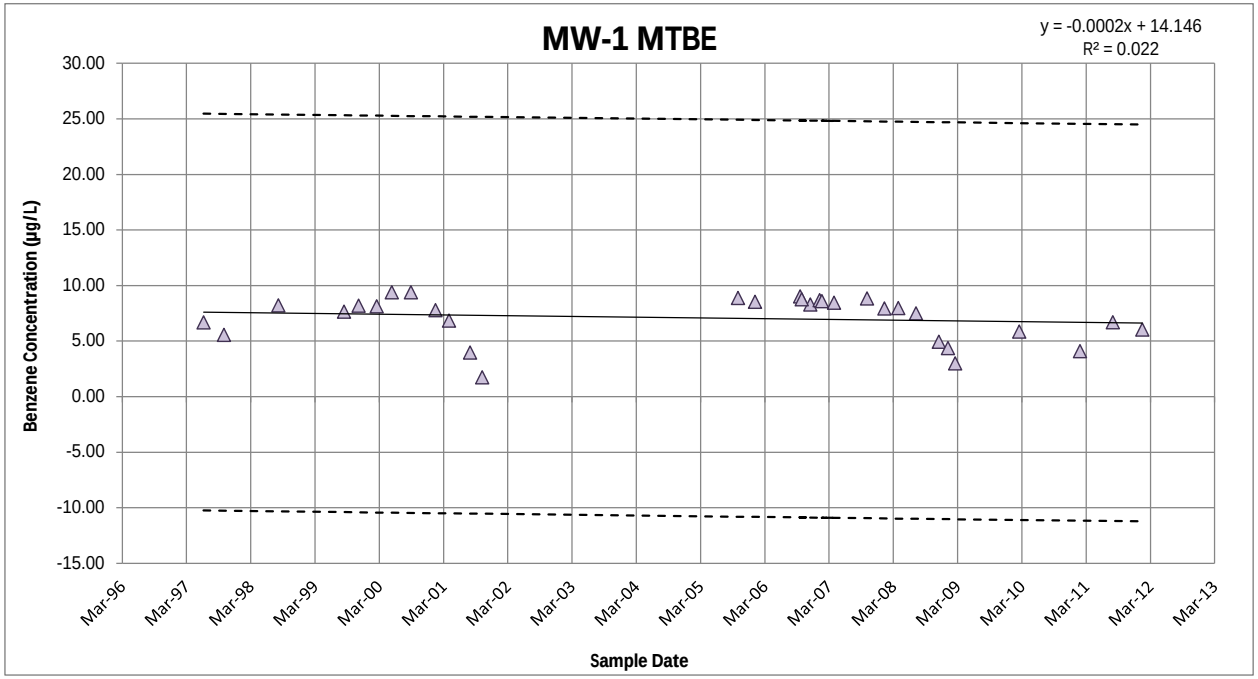
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 706 Harrison Street
Well ID: MW-1
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
06/18/97	**800**	6.68
10/12/97	**260**	5.56
08/18/98	**3,700**	8.22
08/27/99	**2,100**	7.65
11/18/99	**3,600**	8.19
02/29/00	**3,400**	8.13
05/25/00	**12,000**	9.39
09/11/00	**12,000**	9.39
01/29/01	**2,400**	7.78
04/16/01	**940**	6.85
08/14/01	**53**	3.97
10/22/01	**5.7**	1.74
10/18/05	**7,200**	8.88
01/23/06	**5,100**	8.54
12/04/06	**4,000**	8.29
10/07/06	**8,300**	9.02
10/16/06	**6,400**	8.76
01/26/07	**5,900**	8.68
04/18/07	**4,700**	8.46
02/08/07	**5,400**	8.59
10/23/07	**6,900**	8.84
01/30/08	**2,800**	7.94
04/18/08	**2,900**	7.97
07/28/08	**1,800**	7.50
12/05/08	**140**	4.94
01/26/09	**79**	4.37
03/08/09	**20**	3.00
03/08/10	**350**	5.86
02/17/11	**60**	4.09
08/23/11	**810**	6.70
02/07/12	**420**	6.04



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.148350287
R Square	0.022007808
Adjusted R Square	-0.011716061
Standard Error	2.020706263
Observations	31

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	14.146333
Slope	-0.000184
Date Objective is Reached	01/01/2087

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.664684322	2.664684322	0.652588463	0.425765808
Residual	29	118.4143602	4.083253801		
Total	30	121.0790445			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	14.14633312	8.732864031	1.619896184	0.116079751	-3.714378986	32.00704523	-0.691911904	28.98457815
X Variable 1	-0.000183546	0.000227208	-0.807829476	0.425765808	-0.000648239	0.000281148	-0.000569602	0.00020251

Abbreviations:

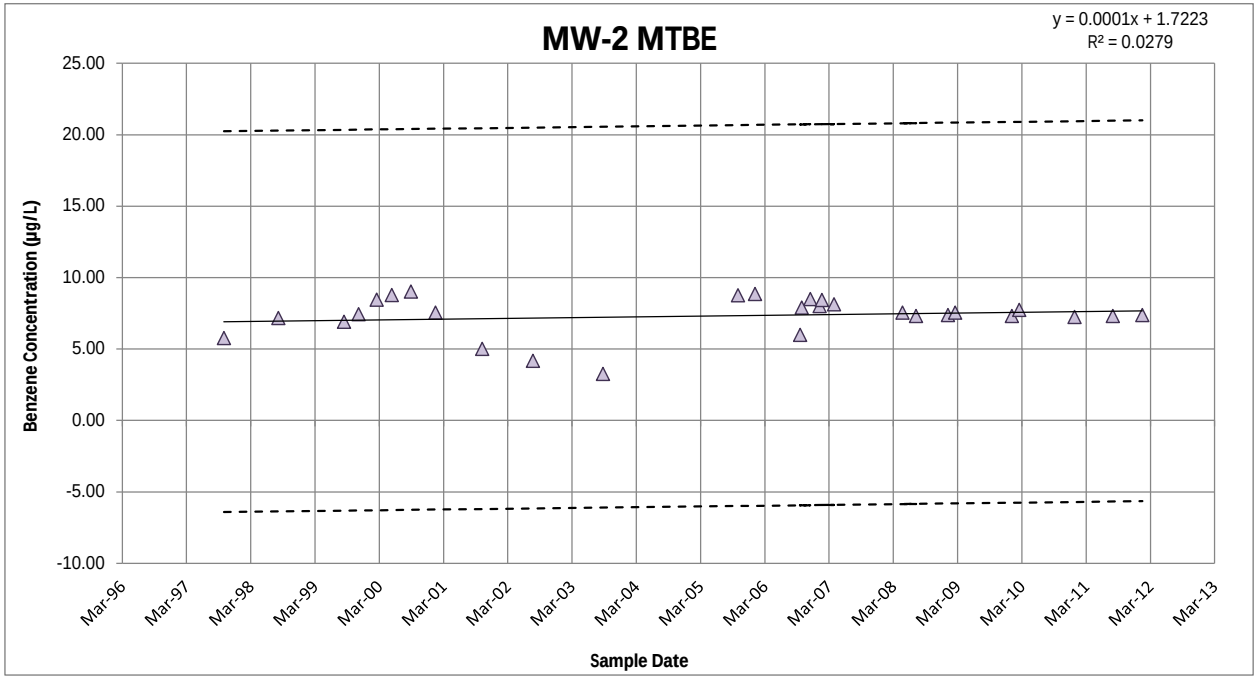
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 706 Harrison Street
Well ID: MW-2
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
10/12/97	**320.00**	5.77
08/18/98	**1,300.00**	7.17
08/27/99	**1,000.00**	6.91
11/18/99	**1,700.00**	7.44
02/29/00	**4,700.00**	8.46
05/25/00	**6,500.00**	8.78
09/11/00	**8,300.00**	9.02
01/29/01	**1,900.00**	7.55
10/22/01	**150.00**	5.01
08/07/02	**65.00**	4.17
09/10/03	**26.00**	3.26
10/18/05	**6,400.00**	8.76
01/23/06	**7,000.00**	8.85
12/04/06	**4,900.00**	8.50
10/07/06	**400.00**	5.99
10/16/06	**2,700.00**	7.90
01/26/07	**3,000.00**	8.01
04/18/07	**3,400.00**	8.13
02/08/07	**4,600.00**	8.43
07/28/08	**1,500.00**	7.31
05/12/08	**1,900.00**	7.55
01/26/09	**1,600.00**	7.38
03/08/09	**1,900.00**	7.55
01/25/10	**1,500.00**	7.31
03/08/10	**2,300.00**	7.74
01/17/11	**1,400.00**	7.24
08/23/11	**1,500.00**	7.31
02/07/12	**1,600.00**	7.38



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.166979185
R Square	0.027882048
Adjusted R Square	-0.009507104
Standard Error	1.385039175
Observations	28

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	1.722263
Slope	0.000145
Date Objective is Reached	NA

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.430550439	1.430550439	0.745725613	0.395729552
Residual	26	49.87667145	1.918333517		
Total	27	51.30722189			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	1.722263306	6.484778145	0.26558554	0.79265299	-11.60738894	15.05191555	-9.338290379	12.78281699
X Variable 1	0.000145381	0.000168352	0.863554059	0.395729552	-0.000200671	0.000491432	-0.000141763	0.000432524

Abbreviations:

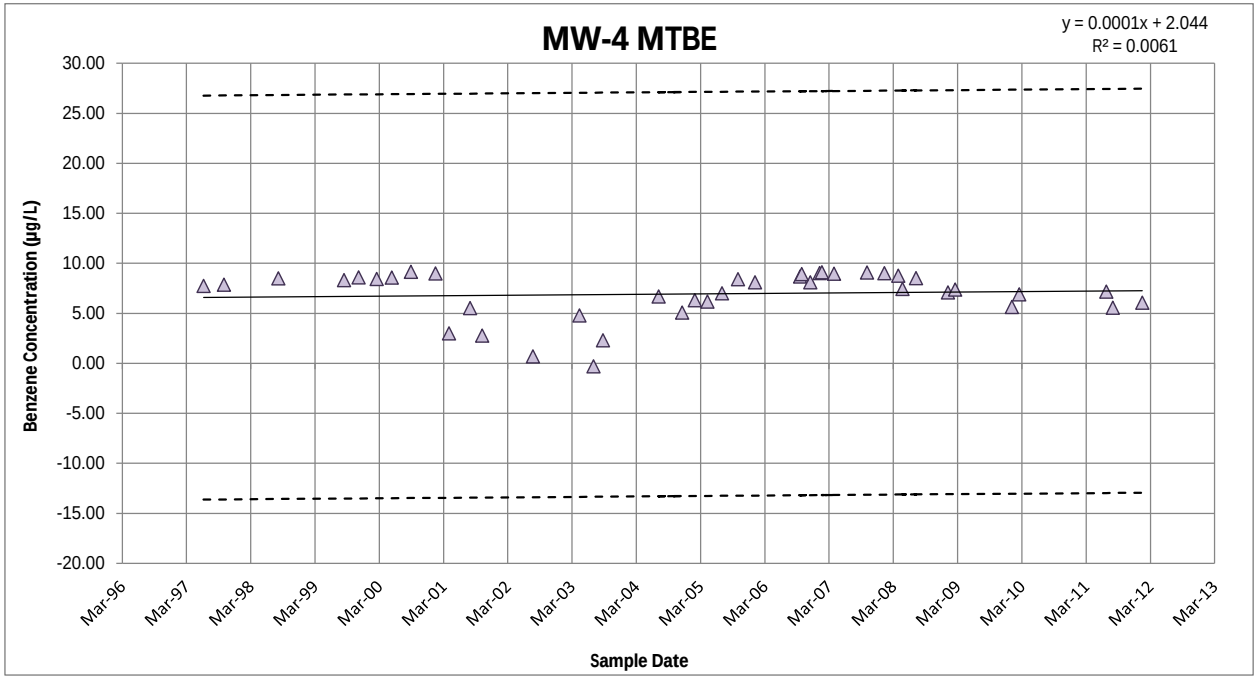
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 706 Harrison Street
Well ID: MW-4
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
06/18/97	**2300**	7.74
10/12/97	**2600**	7.86
08/18/98	**4900**	8.50
08/27/99	**4,100**	8.32
11/18/99	**5,400**	8.59
02/29/00	**4,600**	8.43
05/25/00	**5,300**	8.58
09/11/00	**9,400**	9.15
01/29/01	**8,000**	8.99
04/16/01	**20**	3.00
08/14/01	**250**	5.52
10/22/01	**16**	2.77
08/07/02	**2.0**	0.69
04/29/03	**120**	4.79
07/18/03	0.74	-0.30
09/10/03	**10**	2.30
12/04/04	**160**	5.08
07/23/04	**800**	6.68
02/14/05	**550**	6.31
04/27/05	**480**	6.17
07/19/05	**1,100**	7.00
10/18/05	**4,500**	8.41
01/23/06	**3,300**	8.10
12/04/06	**3,300**	8.10
10/07/06	**5,900**	8.68
10/16/06	**7,500**	8.92
01/26/07	**8,300**	9.02
04/18/07	**7,800**	8.96
02/08/07	**9,000**	9.10
10/23/07	**8,800**	9.08
01/30/08	**8,200**	9.01
04/18/08	**6,400**	8.76
07/28/08	**5,000**	8.52
05/12/08	**1,700**	7.44
01/26/09	**1,200**	7.09
03/08/09	**1,600**	7.38
01/25/10	**280**	5.63
03/08/10	**990**	6.90
07/17/11	**1,300**	7.17
08/23/11	**260**	5.56
02/07/12	**430**	6.06



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.078140708
R Square	0.00610597
Adjusted R Square	-0.019378492
Standard Error	2.389935372
Observations	41

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	2.044006
Slope	0.000127
Date Objective is Reached	NA

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.368521175	1.368521175	0.239595804	0.627240162
Residual	39	222.7598522	5.711791081		
Total	40	224.1283734			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	2.044005776	9.987264323	0.204661227	0.838901193	-18.1571429	22.24515445	-14.78328742	18.87129897
X Variable 1	0.000127295	0.000260059	0.489485244	0.627240162	-0.000398724	0.000653313	-0.000310872	0.000565461

Abbreviations:

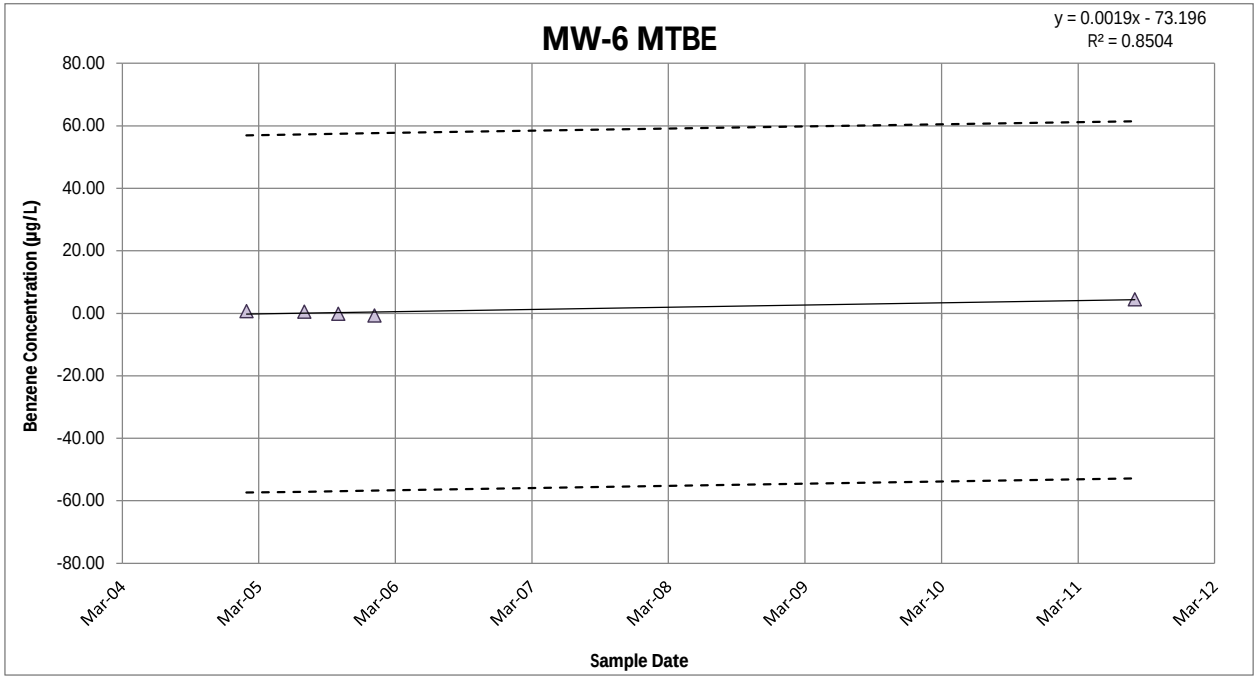
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 706 Harrison Street
Well ID: MW-6
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
02/14/05	**2**	0.69
07/19/05	**1.7**	0.53
10/18/05	**0.87**	-0.14
01/23/06	**0.5**	-0.69
08/23/11	**89**	4.49



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.922168862
R Square	0.85039541
Adjusted R Square	0.800527213
Standard Error	0.91112446
Observations	5

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	-73.196191
Slope	0.001901
Date Objective is Reached	NA

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	14.15639442	14.15639442	17.05286063	0.02575892
Residual	3	2.490443345	0.830147782		
Total	4	16.64683777			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-73.19619095	17.96611654	-4.074124243	0.02669136	-130.3723921	-16.01998976	-115.4769927	-30.91538923
X Variable 1	0.001900779	0.000460292	4.129510943	0.02575892	0.000435926	0.003365632	0.000817546	0.002984012

Abbreviations:

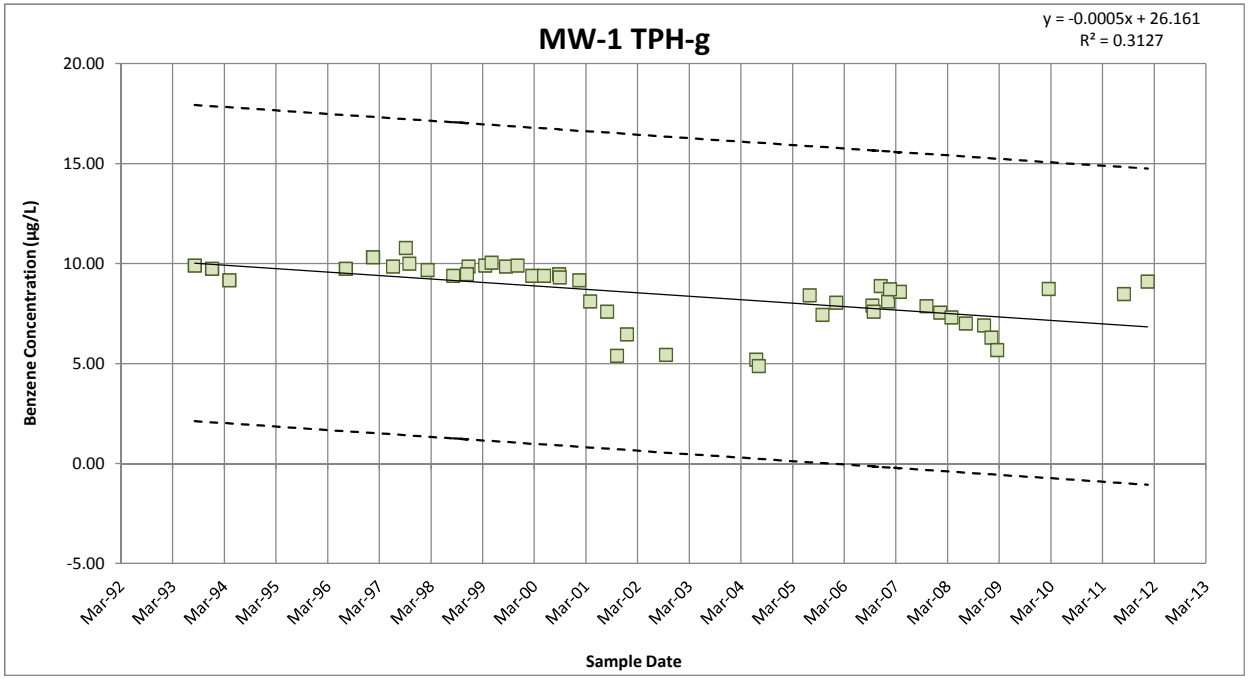
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Well ID: MW-1
Constituent: TPH-g

Sample Date	Detected Concentration (µg/L)	LN Concentration
08/13/93	**20,000**	9.90
12/14/93	**17,000**	9.74
04/15/94	**9,500**	9.16
07/19/96	**17,000**	9.74
01/27/97	**30,000**	10.31
06/18/97	**19,000**	9.85
09/18/97	**48,000**	10.78
10/12/97	**22,000**	10.00
02/18/98	**16,000**	9.68
12/05/98	**19000**	9.85
08/18/98	**12,000**	9.39
11/24/98	**13,000**	9.47
04/02/99	**20,000**	9.90
05/18/99	**23,000**	10.04
08/27/99	**19,000**	9.85
11/18/99	**20,000**	9.90
02/29/00	**12,000**	9.39
05/25/00	**12,000**	9.39
09/08/00	**13,000**	9.47
09/11/00	**11,000**	9.31
01/29/01	**9,600**	9.17
04/16/01	**3,300**	8.10
08/14/01	**2,000**	7.60
10/22/01	**220**	5.39
01/02/02	**640**	6.46
10/05/02	**230**	5.44
07/04/04	**180**	5.19
07/23/04	**130**	4.87
07/19/05	**4,500**	8.41
10/18/05	**1,700**	7.44
01/23/06	**3,100**	8.04
12/04/06	**7,200**	8.88
10/07/06	**2,700**	7.90
10/16/06	**2,000**	7.60
01/26/07	**3,300**	8.10
04/18/07	**5,400**	8.59
02/08/07	**6,100**	8.72
10/23/07	**2,600**	7.86
01/30/08	**1,900**	7.55
04/18/08	**1,500**	7.31
07/28/08	**1,100**	7.00
12/05/08	**1,000**	6.91
01/26/09	**540**	6.29
03/08/09	**290**	5.67
03/08/10	**6,200**	8.73
08/23/11	**4,800**	8.48
02/07/12	**8,900**	9.09



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.559186403
R Square	0.312689433
Adjusted R Square	0.297415865
Standard Error	1.275095553
Observations	47

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	33.28573565	33.28573565	20.47258568	4.39423E-05
Residual	45	73.16409014	1.62586867		
Total	46	106.4498258			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	26.16075714	3.924280609	6.666382899	3.18878E-08	18.25685038	34.0646639	19.57021279	32.75130149
X Variable 1	-0.000471925	0.0001043	-4.524664151	4.39423E-05	-0.000681996	-0.000261853	-0.00064709	-0.000296759

Abbreviations:

LN Natural Log

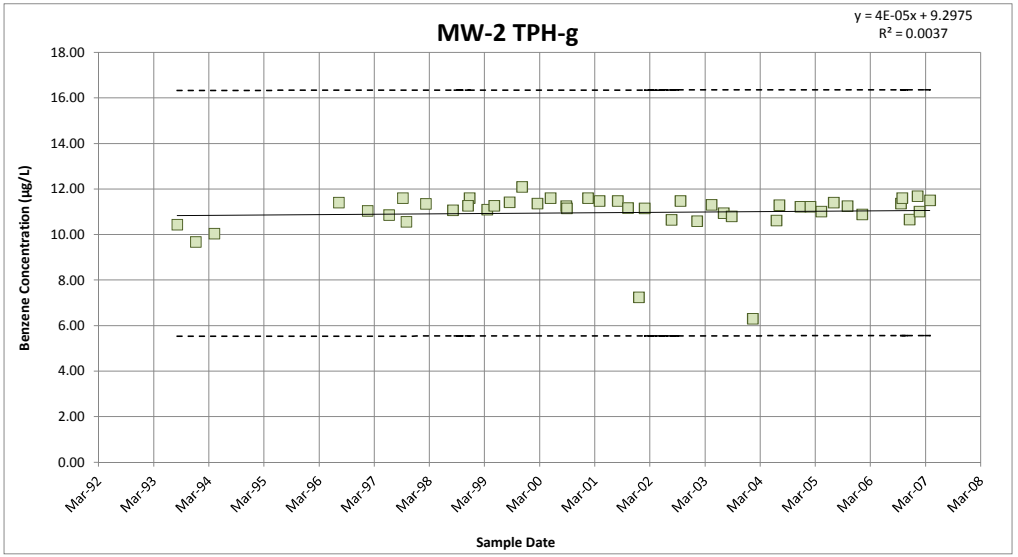
Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence

(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-2
Constituent: TPH-g

Sample Date	Detected Concentration (µg/L)	LN Concentration
08/13/93	**34,000.00**	10.43
12/14/93	**16,000.00**	9.68
04/15/94	**23,000.00**	10.04
07/19/96	**90,000.00**	11.41
01/27/97	**63,000.00**	11.05
06/18/97	**52,000.00**	10.86
09/18/97	**110,000.00**	11.61
10/12/97	**39,000.00**	10.57
02/18/98	**85,000.00**	11.35
12/05/98	**110,000.00**	11.61
08/18/98	**64,000.00**	11.07
11/24/98	**78,000.00**	11.26
04/02/99	**66,000.00**	11.10
05/18/99	**78,000.00**	11.26
08/27/99	**91,000.00**	11.42
11/18/99	**180,000.00**	12.10
02/29/00	**86,000.00**	11.36
05/25/00	**110,000.00**	11.61
09/08/00	**77,000.00**	11.25
09/11/00	**70,000.00**	11.16
01/29/01	**110,000.00**	11.61
04/16/01	**97,000.00**	11.48
08/14/01	**97,000.00**	11.48
10/22/01	**71,000.00**	11.17
01/02/02	**1,400.00**	7.24
10/05/02	**97,000.00**	11.48
08/07/02	**42,000.00**	10.65
02/10/02	**70,000.00**	11.16
01/23/03	**40,000.00**	10.60
04/29/03	**82,000.00**	11.31
07/18/03	**57,000.00**	10.95
09/10/03	**49,000.00**	10.80
01/28/04	**550.00**	6.31
07/04/04	**41,000.00**	10.62
07/23/04	**81,000.00**	11.30
12/10/04	**75,000.00**	11.23
02/14/05	**75,000.00**	11.23
04/27/05	**61,000.00**	11.02
07/19/05	**90,000.00**	11.41
10/18/05	**77,000.00**	11.25
01/23/06	**54,000.00**	10.90
12/04/06	**43,000.00**	10.67
10/07/06	**86,000.00**	11.36
10/16/06	**110,000.00**	11.61
01/26/07	**120,000.00**	11.70
04/18/07	**100,000.00**	11.51
02/08/07	**61,000.00**	11.02
10/23/07	**56,000.00**	10.93
01/30/08	**52,000.00**	10.86
04/18/08	**64,000.00**	11.07
07/28/08	**51,000.00**	10.84
05/12/08	**74,000.00**	11.21
01/26/09	**90,000.00**	11.41
03/08/09	**67,000.00**	11.11
01/25/10	**46,000.00**	10.74
03/08/10	**79,000.00**	11.28
01/17/11	**76,000.00**	11.24
08/23/11	**17,000.00**	9.74
02/07/12	**36,000.00**	10.49



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.010962506
R Square	0.000120177
Adjusted R Square	-0.017421575
Standard Error	0.918754879
Observations	59

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.005782905	0.005782905	0.006850887	0.934324344
Residual	57	48.11430013	0.844110529		
Total	58	48.12008303			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	10.72913023	2.696988245	3.978189468	0.000198338	5.328504467	16.12975599	6.219687971	15.23857249
X Variable 1	5.91089E-06	7.14134E-05	0.082770083	0.934324344	-0.000137092	0.000148914	-0.000113494	0.000125316

Abbreviations:

LN Natural Log

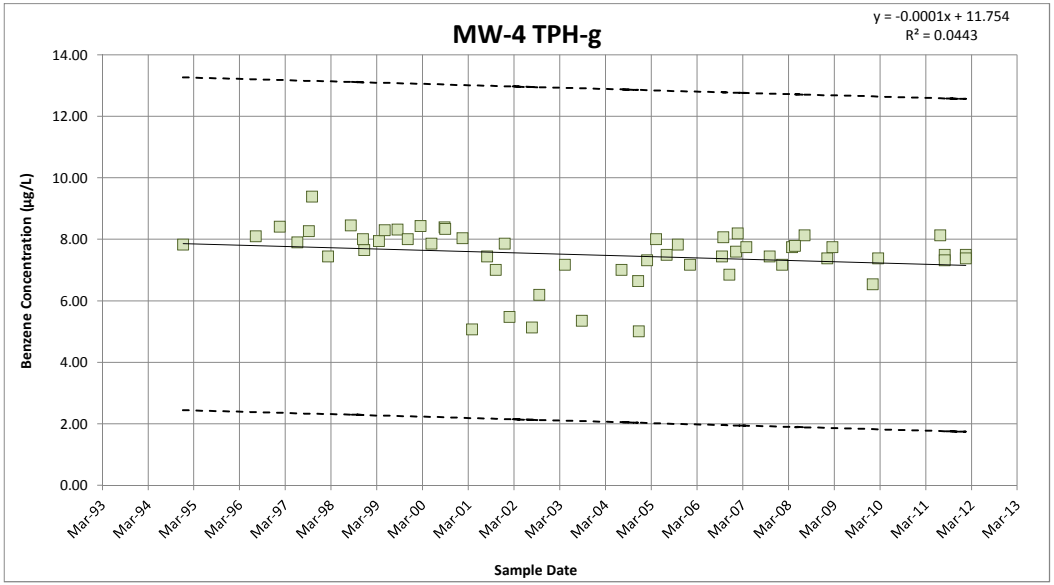
Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence

(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-4
Constituent: TPH-g

Sample Date	Detected Concentration (µg/L)	LN Concentration
12/16/94	**2,500**	7.82
07/19/96	**3,300**	8.10
01/27/97	**4,500**	8.41
06/18/97	**2,700**	7.90
09/18/97	**3,900**	8.27
10/12/97	**12,000**	9.39
02/18/98	**1,700**	7.44
12/05/98	**2,100**	7.65
08/18/98	**4,700**	8.46
11/24/98	**3,000**	8.01
04/02/99	**2,800**	7.94
05/18/99	**4,000**	8.29
08/27/99	**4,100**	8.32
11/18/99	**3,000**	8.01
02/29/00	**4,600**	8.43
05/25/00	**2,600**	7.86
09/08/00	**4,400**	8.39
09/11/00	**4,200**	8.34
01/29/01	**3,100**	8.04
04/16/01	**160**	5.08
08/14/01	**1,700**	7.44
10/22/01	**1,100**	7.00
01/02/02	**2,600**	7.86
10/05/02	**490**	6.19
08/07/02	**170**	5.14
02/10/02	**240**	5.48
04/29/03	**1,300**	7.17
09/10/03	**210**	5.35
12/04/04	**770**	6.65
07/23/04	**1,100**	7.00
12/10/04	**150**	5.01
02/14/05	**1,500**	7.31
04/27/05	**3,000**	8.01
07/19/05	**1,800**	7.50
10/18/05	**2,500**	7.82
01/23/06	**1,300**	7.17
12/04/06	**940**	6.85
10/07/06	**1,700**	7.44
10/16/06	**3,200**	8.07
01/26/07	**2,000**	7.60
04/18/07	**2,300**	7.74
02/08/07	**3,600**	8.19
10/23/07	**1,700**	7.44
01/30/08	**1,300**	7.17
04/18/08	**2,300**	7.74
07/28/08	**3,400**	8.13
05/12/08	**2,400**	7.78
01/26/09	**1,600**	7.38
03/08/09	**2,300**	7.74
01/25/10	**690**	6.54
03/08/10	**1,600**	7.38
07/17/11	**3,400**	8.13
08/23/11	**1,800**	7.50
02/07/12	**1,800**	7.50
08/23/11	**1,500.00**	7.31
02/07/12	**1,600.00**	7.38



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.210533041
R Square	0.044324161
Adjusted R Square	0.026626461
Standard Error	0.890742151
Observations	56

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.987136441	1.987136441	2.504515245	0.119360331
Residual	54	42.84476527	0.793421579		
Total	55	44.83190171			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	11.75360225	2.698901269	4.354958213	5.98233E-05	6.342631029	17.16457347	7.236815798	16.2703887
X Variable 1	-0.00011238	7.10111E-05	-1.582566032	0.119360331	-0.000254748	2.99889E-05	-0.000231221	6.46193E-06

Abbreviations:

LN Natural Log

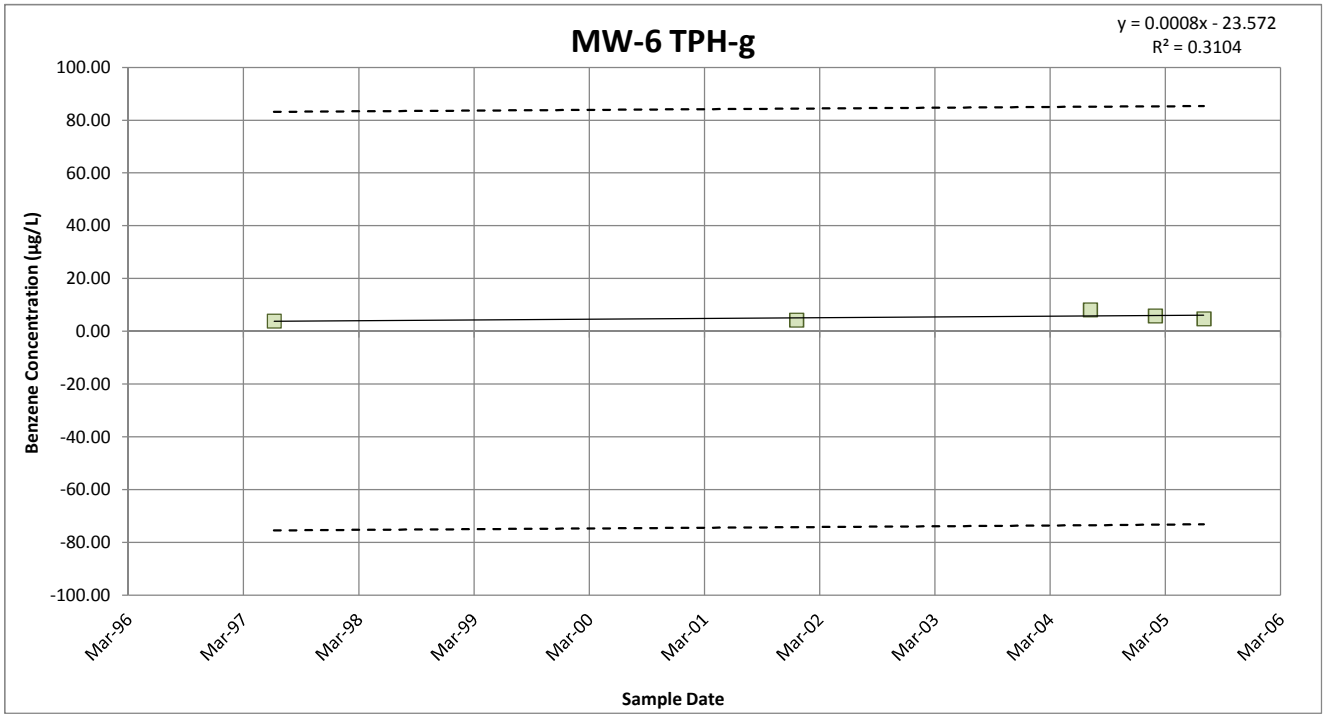
Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence

(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-6
Constituent: TPH-g

Sample Date	Detected Concentration (µg/L)	LN Concentration
06/18/97	**51**	3.93
01/02/02	**70**	4.25
07/23/04	**3,300**	8.10
02/14/05	**350**	5.86
07/19/05	**110**	4.70



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.557129403
R Square	0.310393172
Adjusted R Square	0.080524229
Standard Error	1.62407847
Observations	5

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.561606034	3.561606034	1.350304951	0.329270416
Residual	3	7.912892633	2.637630878		
Total	4	11.47449867			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-23.57222483	24.91562644	-0.946081965	0.413903369	-102.8648681	55.72041847	-82.20774905	35.06329939
X Variable 1	0.000769701	0.000662379	1.162026227	0.329270416	-0.001338283	0.002877686	-0.000789116	0.002328519

Abbreviations:

LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence

(2) Linear regressions were performed on log-normalized concentration data.

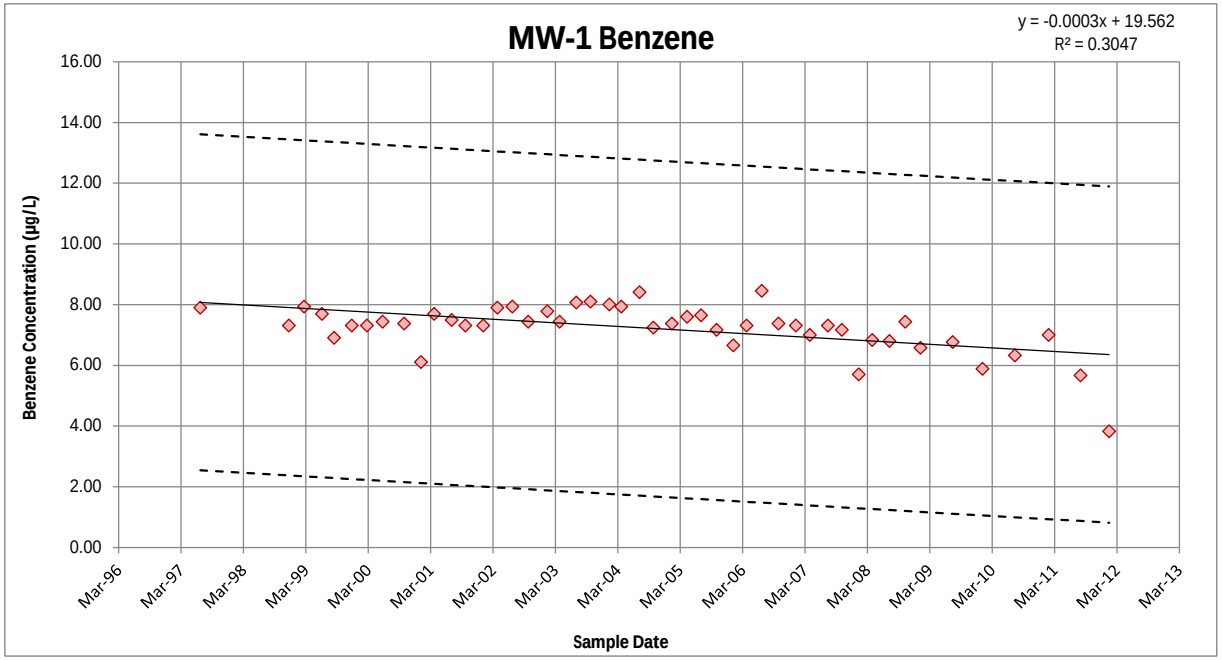
ARCADIS

Summary of Statistical Analysis and Linear Regression

726 Harrison Street

Location: 726 Harrison Street
Well ID: MW-1
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	Normalized Concentration
7/3/1997	**2,700**	7.90
12/5/1998	**1,500**	7.31
3/4/1999	**2,800**	7.94
6/17/1999	**2,200**	7.70
8/27/1999	**1,000**	6.91
12/9/1999	**1,500**	7.31
3/7/2000	**1,500**	7.31
6/7/2000	**1,700**	7.44
10/11/2000	**1,600**	7.38
1/18/2001	**450**	6.11
4/5/2001	**2,200**	7.70
7/17/2001	**1,800**	7.50
10/5/2001	**1,500**	7.31
1/18/2002	**1,500**	7.31
4/11/2002	**2,700**	7.90
7/8/2002	**2,800**	7.94
10/9/2002	**1,700**	7.44
1/29/2003	**2,400**	7.78
4/11/2003	**1,700**	7.44
7/18/2003	**3,200**	8.07
10/9/2003	**3,300**	8.10
1/28/2004	**3,000**	8.01
4/7/2004	**2,800**	7.94
7/23/2004	**4,500**	8.41
10/12/2004	**1,400**	7.24
1/29/2005	**1,600**	7.38
4/28/2005	**2,000**	7.60
7/19/2005	**2,100**	7.65
10/18/2005	**1,300**	7.17
1/24/2006	**780**	6.66
4/12/2006	**1,500**	7.31
7/10/2006	**4,700**	8.46
10/16/2006	**1,600**	7.38
1/26/2007	**1,500**	7.31
4/18/2007	**1,100**	7.00
8/2/2007	**1,500**	7.31
10/23/2007	**1,300**	7.17
1/30/2008	**300**	5.70
4/18/2008	**930**	6.84
7/28/2008	**900**	6.80
10/29/2008	**1,700**	7.44
1/26/2009	**720**	6.58
8/3/2009	**870**	6.77
1/25/2010	**360**	5.89
8/3/2010	**560**	6.33
2/17/2011	**1,100**	7.00
8/23/2011	**290**	5.67
2/7/2012	**46**	3.83



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.552021043
R Square	0.304727232
Adjusted R Square	0.289612607
Standard Error	0.679070276
Observations	48

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	19.561698
Slope	-0.000323
Date Objective is Reached	12/13/2044

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	9.297010501	9.297010501	20.161084	4.75463E-05
Residual	46	21.21227624	0.46113644		
Total	47	30.50928674			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	19.561698	2.750002132	7.113339211	6.16212E-09	14.0262309	25.0971651	14.94537828	24.17801772
X Variable 1	-0.00032254	7.18334E-05	-4.490109575	4.75463E-05	-0.000467133	-0.000177947	-0.000443124	-0.000201956

Abbreviations:

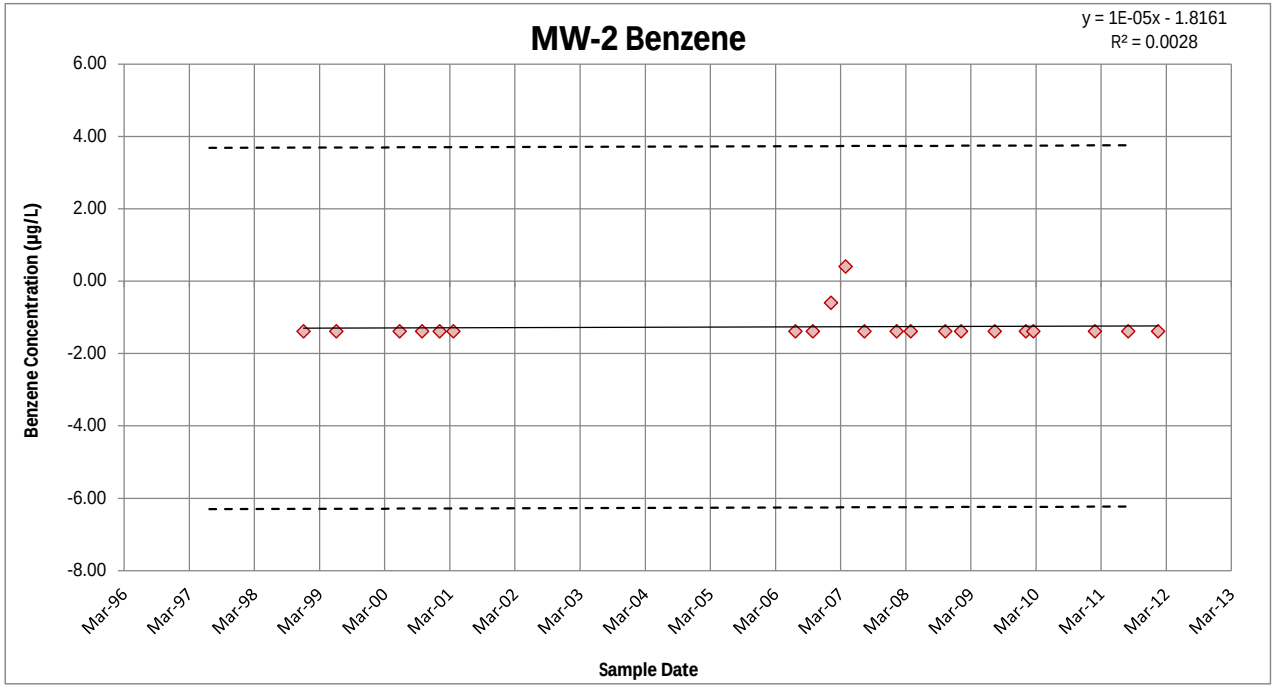
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-2
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	LN Concentration
12/15/1998	0.25	-1.39
6/17/1999	0.25	-1.39
6/7/2000	0.25	-1.39
10/11/2000	0.25	-1.39
1/18/2001	0.25	-1.39
4/5/2001	0.25	-1.39
7/10/2006	0.25	-1.39
10/16/2006	0.25	-1.39
1/26/2007	0.55	-0.60
4/18/2007	**1.5**	0.41
8/2/2007	0.25	-1.39
1/30/2008	0.25	-1.39
4/18/2008	0.25	-1.39
10/29/2008	0.25	-1.39
1/26/2009	0.25	-1.39
8/3/2009	0.25	-1.39
1/25/2010	0.25	-1.39
3/8/2010	0.25	-1.39
2/17/2011	0.25	-1.39
8/23/2011	0.25	-1.39
2/7/2012	0.25	-1.39



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.05312263
R Square	0.002822014
Adjusted R Square	-0.049661038
Standard Error	0.429511522
Observations	21

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	-1.816082
Slope	0.000014
Date Objective is Reached	09/27/2728

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.009919498	0.009919498	0.053770003	0.819107591
Residual	19	3.505122798	0.184480147		
Total	20	3.515042296			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-1.816081901	2.385171698	-0.761405103	0.455762493	-6.808303628	3.176139825	-5.940360499	2.308196697
X Variable 1	1.42091E-05	6.1277E-05	0.231883598	0.819107591	-0.000114045	0.000142463	-9.17469E-05	0.000120165

Abbreviations:

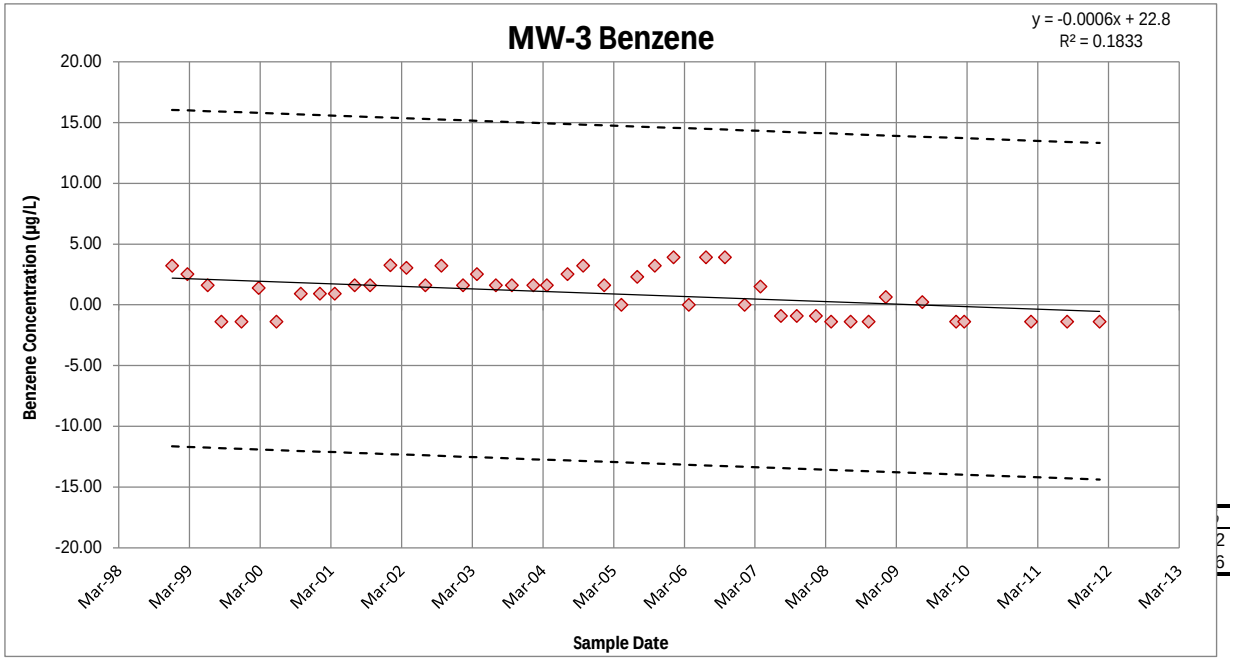
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-3
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	LN Concentration
12/15/98	25	3.22
03/04/99	13	2.53
06/17/99	5	1.61
08/27/99	0	-1.39
12/09/99	0	-1.39
03/07/00	**4**	1.39
06/07/00	0.25	-1.39
10/11/00	2.5	0.92
01/18/01	2.5	0.92
04/05/01	2.5	0.92
07/17/01	5	1.61
10/05/01	5	1.61
01/18/02	**26**	3.26
04/11/02	**21**	3.04
07/18/02	5	1.61
10/09/02	25	3.22
01/29/03	5	1.61
04/11/03	12.5	2.53
07/18/03	5	1.61
10/09/03	5	1.61
01/28/04	5	1.61
04/07/04	5	1.61
07/23/04	12.5	2.53
10/12/04	25	3.22
01/29/05	5	1.61
04/28/05	1	0.00
07/19/05	10	2.30
10/18/05	25	3.22
01/23/06	50	3.91
04/12/06	1	0.00
07/10/06	50	3.91
10/16/06	50	3.91
01/26/07	1	0.00
04/18/07	4.5	1.50
08/02/07	0.4	-0.92
10/23/07	0	-0.92
01/30/08	0.4	-0.92
04/18/08	0.25	-1.39
07/28/08	0	-1.39
10/29/08	0.25	-1.39
01/26/09	**1.9**	0.64
08/03/09	1.25	0.22
01/25/10	0.25	-1.39
03/08/10	0.25	-1.39
02/17/11	0.25	-1.39
08/23/11	0.25	-1.39
02/07/12	0.25	-1.39



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.428081662
R Square	0.183253909
Adjusted R Square	0.165103996
Standard Error	1.619816346
Observations	47

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	22.799802
Slope	-0.000570
Date Objective is Reached	08/04/1997

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	26.4917258	26.4917258	10.09668243	0.002684658
Residual	45	118.0712248	2.623804995		
Total	46	144.5629506			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	22.79980245	6.875429083	3.316127935	0.001811214	8.951977636	36.64762726	11.25301851	34.34658639
X Variable 1	-0.000569895	0.000179352	-3.177527723	0.002684658	-0.000931127	-0.000208662	-0.000871103	-0.000268687

Abbreviations:

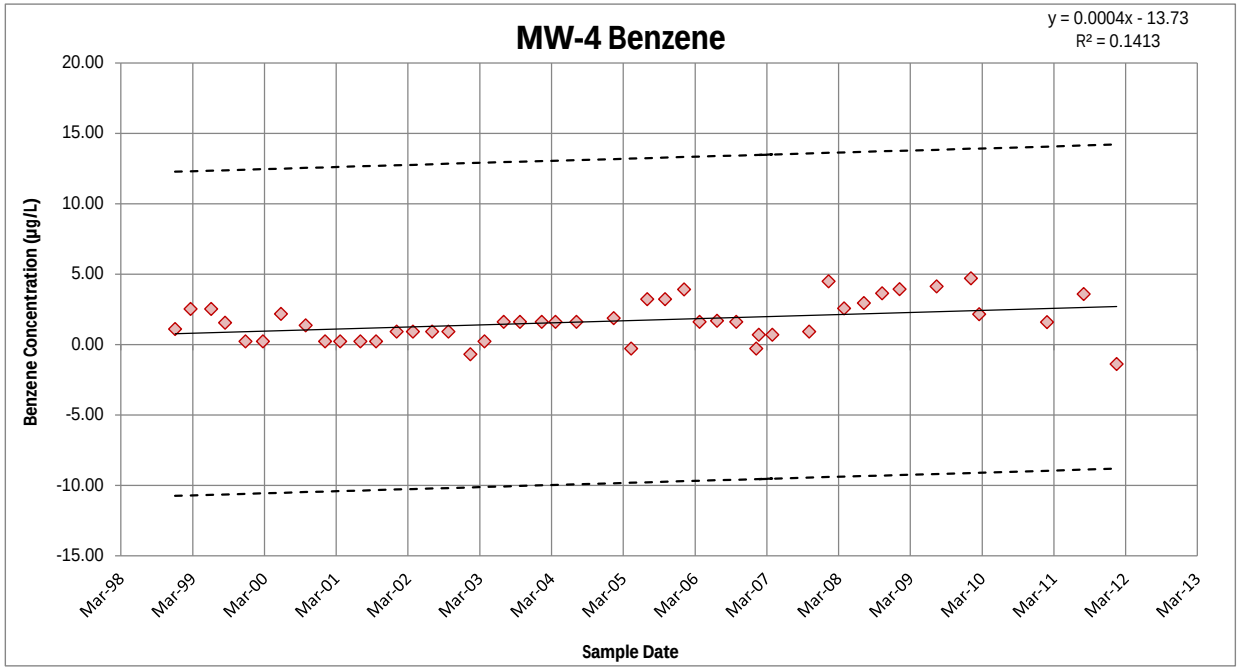
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-4
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	LN Concentration
12/15/98	**3**	1.10
03/04/99	12.5	2.53
06/17/99	12.5	2.53
08/27/99	**4.7**	1.55
12/09/99	1.25	0.22
03/07/00	1.25	0.22
06/07/00	**8.8**	2.17
10/11/00	**3.9**	1.36
01/18/01	1.25	0.22
04/05/01	1.25	0.22
07/17/01	1.25	0.22
10/05/01	1.25	0.22
01/18/02	2.5	0.92
04/11/02	2.5	0.92
07/18/02	2.5	0.92
10/09/02	2.5	0.92
01/29/03	0.5	-0.69
04/11/03	1.25	0.22
07/18/03	5	1.61
10/09/03	5	1.61
01/28/04	5	1.61
04/07/04	5	1.61
07/23/04	5	1.61
01/29/05	6.5	1.87
04/28/05	0.75	-0.29
07/19/05	25	3.22
10/18/05	25	3.22
01/23/06	50	3.91
04/12/06	5	1.61
07/10/06	**5.4**	1.69
10/16/06	5	1.61
01/26/07	0.75	-0.29
04/18/07	2	0.69
02/08/07	2	0.69
10/23/07	2.5	0.92
01/30/08	**89**	4.49
04/18/08	**13**	2.56
07/28/08	**19**	2.94
10/29/08	**38**	3.64
01/26/09	**51**	3.93
08/03/09	**62**	4.13
01/25/10	**110**	4.70
03/08/10	**8.6**	2.15
02/17/11	**4.9**	1.59
08/23/11	**36**	3.58
02/07/12	0.25	-1.39



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.375901036
R Square	0.141301589
Adjusted R Square	0.121785716
Standard Error	1.34320237
Observations	46

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	-13.730092
Slope	0.000401
Date Objective is Reached	09/19/2010

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	13.06297099	13.06297099	7.240341716	0.010038308
Residual	44	79.38447468	1.804192606		
Total	45	92.44744568			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-13.7300916	5.712009725	-2.403723428	0.02050865	-25.24189062	-2.218292571	-23.32758157	-4.132601628
X Variable 1	0.000400961	0.000149013	2.690788308	0.010038308	0.000100646	0.000701277	0.000150586	0.000651337

Abbreviations:

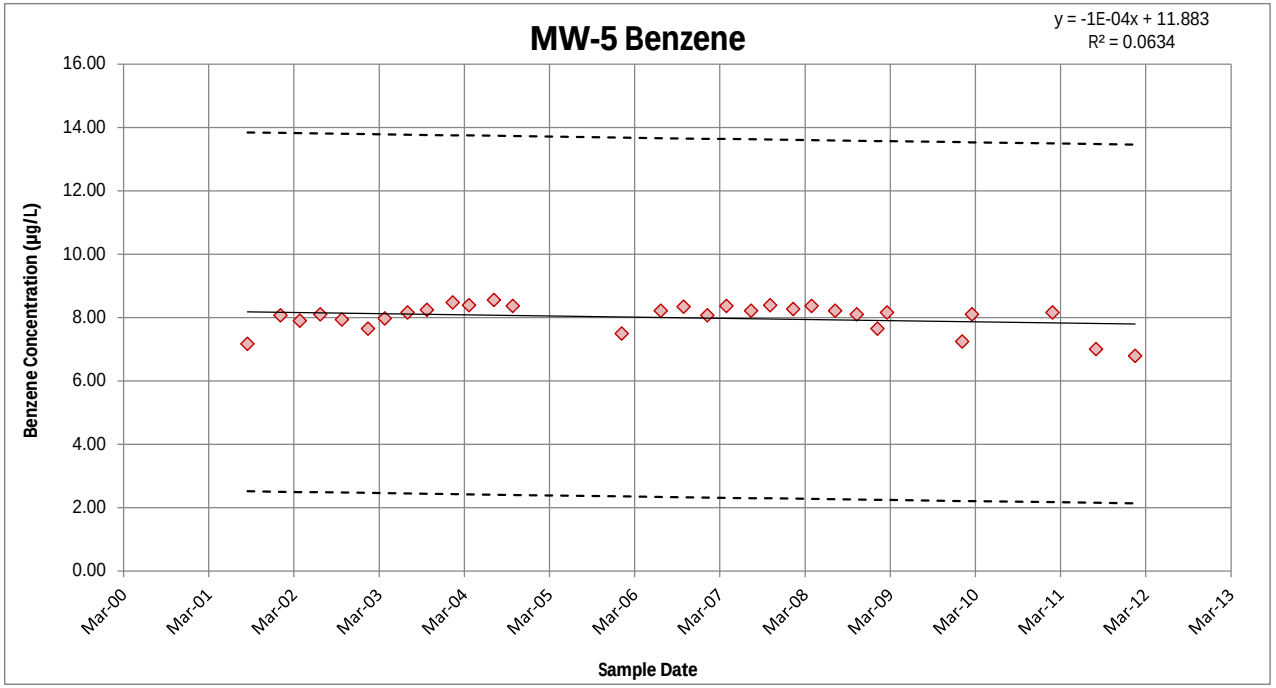
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-5
Constituent: Benzene

Sample Date	Detected Concentration (µg/L)	LN Concentration
08/29/01	**1,300**	7.17
01/18/02	**3,200**	8.07
04/11/02	**2,700**	7.90
07/08/02	**3,300**	8.10
10/09/02	**2,800**	7.94
01/29/03	**2,100**	7.65
04/11/03	**2,900**	7.97
07/18/03	**3,500**	8.16
10/09/03	**3,800**	8.24
01/28/04	**4,800**	8.48
04/07/04	**4,400**	8.39
07/23/04	**5,200**	8.56
10/12/04	**4,300**	8.37
01/23/06	**1,800**	7.50
07/10/06	**3,700**	8.22
10/16/06	**4,200**	8.34
01/26/07	**3,200**	8.07
04/18/07	**4,300**	8.37
08/02/07	**3,700**	8.22
10/23/07	**4,400**	8.39
01/30/08	**3,900**	8.27
04/18/08	**4,300**	8.37
07/28/08	**3,700**	8.22
10/29/08	**3,300**	8.10
01/26/09	**2,100**	7.65
03/08/09	**3,500**	8.16
01/25/10	**1,400**	7.24
03/08/10	**3,300**	8.10
02/17/11	**3,500**	8.16
08/23/11	**1,100**	7.00
02/07/12	**890**	6.79



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.251808896
R Square	0.06340772
Adjusted R Square	0.031111435
Standard Error	0.439396613
Observations	31

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	11.882962
Slope	-0.000100
Date Objective is Reached	11/25/2157

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.379055647	0.379055647	1.963313088	0.171770668
Residual	29	5.599012118	0.193069383		
Total	30	5.978067765			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	11.88296238	2.768736505	4.291835775	0.000180211	6.220260498	17.54566427	7.178527444	16.58739732
X Variable 1	-9.97683E-05	7.12029E-05	-1.401182746	0.171770668	-0.000245395	4.5858E-05	-0.000220751	2.12145E-05

Abbreviations:

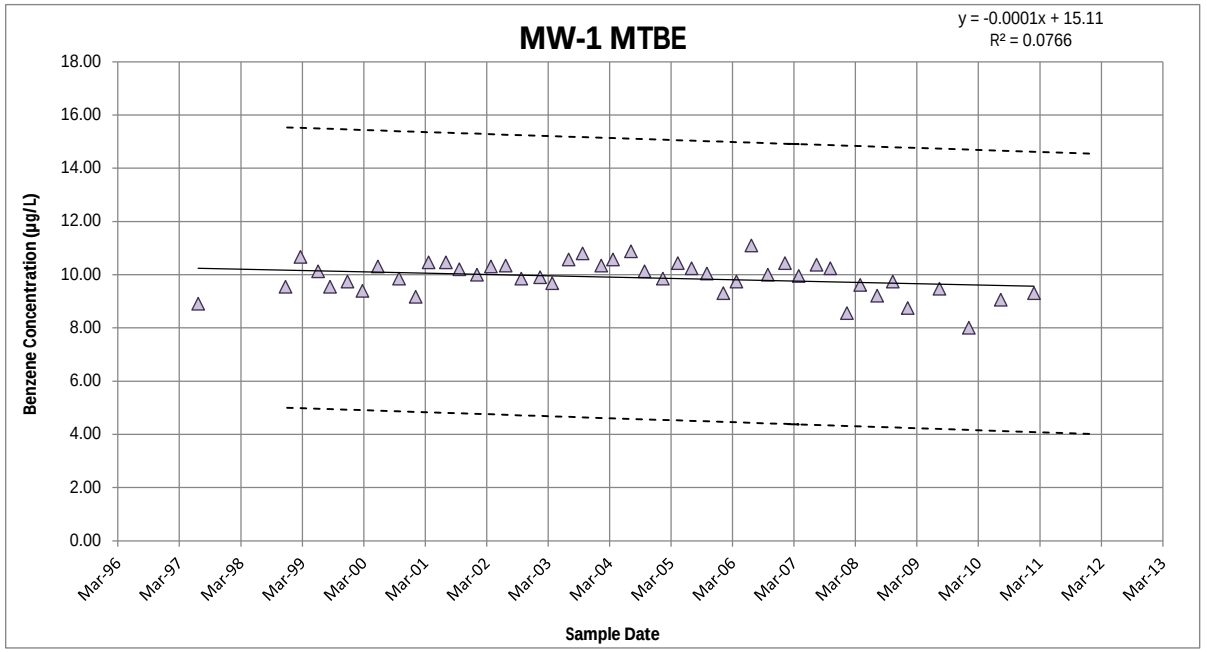
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-1
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
7/3/1997	**7,400**	8.91
12/5/1998	**14,000**	9.55
3/4/1999	**43,000**	10.67
6/17/1999	**25,000**	10.13
8/27/1999	**14,000**	9.55
12/9/1999	**17,000**	9.74
3/7/2000	**12,000**	9.39
6/7/2000	**30,000**	10.31
10/11/2000	**19,000**	9.85
1/18/2001	**9,600**	9.17
4/5/2001	**35,000**	10.46
7/17/2001	**35,000**	10.46
10/5/2001	**27,000**	10.20
1/18/2002	**22,000**	10.00
4/11/2002	**30,000**	10.31
7/8/2002	**31,000**	10.34
10/9/2002	**19,000**	9.85
1/29/2003	**20,000**	9.90
4/11/2003	**16,000**	9.68
7/18/2003	**39,000**	10.57
10/9/2003	**49,000**	10.80
1/28/2004	**31,000**	10.34
4/7/2004	**39,000**	10.57
7/23/2004	**53,000**	10.88
10/12/2004	**25,000**	10.13
1/29/2005	**19,000**	9.85
4/28/2005	**34,000**	10.43
7/19/2005	**28,000**	10.24
10/18/2005	**23,000**	10.04
1/24/2006	**11,000**	9.31
4/12/2006	**17,000**	9.74
7/10/2006	**66,000**	11.10
10/16/2006	**22,000**	10.00
1/26/2007	**34,000**	10.43
4/18/2007	**21,000**	9.95
8/2/2007	**32,000**	10.37
10/23/2007	**28,000**	10.24
1/30/2008	**5,200**	8.56
4/18/2008	**15,000**	9.62
7/28/2008	**10,000**	9.21
10/29/2008	**17,000**	9.74
1/26/2009	**6,300**	8.75
8/3/2009	**13,000**	9.47
1/25/2010	**3,000**	8.01
8/3/2010	**8,600**	9.06
2/17/2011	**11,000**	9.31
8/23/2011	**4,700**	8.46
2/7/2012	**3,800**	8.24



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.405260697
R Square	0.164236232
Adjusted R Square	0.146067455
Standard Error	0.645634836
Observations	48

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	17.687094
Slope	-0.000205
Date Objective is Reached	05/15/2114

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.768054496	3.768054496	9.039476195	0.004270753
Residual	46	19.17483968	0.416844341		
Total	47	22.94289418			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	17.68709382	2.614600044	6.76474165	2.05501E-08	12.42417698	22.95001066	13.29806823	22.07611941
X Variable 1	-0.00020534	6.82965E-05	-3.006572167	0.004270753	-0.000342812	-6.78646E-05	-0.000319985	-9.06917E-05

Abbreviations:

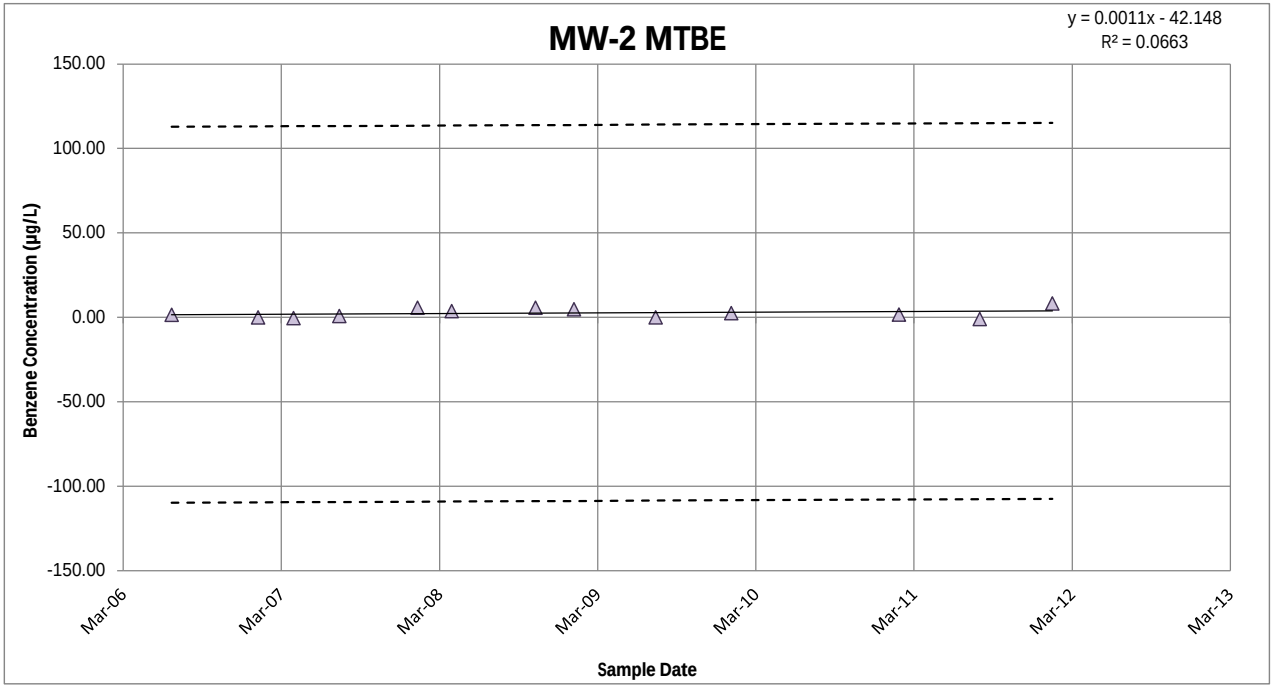
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-2
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
7/10/2006	**4.5**	1.50
1/26/2007	**0.97**	-0.03
4/18/2007	**0.64**	-0.45
8/2/2007	**2.2**	0.79
1/30/2008	**300**	5.70
4/18/2008	**40**	3.69
10/29/2008	**300**	5.70
1/26/2009	**120**	4.79
8/3/2009	**1**	0.00
1/25/2010	**12**	2.48
2/17/2011	**5.2**	1.65
8/23/2011	**0.37**	-0.99
2/7/2012	**3,800**	8.24



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.257437985
R Square	0.066274316
Adjusted R Square	-0.01860984
Standard Error	2.888876152
Observations	13

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	-42.147803
Slope	0.001122
Date Objective is Reached	NA

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6.51593111	6.51593111	0.780761944	0.395809707
Residual	11	91.80165964	8.345605421		
Total	12	98.31759075			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-42.1478032	50.58600277	-0.833191019	0.422459613	-153.4868445	69.19123815	-132.9944374	48.698831
X Variable 1	0.001122343	0.001270183	0.883607347	0.395809707	-0.001673311	0.003917996	-0.001158759	0.003403445

Abbreviations:

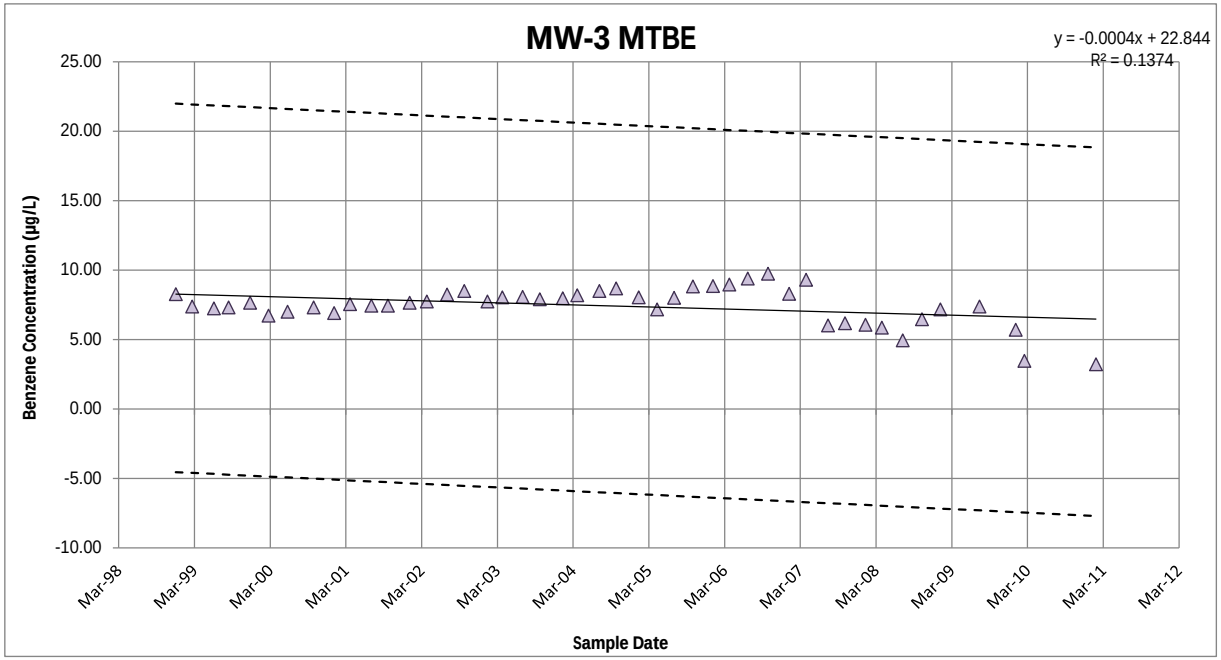
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-3
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
12/15/98	**3,900**	8.27
03/04/99	**1,600**	7.38
06/17/99	**1,400**	7.24
08/27/99	**1,500**	7.31
12/09/99	**2,100**	7.65
03/07/00	**830**	6.72
06/07/00	**1,100**	7.00
10/11/00	**1,500**	7.31
01/18/01	**1,000**	6.91
04/05/01	**1,900**	7.55
07/17/01	**1,700**	7.44
10/05/01	**1,700**	7.44
01/18/02	**2,100**	7.65
04/11/02	**2,300**	7.74
07/18/02	**3,800**	8.24
10/09/02	**4,900**	8.50
01/29/03	**2,300**	7.74
04/11/03	**3,100**	8.04
07/18/03	**3,200**	8.07
10/09/03	**2,700**	7.90
01/28/04	**2,900**	7.97
04/07/04	**3,600**	8.19
07/23/04	**4,900**	8.50
10/12/04	**5,900**	8.68
01/29/05	**3,100**	8.04
04/28/05	**1,300**	7.17
07/19/05	**3,000**	8.01
10/18/05	**6,800**	8.82
01/23/06	**7,000**	8.85
04/12/06	**7,800**	8.96
07/10/06	**12,000**	9.39
10/16/06	**17,000**	9.74
01/26/07	**4,000**	8.29
04/18/07	**11,000**	9.31
08/02/07	**410**	6.02
10/23/07	**480**	6.17
01/30/08	**430**	6.06
04/18/08	**350**	5.86
07/28/08	**140**	4.94
10/29/08	**640**	6.46
01/26/09	**1,300**	7.17
08/03/09	**1,600**	7.38
01/25/10	**300**	5.70
03/08/10	**32**	3.47
02/17/11	**25**	3.22
08/23/11	**9.1**	2.21
02/07/12	**2.1**	0.74



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.524490213
R Square	0.275089984
Adjusted R Square	0.258980872
Standard Error	1.552125426
Observations	47

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	34.388123
Slope	-0.000710
Date Objective is Reached	05/13/2026

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	41.13929241	41.13929241	17.07667019	0.000154119
Residual	45	108.4092003	2.40909334		
Total	46	149.5484927			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	34.38812315	6.588110018	5.219725088	4.41124E-06	21.11898863	47.65725766	23.32387071	45.45237558
X Variable 1	-0.00071018	0.000171857	-4.132392792	0.000154119	-0.001056316	-0.000364042	-0.0009988	-0.000421558

Abbreviations:

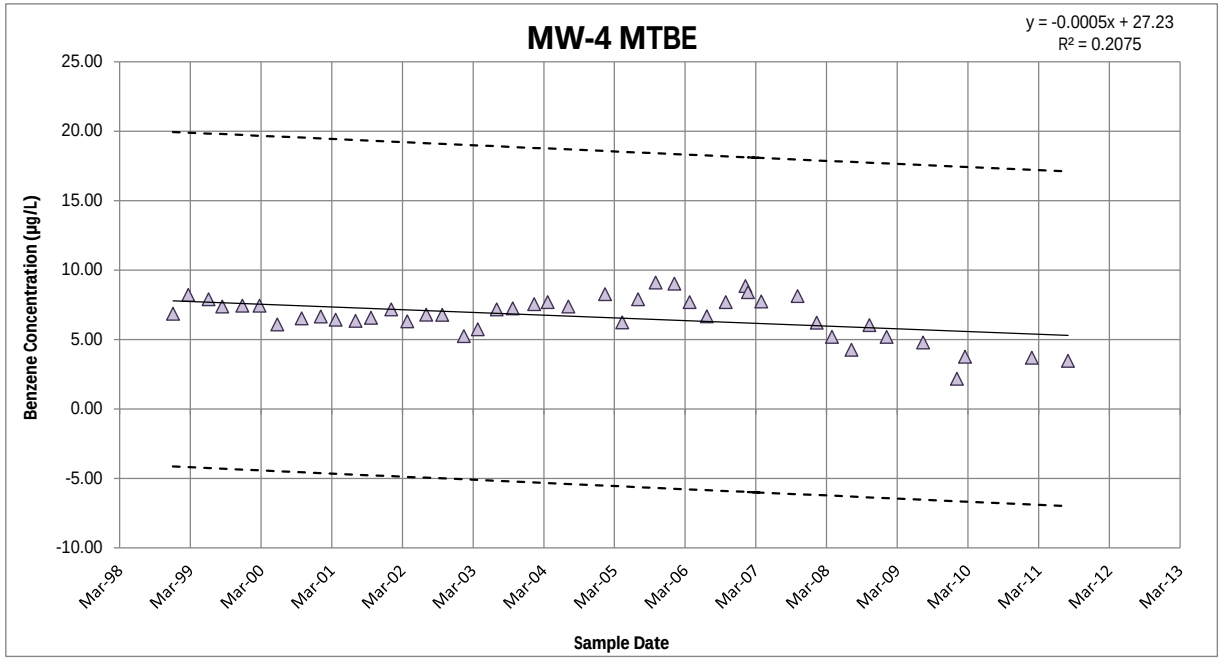
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-4
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
12/15/98	**950**	6.86
03/04/99	**3,700**	8.22
06/17/99	**2,700**	7.90
08/27/99	**1,600**	7.38
12/09/99	**1,700**	7.44
03/07/00	**1,700**	7.44
06/07/00	**440**	6.09
10/11/00	**680**	6.52
01/18/01	**780**	6.66
04/05/01	**620**	6.43
07/17/01	**570**	6.35
10/05/01	**710**	6.57
01/18/02	**1,300**	7.17
04/11/02	**550**	6.31
07/18/02	**890**	6.79
10/09/02	**880**	6.78
01/29/03	**190**	5.25
04/11/03	**310**	5.74
07/18/03	**1,300**	7.17
10/09/03	**1,400**	7.24
01/28/04	**1,900**	7.55
04/07/04	**2,200**	7.70
07/23/04	**1,600**	7.38
01/29/05	**3,900**	8.27
04/28/05	**510**	6.23
07/19/05	**2,700**	7.90
10/18/05	**9,000**	9.10
01/23/06	**8,300**	9.02
04/12/06	**2,200**	7.70
07/10/06	**790**	6.67
10/16/06	**2,200**	7.70
01/26/07	**7,000**	8.85
04/18/07	**2,300**	7.74
02/08/07	**4,500**	8.41
10/23/07	**3,400**	8.13
01/30/08	**500**	6.21
04/18/08	**180**	5.19
07/28/08	**71**	4.26
10/29/08	**420**	6.04
01/26/09	**180**	5.19
08/03/09	**120**	4.79
01/25/10	**8.8**	2.17
03/08/10	**43**	3.76
02/17/11	**40**	3.69
08/23/11	**32**	3.47
02/07/12	**17**	2.83



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.510891724
R Square	0.261010354
Adjusted R Square	0.244215135
Standard Error	1.405921029
Observations	46

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	30.125868
Slope	-0.000615
Date Objective is Reached	12/22/2026

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	30.71806904	30.71806904	15.54075301	0.000285656
Residual	44	86.97101336	1.97661394		
Total	45	117.6890824			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	30.12586841	5.978722768	5.038846854	8.47997E-06	18.07654457	42.17519225	20.08023919	40.17149763
X Variable 1	-0.00061486	0.00015597	-3.942176177	0.000285656	-0.000929201	-0.000300525	-0.000876929	-0.000352797

Abbreviations:

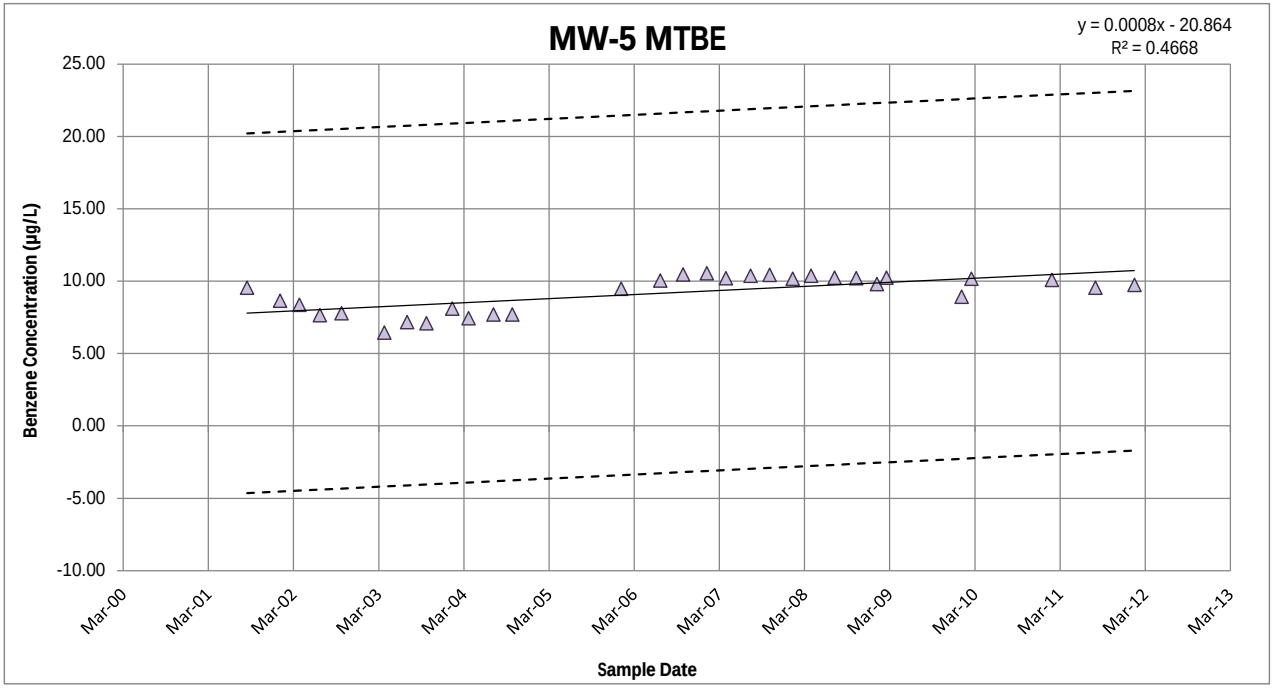
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 726 Harrison Street
Well ID: MW-5
Constituent: MTBE

Sample Date	Detected Concentration (µg/L)	LN Concentration
08/29/01	**14,000**	9.55
01/18/02	**5,700**	8.65
04/11/02	**4,300**	8.37
07/08/02	**2,100**	7.65
10/09/02	**2,400**	7.78
04/11/03	**630**	6.45
07/18/03	**1,300**	7.17
10/09/03	**1,200**	7.09
01/28/04	**3,300**	8.10
04/07/04	**1,700**	7.44
07/23/04	**2,200**	7.70
10/12/04	**2,200**	7.70
01/23/06	**13,000**	9.47
07/10/06	**23,000**	10.04
10/16/06	**35,000**	10.46
01/26/07	**38,000**	10.55
04/18/07	**27,000**	10.20
08/02/07	**32,000**	10.37
10/23/07	**34,000**	10.43
01/30/08	**26,000**	10.17
04/18/08	**32,000**	10.37
07/28/08	**28,000**	10.24
10/29/08	**27,000**	10.20
01/26/09	**18,000**	9.80
03/08/09	**28,000**	10.24
01/25/10	**7,500**	8.92
03/08/10	**26,000**	10.17
02/17/11	**24,000**	10.09
08/23/11	**14,000**	9.55
02/07/12	**17,000**	9.74



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.683198618
R Square	0.466760351
Adjusted R Square	0.447716078
Standard Error	0.942091108
Observations	30

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	-20.864374
Slope	0.000772
Date Objective is Reached	NA

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	21.75280991	21.75280991	24.50922367	3.17376E-05
Residual	28	24.85099836	0.887535656		
Total	29	46.60380827			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-20.8643737	6.066136469	-3.439483066	0.001844455	-33.29029076	-8.438456558	-31.1836659	-10.54508142
X Variable 1	0.000771509	0.000155839	4.950679112	3.17376E-05	0.000452287	0.001090731	0.000506407	0.001036612

Abbreviations:

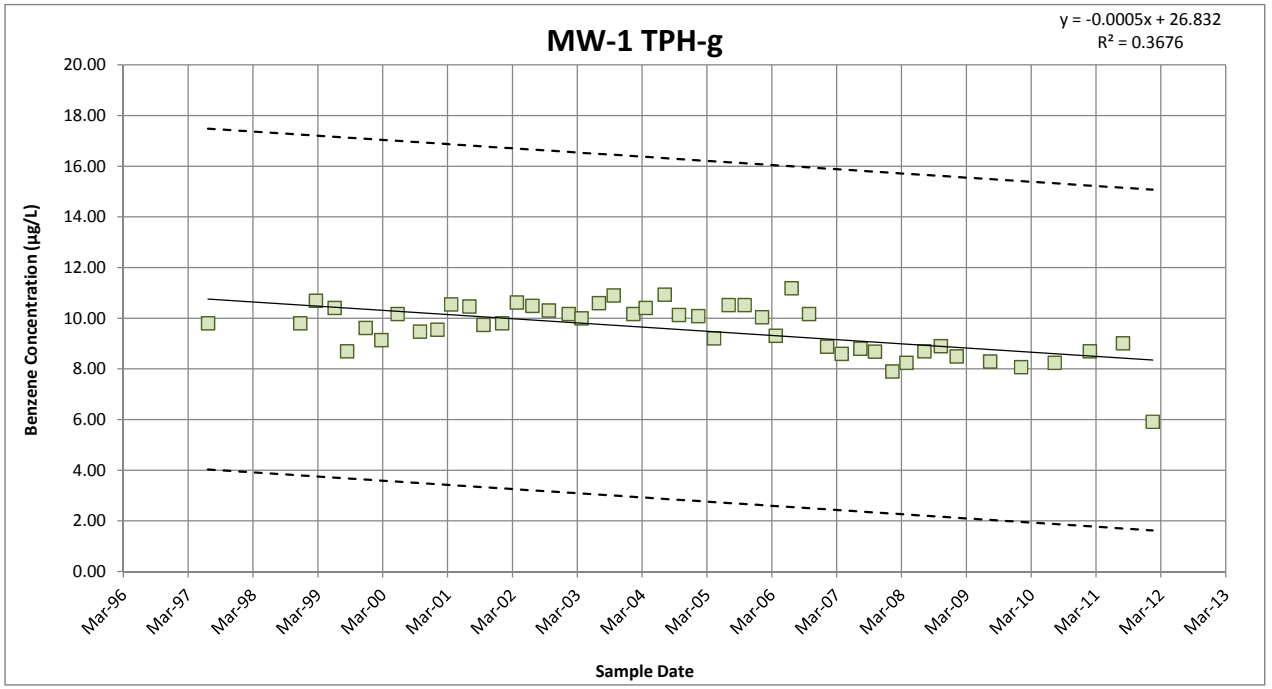
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Well ID: MW-1
Constituent: TPH-g

Sample Date	Detected Concentration (µg/L)	Normalized Concentration
7/3/1997	**18,000**	9.80
12/5/1998	**18,000**	9.80
3/4/1999	**44,000**	10.69
6/17/1999	**33,000**	10.40
8/27/1999	**6,000**	8.70
12/9/1999	**15,000**	9.62
3/7/2000	**9,300**	9.14
6/7/2000	**26,000**	10.17
10/11/2000	**13,000**	9.47
1/18/2001	**14,000**	9.55
4/5/2001	**38,000**	10.55
7/17/2001	**35,000**	10.46
10/5/2001	**17,000**	9.74
1/18/2002	**18,000**	9.80
4/11/2002	**41,000**	10.62
7/8/2002	**36,000**	10.49
10/9/2002	**30,000**	10.31
1/29/2003	**26,000**	10.17
4/11/2003	**22,000**	10.00
7/18/2003	**40,000**	10.60
10/9/2003	**54,000**	10.90
1/28/2004	**26,000**	10.17
4/7/2004	**33,000**	10.40
7/23/2004	**56,000**	10.93
10/12/2004	**25,000**	10.13
1/29/2005	**24,000**	10.09
4/28/2005	**10,000**	9.21
7/19/2005	**37,000**	10.52
10/18/2005	**37,000**	10.52
1/24/2006	**23,000**	10.04
4/12/2006	**11,000**	9.31
7/10/2006	**72,000**	11.18
10/16/2006	**26,000**	10.17
1/26/2007	**7,200**	8.88
4/18/2007	**5,400**	8.59
8/2/2007	**6,600**	8.79
10/23/2007	**5,900**	8.68
1/30/2008	**2,700**	7.90
4/18/2008	**3,800**	8.24
7/28/2008	**6,000**	8.70
10/29/2008	**7,300**	8.90
1/26/2009	**4,900**	8.50
8/3/2009	**4,000**	8.29
1/25/2010	**3,200**	8.07
8/3/2010	**3,800**	8.24
2/17/2011	**6,000**	8.70
8/23/2011	**8,200**	9.01
2/7/2012	**370**	5.91



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.606330112
R Square	0.367636204
Adjusted R Square	0.353889165
Standard Error	0.825098842
Observations	48

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	18.2062735	18.2062735	26.7429374	4.93538E-06
Residual	46	31.31625253	0.680788099		
Total	47	49.52252604			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	26.83181589	3.341367828	8.030189212	2.66953E-10	20.1059914	33.55764038	21.22279398	32.44083779
X Variable 1	-0.00045136	8.72806E-05	-5.171357404	4.93538E-06	-0.000627046	-0.000275672	-0.000597873	-0.000304845

Abbreviations:

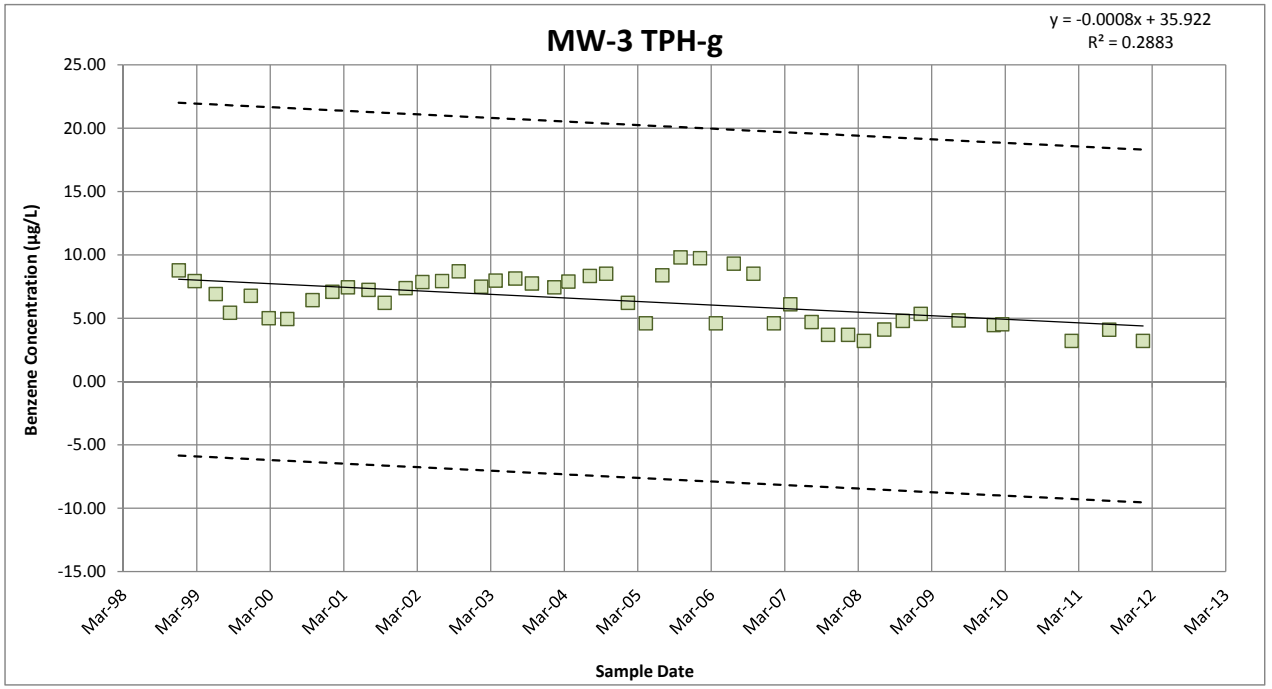
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-3
Constituent: TPH-g

Sample Date	Detected Concentration (µg/L)	Normalized Concentration
12/15/98	6,500	8.78
03/04/99	2,800	7.94
06/17/99	1,000	6.91
08/27/99	230	5.44
12/09/99	870	6.77
03/07/00	150	5.01
06/07/00	140	4.94
10/11/00	620	6.43
01/18/01	1,200	7.09
04/05/01	1,700	7.44
07/17/01	1,400	7.24
10/05/01	500	6.21
01/18/02	1,600	7.38
04/11/02	2,600	7.86
07/18/02	2,800	7.94
10/09/02	6,000	8.70
01/29/03	1,800	7.50
04/11/03	2,900	7.97
07/18/03	3,400	8.13
10/09/03	2,300	7.74
01/28/04	1,700	7.44
04/07/04	2,700	7.90
07/23/04	4,200	8.34
10/12/04	5,000	8.52
01/29/05	500	6.21
04/28/05	100	4.61
07/19/05	4,400	8.39
10/18/05	18,000	9.80
01/23/06	17,000	9.74
04/12/06	100	4.61
07/10/06	11,000	9.31
10/16/06	5000	8.52
01/26/07	100	4.61
04/18/07	450	6.11
08/02/07	110	4.70
10/23/07	40	3.69
01/30/08	40	3.69
04/18/08	25	3.22
07/28/08	61	4.11
10/29/08	120	4.79
01/26/09	210	5.35
08/03/09	125	4.83
01/25/10	87	4.47
03/08/10	92	4.52
02/17/11	25	3.22
08/23/11	60	4.09
02/07/12	25	3.22



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.53696084
R Square	0.288326944
Adjusted R Square	0.272511987
Standard Error	1.629169931
Observations	47

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	48.38937245	48.38937245	18.23128239	9.97279E-05
Residual	45	119.4387599	2.654194665		
Total	46	167.8281324			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	35.92161433	6.915131059	5.1946397	4.79886E-06	21.99382564	49.84940303	24.3081538	47.53507486
X Variable 1	-0.00077022	0.000180387	-4.26981058	9.97279E-05	-0.001133538	-0.000406901	-0.001073167	-0.000467272

Abbreviations:

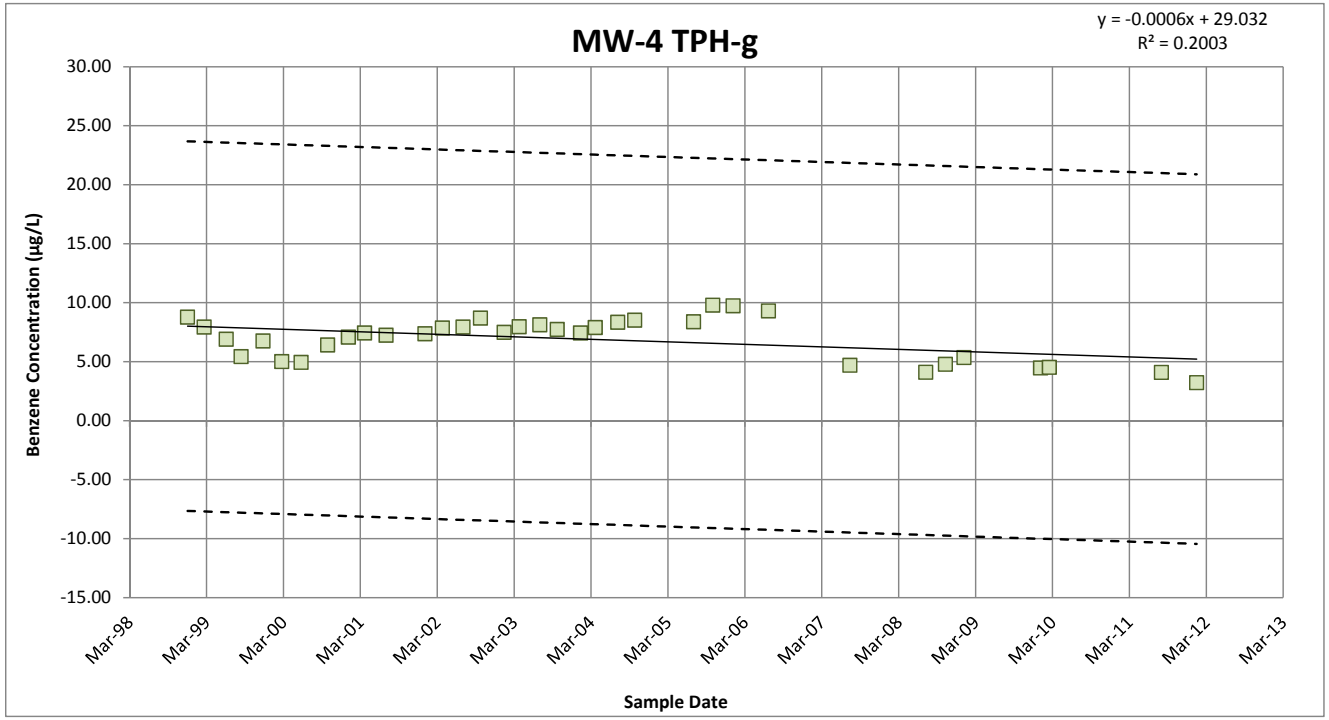
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-4
Constituent: TPH-g

Sample Date	Detected Concentration (µg/L)	Normalized Concentration
12/15/98	**6,500**	8.78
03/04/99	**2,800**	7.94
06/17/99	**1,000**	6.91
08/27/99	**230**	5.44
12/09/99	**870**	6.77
03/07/00	**150**	5.01
06/07/00	**140**	4.94
10/11/00	**620**	6.43
01/18/01	**1,200**	7.09
04/05/01	**1,700**	7.44
07/17/01	**1,400**	7.24
01/18/02	**1,600**	7.38
04/11/02	**2,600**	7.86
07/18/02	**2,800**	7.94
10/09/02	**6,000**	8.70
01/29/03	**1,800**	7.50
04/11/03	**2,900**	7.97
07/18/03	**3,400**	8.13
10/09/03	**2,300**	7.74
01/28/04	**1,700**	7.44
04/07/04	**2,700**	7.90
07/23/04	**4,200**	8.34
10/12/04	**5,000**	8.52
07/19/05	**4,400**	8.39
10/18/05	**18,000**	9.80
01/23/06	**17,000**	9.74
07/10/06	**11,000**	9.31
08/02/07	**110**	4.70
07/28/08	**61**	4.11
10/29/08	**120**	4.79
01/26/09	**210**	5.35
01/25/10	**87**	4.47
03/08/10	**92**	4.52
08/23/11	**60**	4.09
02/07/12	**25**	3.22



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.447541739
R Square	0.200293609
Adjusted R Square	0.176060082
Standard Error	1.610180871
Observations	35

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	21.42889562	21.42889562	8.265144747	0.00702317
Residual	33	85.55852039	2.592682436		
Total	34	106.987416			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	29.03233371	7.699417856	3.770718028	0.000641809	13.36775038	44.69691704	16.00214493	42.0625225
X Variable 1	-0.00058148	0.000202261	-2.874916477	0.00702317	-0.000992986	-0.00016998	-0.000923782	-0.000239185

Abbreviations:

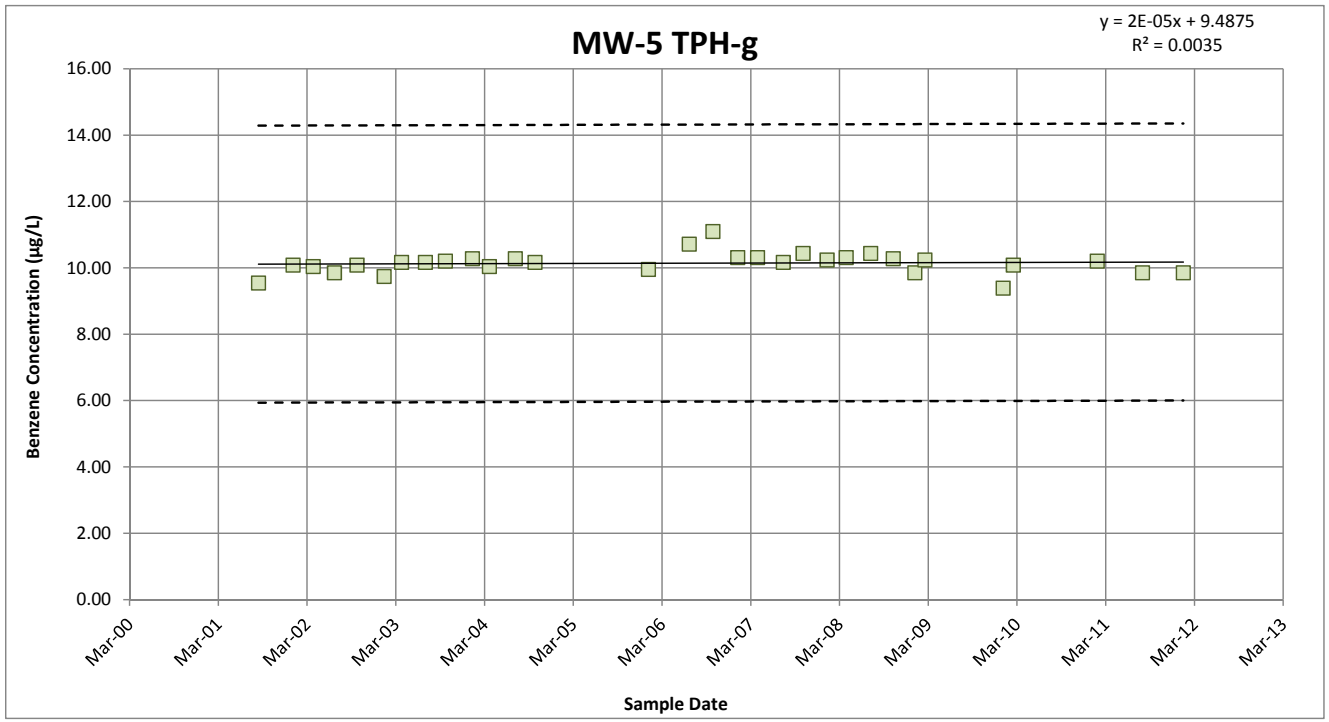
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-5
Constituent: TPH-g

Sample Date	Detected Concentration (µg/L)	Normalized Concentration
08/29/01	**14,000**	9.55
01/18/02	**24,000**	10.09
04/11/02	**23,000**	10.04
07/08/02	**19,000**	9.85
10/09/02	**24,000**	10.09
01/29/03	**17,000**	9.74
04/11/03	**26,000**	10.17
07/18/03	**26,000**	10.17
10/09/03	**27,000**	10.20
01/28/04	**29,000**	10.28
04/07/04	**23,000**	10.04
07/23/04	**29,000**	10.28
10/12/04	**26,000**	10.17
01/23/06	**21,000**	9.95
07/10/06	**45,000**	10.71
10/16/06	**66,000**	11.10
01/26/07	**30,000**	10.31
04/18/07	**30,000**	10.31
08/02/07	**26,000**	10.17
10/23/07	**34,000**	10.43
01/30/08	**28,000**	10.24
04/18/08	**30,000**	10.31
07/28/08	**34,000**	10.43
10/29/08	**29,000**	10.28
01/26/09	**19,000**	9.85
03/08/09	**28,000**	10.24
01/25/10	**12,000**	9.39
03/08/10	**24,000**	10.09
02/17/11	**27,000**	10.20
08/23/11	**19,000**	9.85
02/07/12	**19,000**	9.85



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.059356137
R Square	0.003523151
Adjusted R Square	-0.03083812
Standard Error	0.323963553
Observations	31

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.010761043	0.010761043	0.102532618	0.751107102
Residual	29	3.043619135	0.104952384		
Total	30	3.054380177			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	9.48750872	2.041366935	4.647625353	6.74802E-05	5.312444618	13.66257282	6.018967053	12.95605039
X Variable 1	1.681E-05	5.24973E-05	0.320207148	0.751107102	-9.05591E-05	0.000124179	-7.23896E-05	0.00010601

Abbreviations:

LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

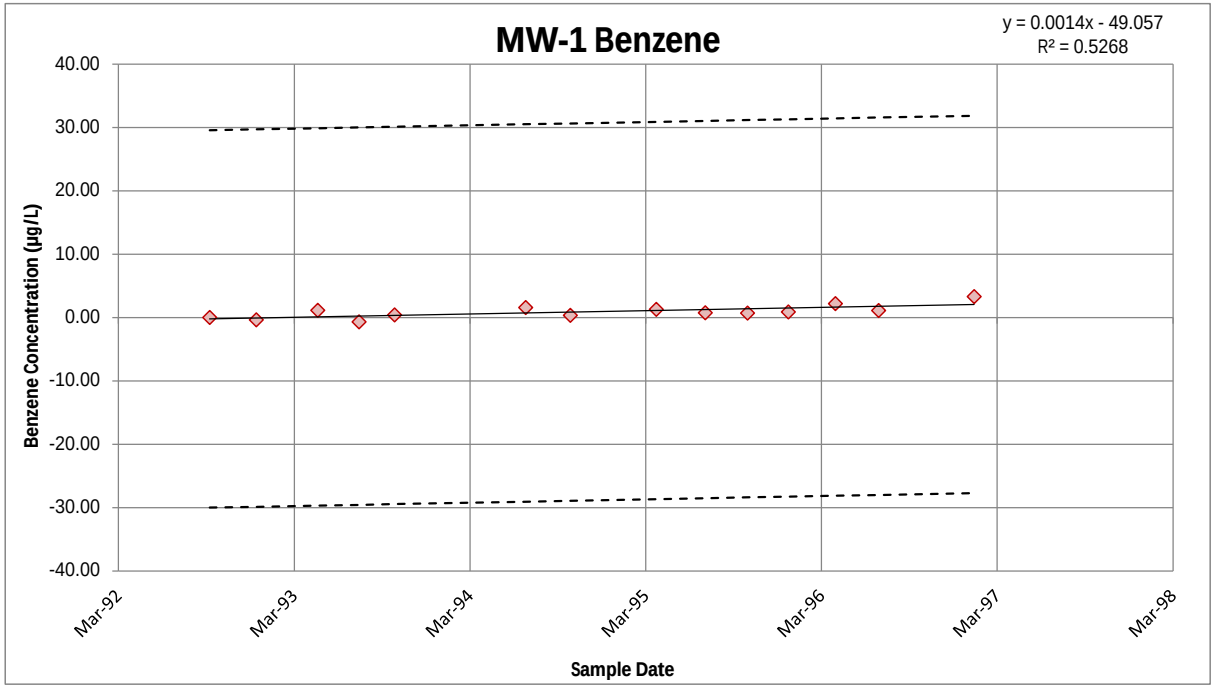
ARCADIS

Summary of Statistical Analysis and Linear Regression

800 Harrison Street

Location: 800 Harrison Street
Well ID: MW-1
Constituent: Benzene

Sample Date	Detected Concentration	LN Concentration
09/15/92	**1**	0.00
12/21/92	**0.69**	-0.37
04/28/93	**3.1**	1.13
07/23/93	**0.5**	-0.69
10/05/93	**1.5**	0.41
07/05/94	**4.8**	1.57
10/06/94	**1.4**	0.34
04/03/95	**3.6**	1.28
07/14/95	**2.1**	0.74
10/10/95	**2**	0.69
01/03/96	**2.4**	0.88
04/10/96	**8.9**	2.19
07/09/96	**3**	1.10
01/24/97	**27**	3.30



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.725776753
R Square	0.526751895
Adjusted R Square	0.487314552
Standard Error	0.734324816
Observations	14

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	-49.056549
Slope	0.001442
Date Objective is Reached	NA

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	7.202360879	7.202360879	13.35667837	0.003298178
Residual	12	6.47079522	0.539232935		
Total	13	13.6731561			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-49.05654909	13.66962955	-3.588725569	0.003722149	-78.8401133	-19.27298488	-73.41975962	-24.69333856
X Variable 1	0.001441733	0.00039449	3.654678969	0.003298178	0.000582214	0.002301252	0.000738639	0.002144827

Abbreviations:

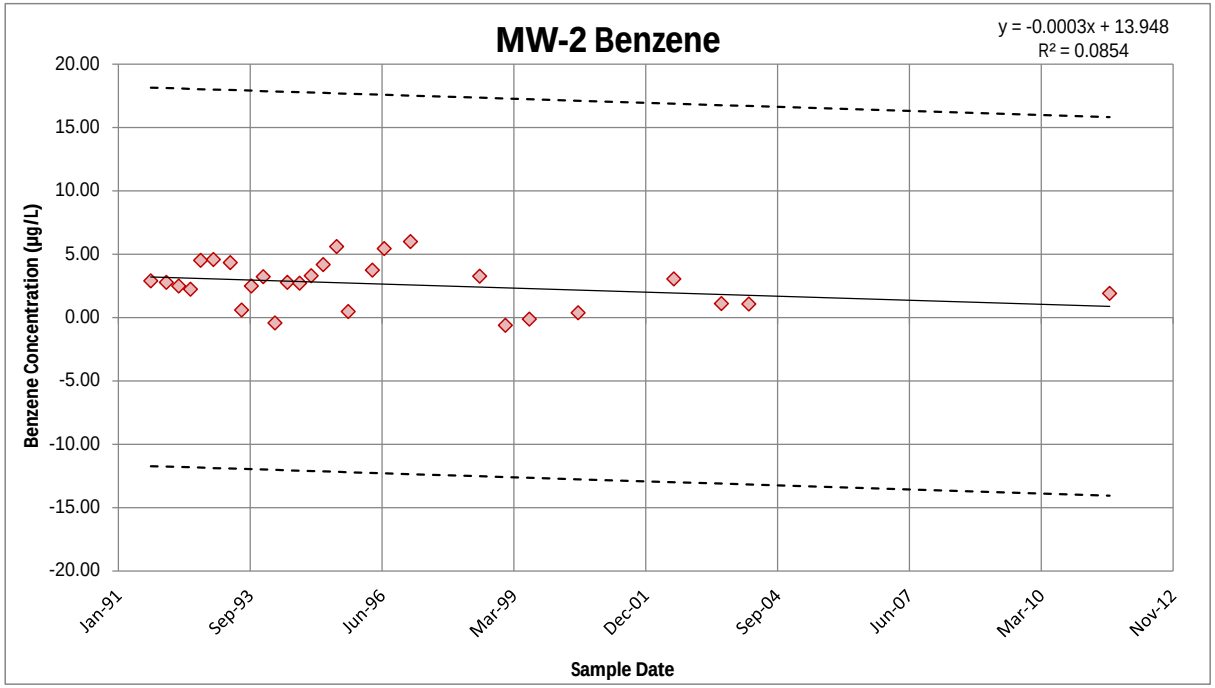
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-2
Constituent: Benzene

Sample Date	Detected Concentration	LN Concentration
09/03/91	**18**	2.89
12/30/91	**16**	2.77
04/02/92	**12**	2.48
06/30/92	**9.3**	2.23
09/15/92	**91**	4.51
12/21/92	**97**	4.57
04/28/93	**76**	4.33
07/23/93	**1.8**	0.59
10/05/93	**12**	2.48
01/03/94	**25**	3.22
04/02/94	**0.65**	-0.43
07/05/94	**16**	2.77
10/06/94	**15**	2.71
01/02/95	**27**	3.30
04/03/95	**65**	4.17
07/14/95	**270**	5.60
10/10/95	**1.6**	0.47
04/10/96	**42**	3.74
07/09/96	**230**	5.44
01/24/97	**400**	5.99
07/03/98	**26**	3.26
01/14/99	**0.54**	-0.62
07/15/99	**0.88**	-0.13
07/19/00	**1.45**	0.37
07/15/02	**21**	3.04
07/11/03	**3**	1.10
02/04/04	**2.9**	1.06
08/03/11	**6.7**	1.90



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.292280157
R Square	0.08542769
Adjusted R Square	0.050251832
Standard Error	1.781901614
Observations	28

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	13.948396
Slope	-0.000321
Date Objective is Reached	11/01/1997

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	7.711190054	7.711190054	2.428588669	0.13123053
Residual	26	82.55450745	3.175173363		
Total	27	90.2656975			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	13.94839613	7.266155091	1.919639198	0.065940069	-0.987399416	28.88419168	1.555111941	26.34168032
X Variable 1	-0.000320788	0.000205845	-1.558392977	0.13123053	-0.000743909	0.000102333	-0.000671881	3.03056E-05

Abbreviations:

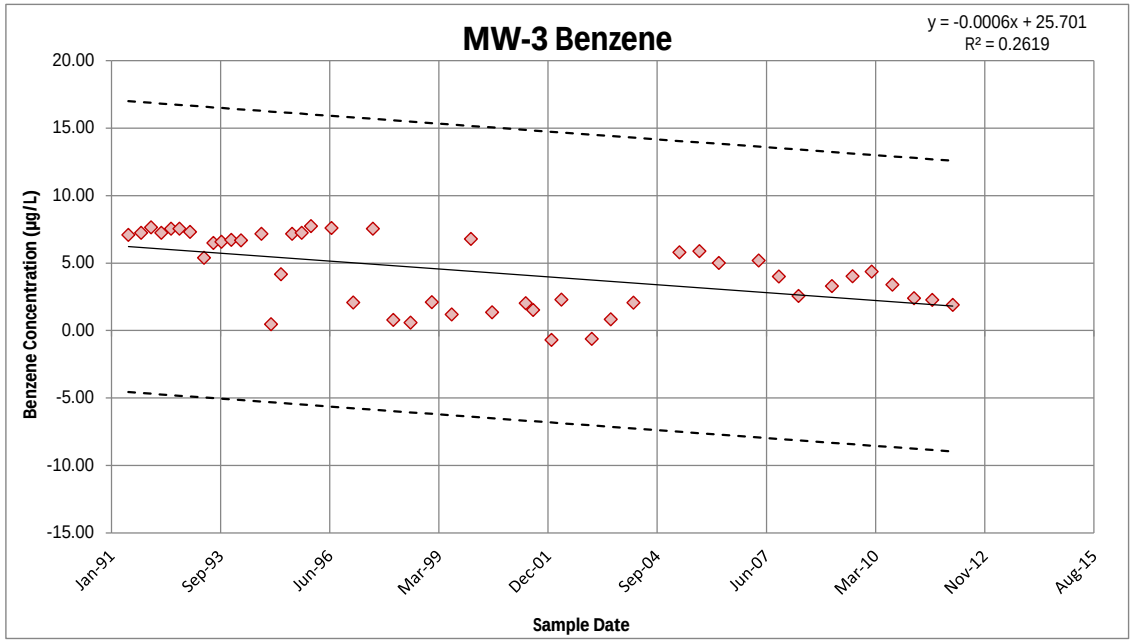
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-3
Constituent: Benzene

Sample Date	Detected Concentration	LN Concentration
06/05/91	**1,200**	7.09
09/30/91	**1,400**	7.24
12/30/91	**2,100**	7.65
04/02/92	**1,400**	7.24
06/30/92	**1,900**	7.55
09/15/92	**1,900**	7.55
12/21/92	**1,500**	7.31
04/28/93	**220**	5.39
07/23/93	**660**	6.49
10/05/93	**720**	6.58
01/03/94	**830**	6.72
04/02/94	**800**	6.68
10/06/94	**1,300**	7.17
01/02/95	**1.6**	0.47
04/03/95	**65**	4.17
07/14/95	**1,300**	7.17
10/10/95	**1,400**	7.24
01/03/96	**2,300**	7.74
07/09/96	**2,000**	7.60
01/24/97	**8**	2.08
07/23/97	**1,900**	7.55
01/26/98	**2.2**	0.79
07/03/98	**1.8**	0.59
01/14/99	**8.2**	2.10
07/15/99	**3.3**	1.19
01/07/00	**890**	6.79
07/19/00	**3.87**	1.35
05/23/01	**7.6**	2.03
07/30/01	**4.6**	1.53
01/14/02	**0.5**	-0.69
04/15/02	**9.9**	2.29
01/18/03	**0.54**	-0.62
07/11/03	**2.3**	0.83
02/04/04	**7.9**	2.07
03/31/05	**330**	5.80
09/30/05	**360**	5.89
03/27/06	**150**	5.01
03/27/07	**180**	5.19
09/28/07	**55**	4.01
03/26/08	**13**	2.56
01/26/09	**27**	3.30
08/03/09	**56**	4.03
01/25/10	**79**	4.37
08/03/10	**30**	3.40
02/17/11	**11**	2.40
08/03/11	**9.7**	2.27
02/07/12	**6.7**	1.90



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.511787542
R Square	0.261926488
Adjusted R Square	0.245524854
Standard Error	2.327026579
Observations	47

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	25.700627
Slope	-0.000583
Date Objective is Reached	12/12/2008

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	86.47588225	86.47588225	15.9695366	0.000236051
Residual	45	243.6773714	5.415052698		
Total	46	330.1532537			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	25.70062737	5.350104105	4.803762106	1.7629E-05	14.92496472	36.47629002	16.71551598	34.68573876
X Variable 1	-0.000583391	0.000145987	-3.99619026	0.000236051	-0.000877423	-0.000289358	-0.000828565	-0.000338216

Abbreviations:

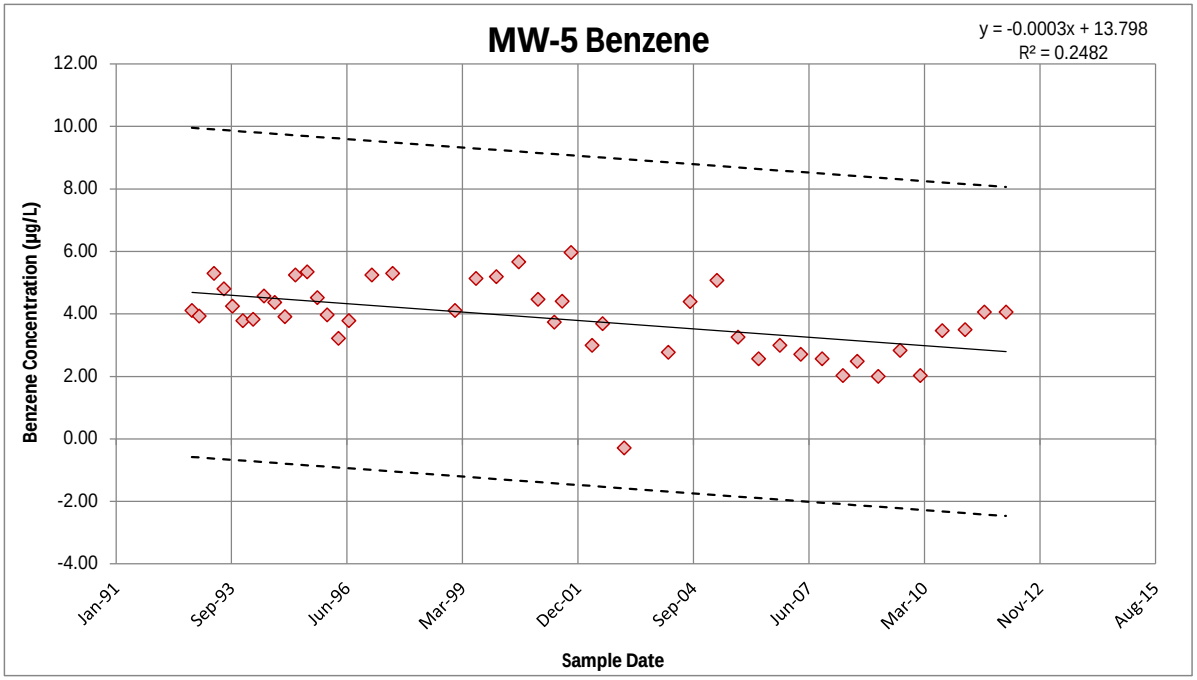
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-5
Constituent: Benzene

Sample Date	Detected Concentration	LN Concentration
10/19/92	**61**	4.11
12/21/92	**51**	3.93
04/28/93	**200**	5.30
07/23/93	**122**	4.80
10/05/93	**70**	4.25
01/03/94	**44**	3.78
04/02/94	**46**	3.83
07/05/94	**97**	4.57
10/06/94	**79**	4.37
01/02/95	**50**	3.91
04/03/95	**190**	5.25
07/14/95	**210**	5.35
10/10/95	**92**	4.52
01/03/96	**53**	3.97
04/10/96	**25**	3.22
07/09/96	**44**	3.78
01/24/97	**190**	5.25
07/23/97	**200**	5.30
01/14/99	**61**	4.11
07/15/99	**170**	5.14
01/07/00	**180**	5.19
07/19/00	**289**	5.67
01/02/01	**87.2**	4.47
05/23/01	**42**	3.74
07/30/01	**82**	4.41
10/15/01	**390**	5.97
04/15/02	**20**	3.00
07/15/02	**40**	3.69
01/18/03	**0.75**	-0.29
02/04/04	**16**	2.77
08/11/04	**81**	4.39
03/31/05	**160**	5.08
09/30/05	**26**	3.26
03/27/06	**13**	2.56
09/27/06	**20**	3.00
03/27/07	**15**	2.71
09/28/07	**13**	2.56
03/26/08	**7.6**	2.03
07/28/08	**12**	2.48
01/26/09	**7.4**	2.00
08/03/09	**17**	2.83
01/25/10	**7.6**	2.03
08/03/10	**32**	3.47
02/17/11	**33**	3.50
08/03/11	**58**	4.06
02/07/12	**58**	4.06



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.498228698
R Square	0.248231835
Adjusted R Square	0.231146195
Standard Error	1.053804646
Observations	46

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	13.798424
Slope	-0.000269
Date Objective is Reached	04/13/2015

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	16.13416309	16.13416309	14.52868221	0.000425684
Residual	44	48.86218623	1.110504233		
Total	45	64.99634932			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	13.79842372	2.613076597	5.28052784	3.79838E-06	8.532113947	19.06473349	9.407854087	18.18899335
X Variable 1	-0.000268684	7.04902E-05	-3.811650852	0.000425684	-0.000410747	-0.00012662	-0.000387124	-0.000150244

Abbreviations:

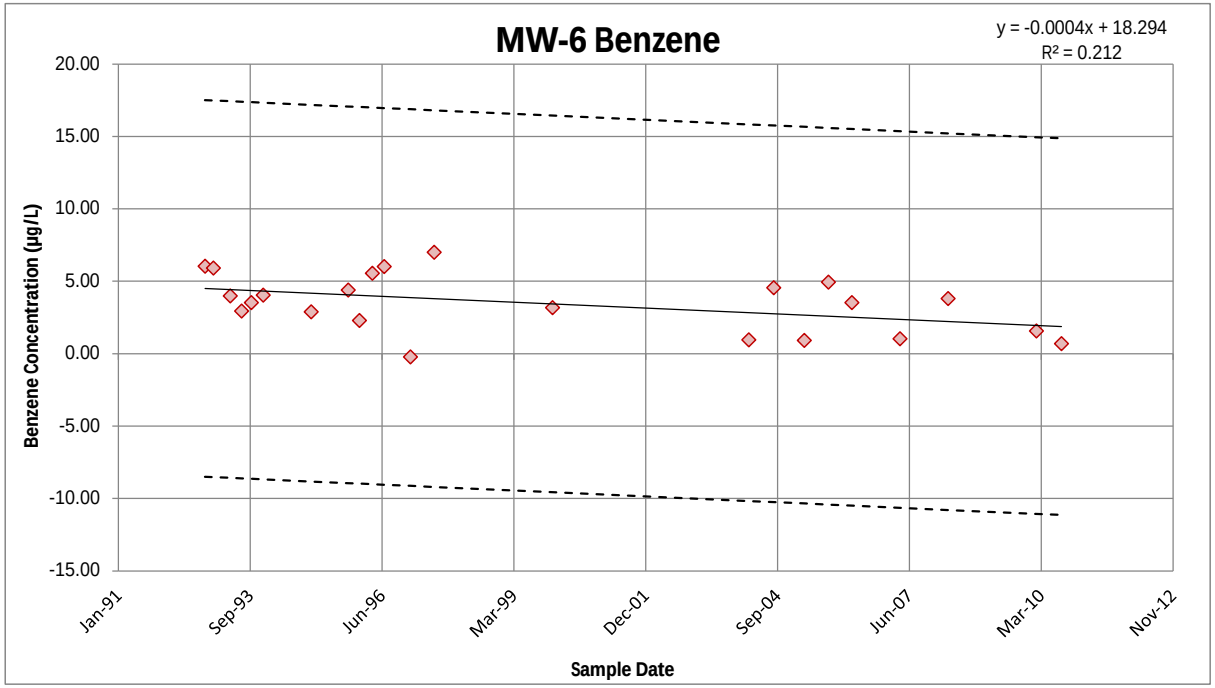
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-6
Constituent: Benzene

Sample Date	Detected Concentration	LN Concentration
10/19/92	**420**	6.04
12/21/92	**370**	5.91
04/28/93	**54**	3.99
07/23/93	**19**	2.94
10/05/93	**34**	3.53
01/03/94	**57**	4.04
01/02/95	**18**	2.89
10/10/95	**81**	4.39
01/03/96	**9.9**	2.29
04/10/96	**258**	5.55
07/09/96	**410**	6.02
01/24/97	0.8	-0.22
07/23/97	**1,100**	7.00
01/07/00	**24**	3.18
02/04/04	**2.6**	0.96
08/11/04	**95**	4.55
03/31/05	**2.5**	0.92
09/30/05	**140**	4.94
03/27/06	**34**	3.53
03/27/07	**2.8**	1.03
03/26/08	**45**	3.81
01/25/10	**4.8**	1.57
08/03/10	**2**	0.69



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.460394496
R Square	0.211963092
Adjusted R Square	0.174437525
Standard Error	1.803108929
Observations	23

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	18.294456
Slope	-0.000407
Date Objective is Reached	05/30/2006

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	18.36440706	18.36440706	5.648498043	0.027057754
Residual	21	68.275238	3.25120181		
Total	22	86.63964506			

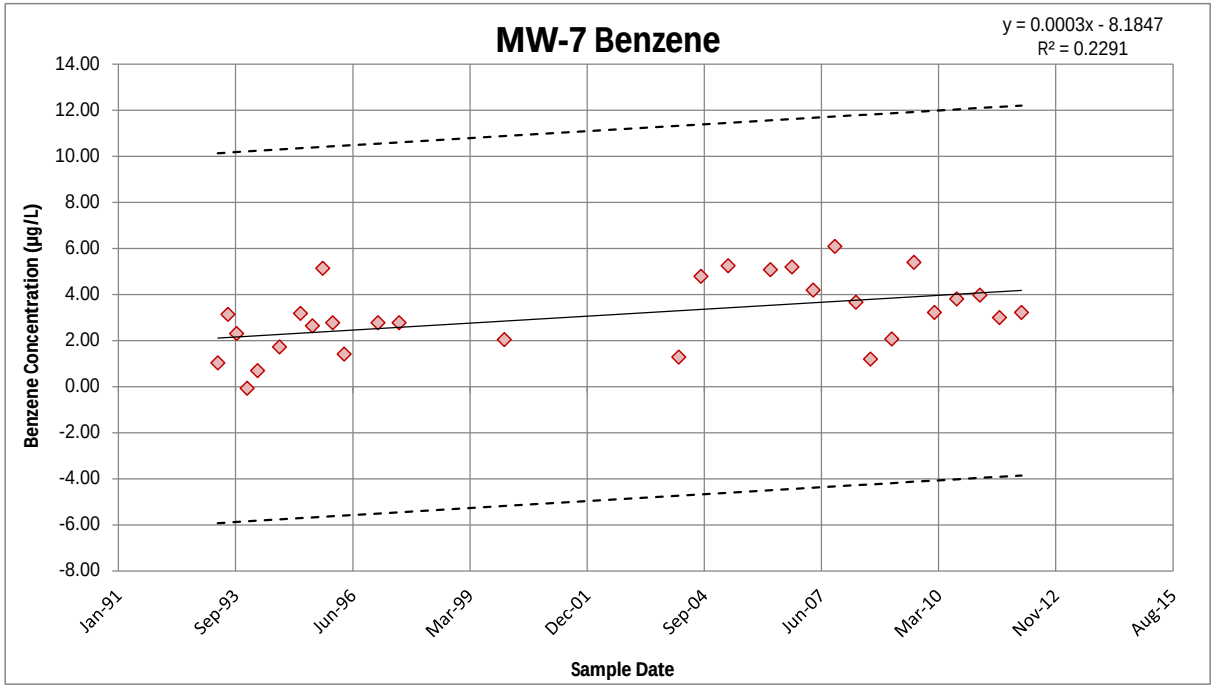
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	18.29445649	6.253542972	2.92545467	0.008084364	5.289501995	31.29941099	7.533716999	29.05519598
X Variable 1	-0.000406753	0.000171145	-2.376656905	0.027057754	-0.000762668	-5.08374E-05	-0.000701249	-0.000112256

Abbreviations:
LN Natural Log
NA Not Applicable

Notes:
(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-7
Constituent: Benzene

Sample Date	Detected Concentration	LN Concentration
04/28/93	**2.8**	1.03
07/23/93	**23**	3.14
10/05/93	**10**	2.30
01/03/94	**0.93**	-0.07
04/02/94	**2**	0.69
10/06/94	**5.6**	1.72
04/03/95	**24**	3.18
07/14/95	**14**	2.64
10/10/95	**170**	5.14
01/03/96	**16**	2.77
04/10/96	**4.1**	1.41
01/24/97	**16**	2.77
07/23/97	**16**	2.77
01/07/00	**7.7**	2.04
02/04/04	**3.6**	1.28
08/11/04	**120**	4.79
03/31/05	**190**	5.25
03/27/06	**160**	5.08
09/27/06	**180**	5.19
03/27/07	**66**	4.19
09/28/07	**440**	6.09
03/26/08	**39**	3.66
07/28/08	**3.3**	1.19
01/26/09	**7.9**	2.07
08/03/09	**220**	5.39
01/25/10	**25**	3.22
08/03/10	**45**	3.81
02/17/11	**53**	3.97
08/03/11	**20**	3.00
02/07/12	**25**	3.22



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.478663988
R Square	0.229119213
Adjusted R Square	0.201587757
Standard Error	1.408591766
Observations	30

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	-8.184748
Slope	0.000302
Date Objective is Reached	NA

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	16.51211141	16.51211141	8.322088296	0.007454341
Residual	28	55.55566138	1.984130764		
Total	29	72.06777279			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-8.184748171	3.919340812	-2.08829713	0.045985443	-16.21315377	-0.156342567	-14.85205996	-1.517436378
X Variable 1	0.000301841	0.000104631	2.884802991	0.007454341	8.75133E-05	0.000516169	0.000123849	0.000479833

Abbreviations:

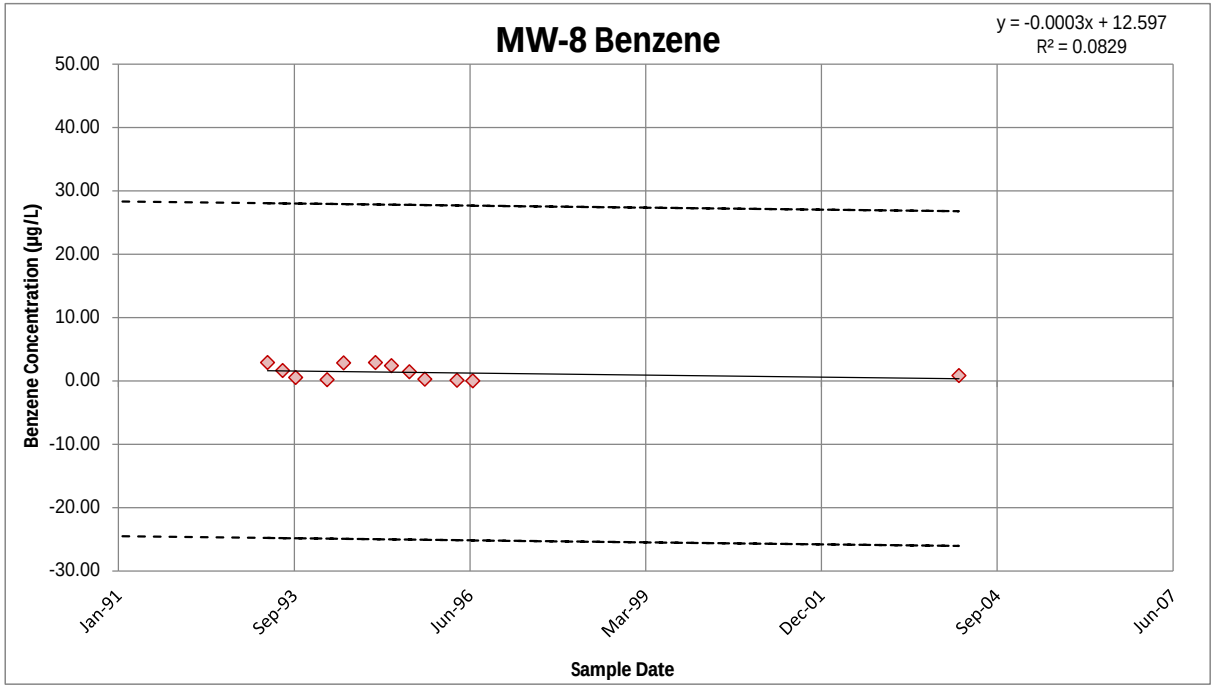
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-8
Constituent: Benzene

Sample Date	Detected Concentration	LN Concentration
04/28/93	**18**	2.89
07/23/93	**5.1**	1.63
10/05/93	**1.7**	0.53
04/02/94	**1.2**	0.18
07/05/94	**17**	2.83
01/02/95	**18**	2.89
04/03/95	**11**	2.40
07/14/95	**4.2**	1.44
10/10/95	**1.3**	0.26
04/10/96	**1.1**	0.10
07/09/96	**1**	0.00
02/04/04	**2.3**	0.83



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.287869624
R Square	0.08286892
Adjusted R Square	-0.008844188
Standard Error	1.173158614
Observations	12

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	12.00
LN Target Concentration	2.48
Intercept	12.596861
Slope	-0.000322
Date Objective is Reached	11/10/1985

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.243580025	1.243580025	0.903566811	0.364235229
Residual	10	13.76301133	1.376301133		
Total	11	15.00659136			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	12.59686125	11.85596051	1.062491836	0.312997302	-13.81986487	39.01358737	-8.891606002	34.0853285
X Variable 1	-0.000322429	0.000339199	-0.950561313	0.364235229	-0.001078211	0.000433353	-0.000937214	0.000292355

Abbreviations:

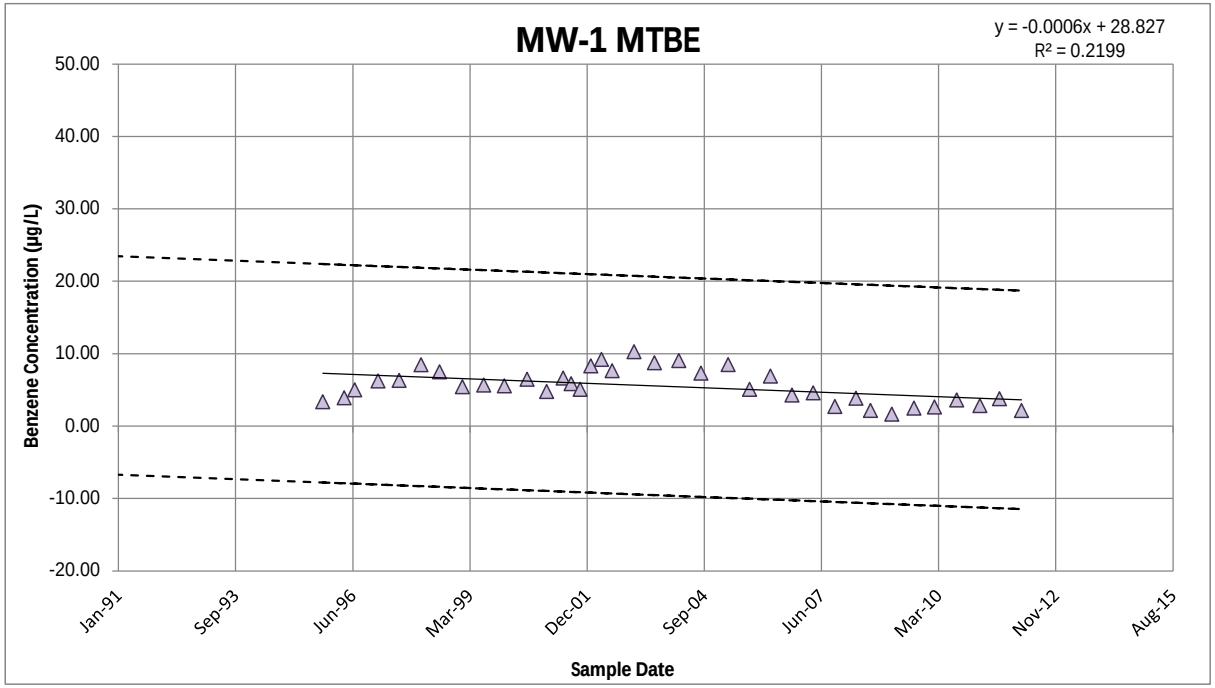
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-1
Constituent: MTBE

Sample Date	Detected Concentration	LN Concentration
10/10/95	**29**	3.37
04/10/96	**50**	3.91
07/09/96	**150**	5.01
01/24/97	**510**	6.23
07/23/97	**550**	6.31
01/26/98	**4,800**	8.48
07/03/98	**1,800**	7.50
01/14/99	**230**	5.44
07/15/99	**290**	5.67
01/07/00	**260**	5.56
07/19/00	**648**	6.47
01/02/01	**119**	4.78
05/23/01	**760**	6.63
07/30/01	**350**	5.86
10/15/01	**160**	5.08
01/14/02	**4,100**	8.32
04/15/02	**10,000**	9.21
07/15/02	**2,100**	7.65
01/18/03	**29,000**	10.28
07/11/03	**6,300**	8.75
02/04/04	**8,500**	9.05
08/11/04	**1,500**	7.31
03/31/05	**4,900**	8.50
09/30/05	**160**	5.08
03/27/06	**1,000**	6.91
09/27/06	**73**	4.29
03/27/07	**99**	4.60
09/28/07	**15**	2.71
03/26/08	**47**	3.85
07/28/08	**8.7**	2.16
01/26/09	**5.2**	1.65
08/03/09	**12**	2.48
01/25/10	**14**	2.64
08/03/10	**37**	3.61
02/17/11	**17**	2.83
08/03/11	**44**	3.78
02/07/12	**8.6**	2.15



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.468987393
R Square	0.219949175
Adjusted R Square	0.197662009
Standard Error	2.068684627
Observations	37

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	28.827294
Slope	-0.000615
Date Objective is Reached	01/26/2021

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	42.23340093	42.23340093	9.868871205	0.00341159
Residual	35	149.780963	4.279456085		
Total	36	192.0143639			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	28.82729383	7.428235694	3.880772637	0.000440147	13.74717375	43.90741391	16.27675152	41.37783613
X Variable 1	-0.000615475	0.000195919	-3.14147596	0.00341159	-0.001013211	-0.000217738	-0.000946494	-0.000284455

Abbreviations:

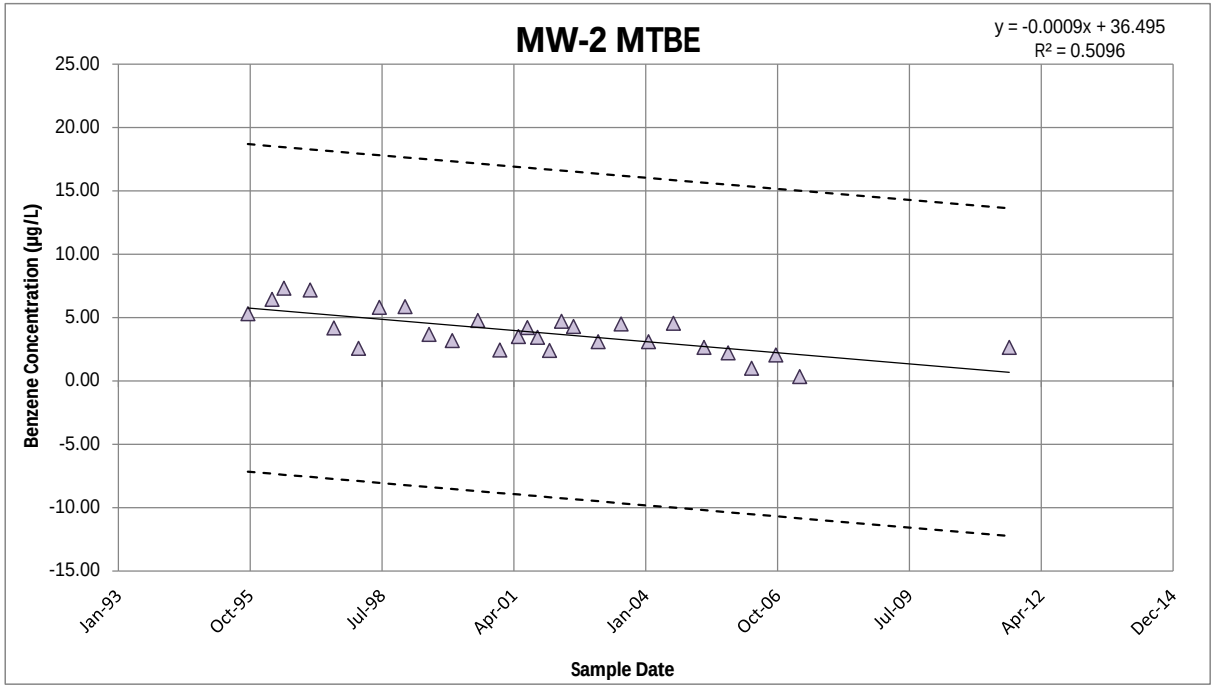
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-2
Constituent: MTBE

Sample Date	Detected Concentration	LN Concentration
10/10/95	**200**	5.30
04/10/96	**620**	6.43
07/09/96	**1,500**	7.31
01/24/97	**1,300**	7.17
07/23/97	**65**	4.17
01/26/98	**13**	2.56
07/03/98	**330**	5.80
01/14/99	**350**	5.86
07/15/99	**39**	3.66
01/07/00	**24**	3.18
07/19/00	**117**	4.76
01/02/01	**11.4**	2.43
05/23/01	**33**	3.50
07/30/01	**67**	4.20
10/15/01	**31**	3.43
01/14/02	**11**	2.40
04/15/02	**110**	4.70
07/15/02	**73**	4.29
01/18/03	**22**	3.09
07/11/03	**89**	4.49
02/04/04	**22**	3.09
08/11/04	**94**	4.54
03/31/05	**14**	2.64
09/30/05	**9.1**	2.21
03/27/06	**2.7**	0.99
09/27/06	**7.7**	2.04
03/27/07	**1.4**	0.34
08/03/11	**14**	2.64



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.713850752
R Square	0.509582897
Adjusted R Square	0.4907207
Standard Error	1.225068799
Observations	28

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	36.494569
Slope	-0.000879
Date Objective is Reached	09/08/2008

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	40.54558224	40.54558224	27.01609553	1.99587E-05
Residual	26	39.02063261	1.500793562		
Total	27	79.56621485			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	36.49456878	6.288685818	5.803210691	4.09601E-06	23.56799007	49.42114748	25.76847367	47.22066388
X Variable 1	-0.000878725	0.00016906	-5.197700985	1.99587E-05	-0.001226233	-0.000531216	-0.001167077	-0.000590372

Abbreviations:

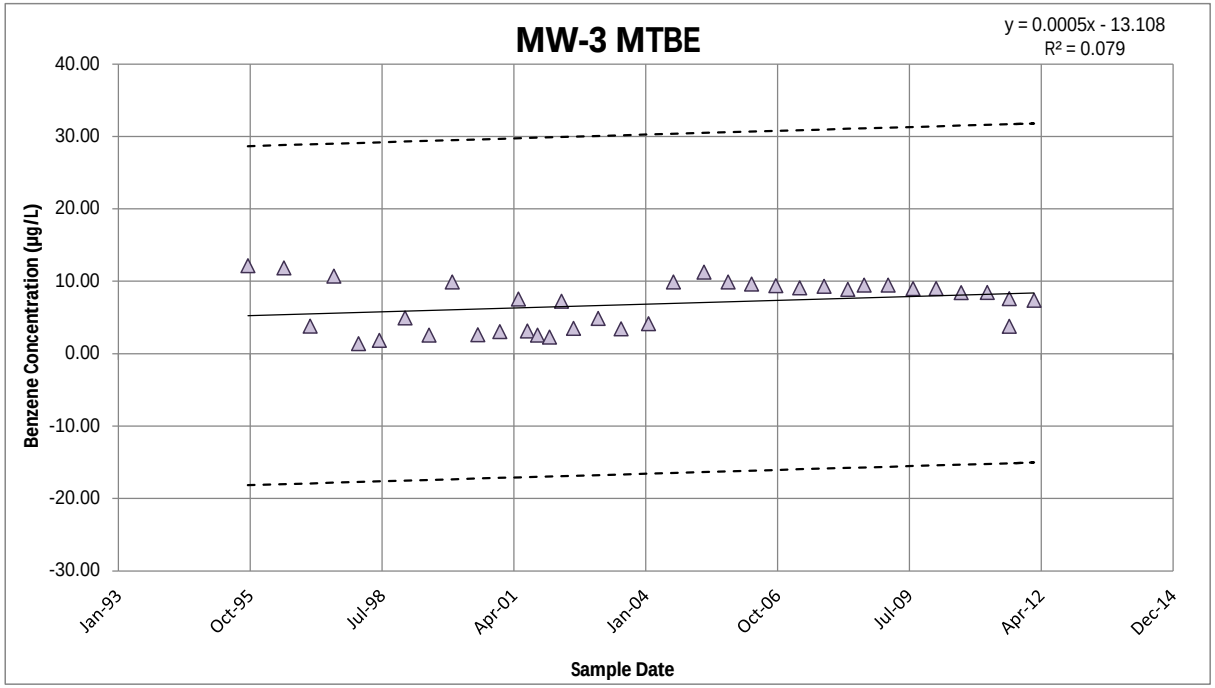
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-3
Constituent: MTBE

Sample Date	Detected Concentration	LN Concentration
10/10/95	**190,000**	12.15
07/09/96	**140,000**	11.85
01/24/97	**45**	3.81
07/23/97	**45,000**	10.71
01/26/98	**4**	1.39
07/03/98	**6.3**	1.84
01/14/99	**140**	4.94
07/15/99	**13**	2.56
01/07/00	**20,000**	9.90
07/19/00	**13.7**	2.62
01/02/01	**21.1**	3.05
05/23/01	**1,900**	7.55
07/30/01	**23**	3.14
10/15/01	**13**	2.56
01/14/02	**9.9**	2.29
04/15/02	**1,400**	7.24
07/15/02	**33**	3.50
01/18/03	**130**	4.87
07/11/03	**31**	3.43
02/04/04	**63**	4.14
08/11/04	**20,000**	9.90
03/31/05	**78,000**	11.26
09/30/05	**20,000**	9.90
03/27/06	**15,000**	9.62
09/27/06	**12,000**	9.39
03/27/07	**8,900**	9.09
09/28/07	**11,000**	9.31
03/26/08	**7,200**	8.88
07/28/08	**13,000**	9.47
01/26/09	**13,000**	9.47
08/03/09	**8,000**	8.99
01/25/10	**8,100**	9.00
08/03/10	**4,600**	8.43
02/17/11	**4,700**	8.46
08/03/11	**2,000**	7.60
02/07/12	**1,600**	7.38
08/03/11	**44**	3.78



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.280997897
R Square	0.078959818
Adjusted R Square	0.052644385
Standard Error	3.201241993
Observations	37

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	-13.107916
Slope	0.000525
Date Objective is Reached	10/06/1976

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	30.74911483	30.74911483	3.000513657	0.092043809
Residual	35	358.6782605	10.2479503		
Total	36	389.4273753			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-13.10791606	11.53454931	-1.136404701	0.263508515	-36.52429592	10.3084638	-32.59637268	6.380540556
X Variable 1	0.000524883	0.000303015	1.732199081	0.092043809	-9.0271E-05	0.001140037	1.29165E-05	0.001036849

Abbreviations:

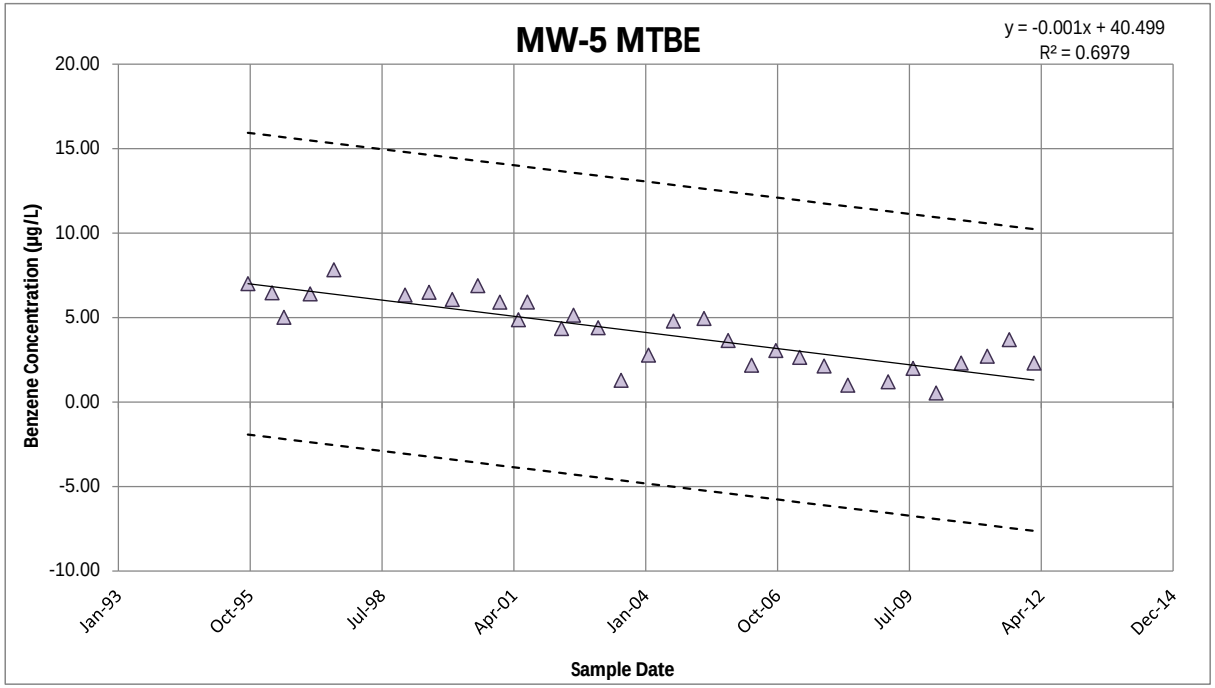
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-5
Constituent: MTBE

Sample Date	Detected Concentration	LN Concentration
10/10/95	**1,100**	7.00
04/10/96	**640**	6.46
07/09/96	**150**	5.01
01/24/97	**600**	6.40
07/23/97	**2,500**	7.82
01/14/99	**560**	6.33
07/15/99	**660**	6.49
01/07/00	**430**	6.06
07/19/00	**976**	6.88
01/02/01	**368**	5.91
05/23/01	**130**	4.87
07/30/01	**370**	5.91
04/15/02	**77**	4.34
07/15/02	**170**	5.14
01/18/03	**81**	4.39
07/11/03	**3.6**	1.28
02/04/04	**16**	2.77
08/11/04	**120**	4.79
03/31/05	**140**	4.94
09/30/05	**38**	3.64
03/27/06	**8.8**	2.17
09/27/06	**21**	3.04
03/27/07	**14**	2.64
09/28/07	**8.4**	2.13
03/26/08	**2.7**	0.99
01/26/09	**3.3**	1.19
08/03/09	**7.3**	1.99
01/25/10	**1.7**	0.53
08/03/10	**10**	2.30
02/17/11	**15**	2.71
08/03/11	**40**	3.69
02/07/12	**10**	2.30



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.835394842
R Square	0.697884542
Adjusted R Square	0.687814027
Standard Error	1.146037095
Observations	32

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	40.499381
Slope	-0.000958
Date Objective is Reached	03/13/2011

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	91.01840839	91.01840839	69.29978491	2.72121E-09
Residual	30	39.40203069	1.313401023		
Total	31	130.4204391			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	40.49938111	4.373643301	9.259872907	2.65794E-10	31.56720989	49.43155233	33.07616756	47.92259466
X Variable 1	-0.00095752	0.000115022	-8.324649236	2.72121E-09	-0.001192427	-0.000722613	-0.001152743	-0.000762297

Abbreviations:

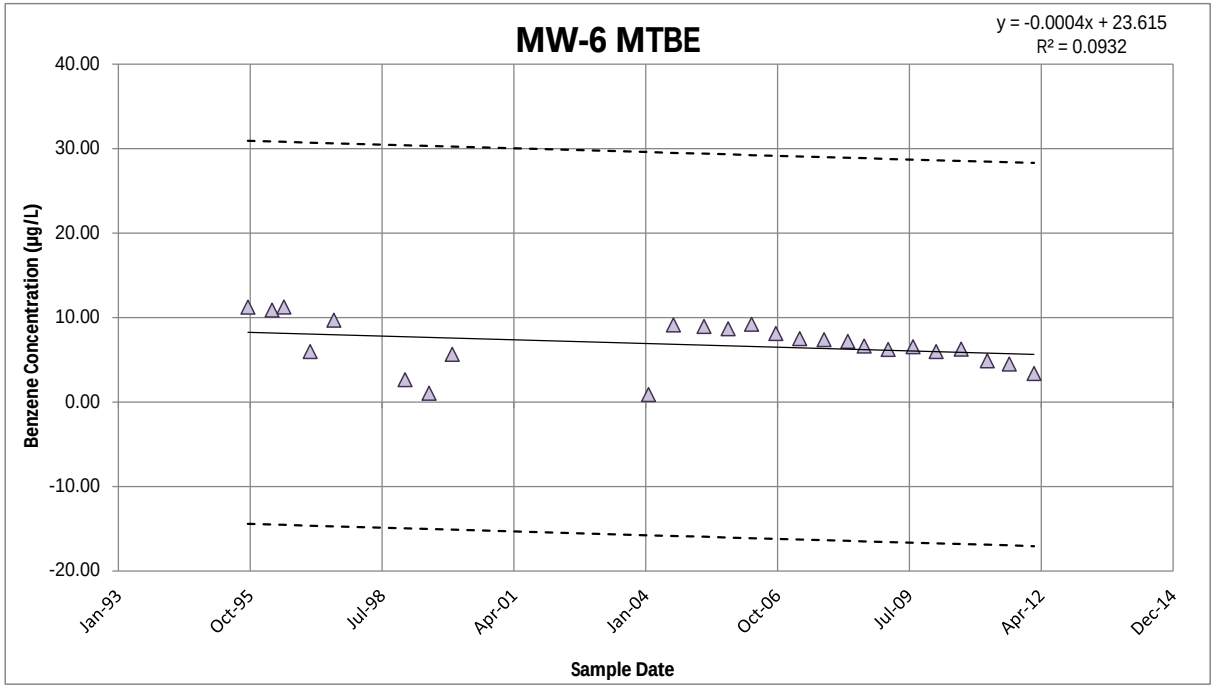
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-6
Constituent: MTBE

Sample Date	Detected Concentration	LN Concentration
10/10/95	**75,000**	11.23
04/10/96	**53,000**	10.88
07/09/96	**76,000**	11.24
01/24/97	**390**	5.97
07/23/97	**16,000**	9.68
01/14/99	**14**	2.64
07/15/99	**2.8**	1.03
01/07/00	**280**	5.63
02/04/04	**2.4**	0.88
08/11/04	**9,100**	9.12
03/31/05	**7,600**	8.94
09/30/05	**5,800**	8.67
03/27/06	**9,900**	9.20
09/27/06	**3,300**	8.10
03/27/07	**1,800**	7.50
09/28/07	**1,600**	7.38
03/26/08	**1,300**	7.17
07/28/08	**750**	6.62
01/26/09	**500**	6.21
08/03/09	**690**	6.54
01/25/10	**390**	5.97
08/03/10	**520**	6.25
02/17/11	**130**	4.87
08/03/11	**89**	4.49
02/07/12	**29**	3.37



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.305307698
R Square	0.09321279
Adjusted R Square	0.053787259
Standard Error	2.780392136
Observations	25

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	23.614684
Slope	-0.000440
Date Objective is Reached	01/08/2037

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	18.27721674	18.27721674	2.36427483	0.137786272
Residual	23	177.80335	7.730580433		
Total	24	196.0805667			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	23.61468437	10.96147931	2.154333708	0.041926104	0.9391369	46.29023183	4.828117192	42.40125154
X Variable 1	-0.00043968	0.000285949	-1.537619859	0.137786272	-0.001031211	0.00015185	-0.00092976	5.03989E-05

Abbreviations:

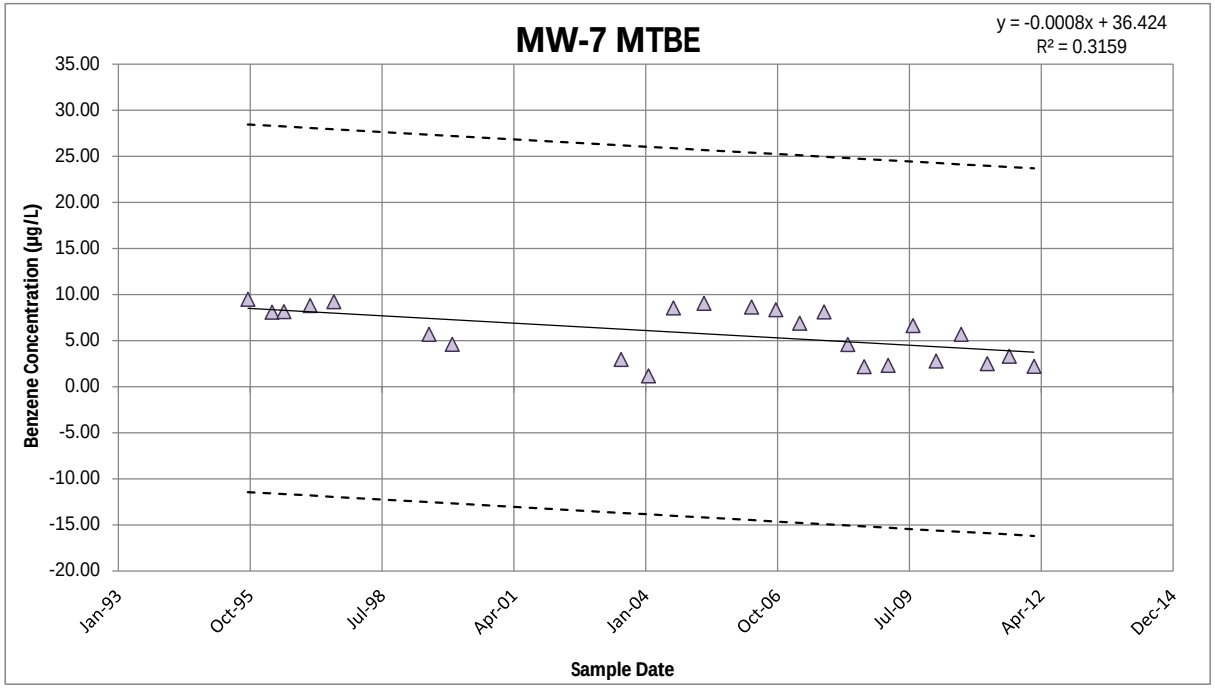
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-7
Constituent: MTBE

Sample Date	Detected Concentration	LN Concentration
10/10/95	**13,000**	9.47
04/10/96	**3,200**	8.07
07/09/96	**3,400**	8.13
01/24/97	**6,600**	8.79
07/23/97	**10,000**	9.21
07/15/99	**290**	5.67
01/07/00	**98**	4.58
07/11/03	**19**	2.94
02/04/04	**3.2**	1.16
08/11/04	**5,100**	8.54
03/31/05	**8,400**	9.04
03/27/06	**5,600**	8.63
09/27/06	**4,200**	8.34
03/27/07	**970**	6.88
09/28/07	**3,300**	8.10
03/26/08	**96**	4.56
07/28/08	**8.7**	2.16
01/26/09	**10**	2.30
08/03/09	**750**	6.62
01/25/10	**16**	2.77
08/03/10	**290**	5.67
02/17/11	**12**	2.48
08/03/11	**27**	3.30
02/07/12	**9.0**	2.20



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.562087794
R Square	0.315942689
Adjusted R Square	0.284849175
Standard Error	2.377558393
Observations	24

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	36.424417
Slope	-0.000798
Date Objective is Reached	05/25/2019

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	57.43820846	57.43820846	10.16104797	0.004254114
Residual	22	124.361246	5.652783911		
Total	23	181.7994545			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	36.42441746	9.613760281	3.788779457	0.001008163	16.48669902	56.36213589	19.91620345	52.93263147
X Variable 1	-0.000798314	0.000250441	-3.187639874	0.004254114	-0.001317696	-0.000278932	-0.001228357	-0.000368272

Abbreviations:

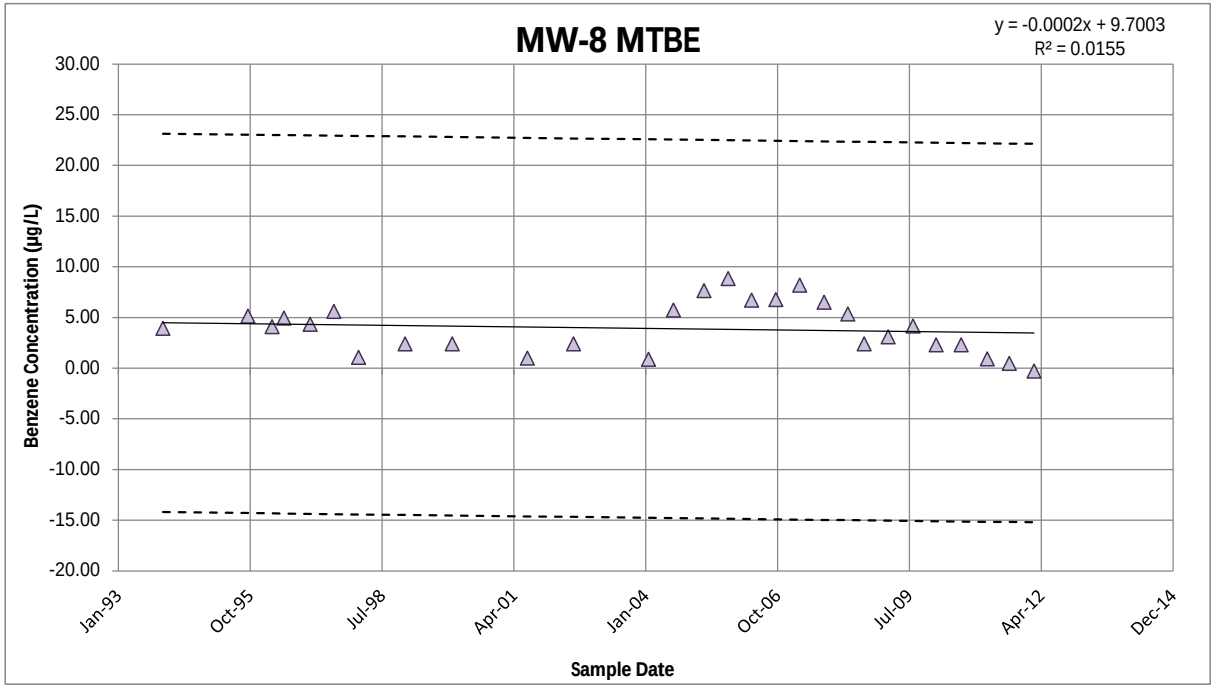
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Location: 800 Harrison Street
Well ID: MW-8
Constituent: MTBE

Sample Date	Detected Concentration	LN Concentration
01/03/94	**51**	3.93
10/10/95	**170**	5.14
04/10/96	**60**	4.09
07/09/96	**140**	4.94
01/24/97	**76**	4.33
07/23/97	**270**	5.60
01/26/98	**2.9**	1.06
01/14/99	**11**	2.40
01/07/00	**11**	2.40
07/30/01	**2.7**	0.99
07/15/02	**11**	2.40
02/04/04	**2.4**	0.88
08/11/04	**310**	5.74
03/31/05	**2,100**	7.65
09/30/05	**6,900**	8.84
03/27/06	**820**	6.71
09/27/06	**870**	6.77
03/27/07	**3,600**	8.19
09/28/07	**670**	6.51
03/26/08	**210**	5.35
07/28/08	**11**	2.40
01/26/09	**22**	3.09
08/03/09	**64**	4.16
01/25/10	**10**	2.30
08/03/10	**10**	2.30
02/17/11	**2.5**	0.92
08/03/11	**1.6**	0.47
02/07/12	**0.75**	-0.29



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.124392082
R Square	0.01547339
Adjusted R Square	-0.022393018
Standard Error	2.534539128
Observations	28

WATER QUALITY OBJECTIVES

Target Concentration (µg/L)	5.00
LN Target Concentration	1.61
Intercept	9.700274
Slope	-0.000152
Date Objective is Reached	05/16/2045

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.625000329	2.625000329	0.408631048	0.528257439
Residual	26	167.0211034	6.423888592		
Total	27	169.6461037			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	9.700273597	9.083069374	1.067951063	0.295358512	-8.97024271	28.3707899	-5.791972118	25.19251931
X Variable 1	-0.000152375	0.000238367	-0.639242558	0.528257439	-0.000642346	0.000337597	-0.000558938	0.000254189

Abbreviations:

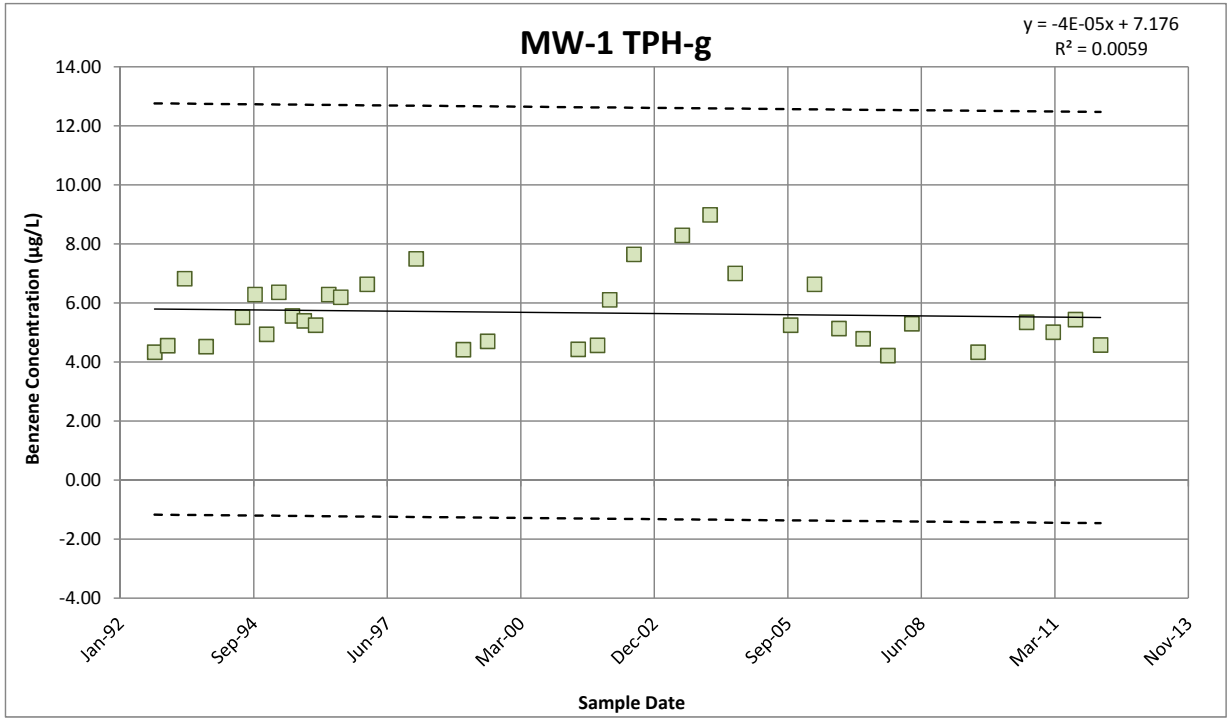
LN Natural Log
NA Not Applicable

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence.
(2) Linear regressions were performed on log-normalized concentration data.
(3) Date to target concentration is not estimated if the constituent concentrations are showing increasing trends.

Well ID: MW-1
Constituent: TPH-g

Sample Date	Detected Concentration	LN Concentration
09/15/92	**76**	4.33
12/21/92	**95**	4.55
04/28/93	**920**	6.82
10/05/93	**92**	4.52
07/05/94	**250**	5.52
10/06/94	**540**	6.29
01/02/95	**140**	4.94
04/03/95	**580**	6.36
07/14/95	**260**	5.56
10/10/95	**220**	5.39
01/03/96	**190**	5.25
04/10/96	**540**	6.29
07/09/96	**490**	6.19
01/24/97	**760**	6.63
01/26/98	**1,800**	7.50
01/14/99	**83**	4.42
07/15/99	**110**	4.70
05/23/01	**84**	4.43
10/15/01	**96**	4.56
01/14/02	**450**	6.11
07/15/02	**2,100**	7.65
07/11/03	**4,000**	8.29
02/04/04	**8,000**	8.99
08/11/04	**1,100**	7.00
09/30/05	**190**	5.25
03/27/06	**760**	6.63
09/27/06	**170**	5.14
03/27/07	**120**	4.79
09/28/07	**68**	4.22
03/26/08	**200**	5.30
08/03/09	**76**	4.33
08/03/10	**210**	5.35
02/17/11	**150**	5.01
08/03/11	**230**	5.44
02/07/12	**97**	4.57



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.076621595
R Square	0.005870869
Adjusted R Square	-0.024254256
Standard Error	1.219165381
Observations	35

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.289666825	0.289666825	0.194882802	0.661762568
Residual	33	49.05001948	1.486364227		
Total	34	49.33968631			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	7.175968512	3.424367837	2.095560072	0.04387323	0.209039798	14.14289723	1.380704477	12.97123255
X Variable 1	-4.08108E-05	9.24461E-05	-0.441455322	0.661762568	-0.000228894	0.000147272	-0.000197263	0.000115641

Abbreviations:

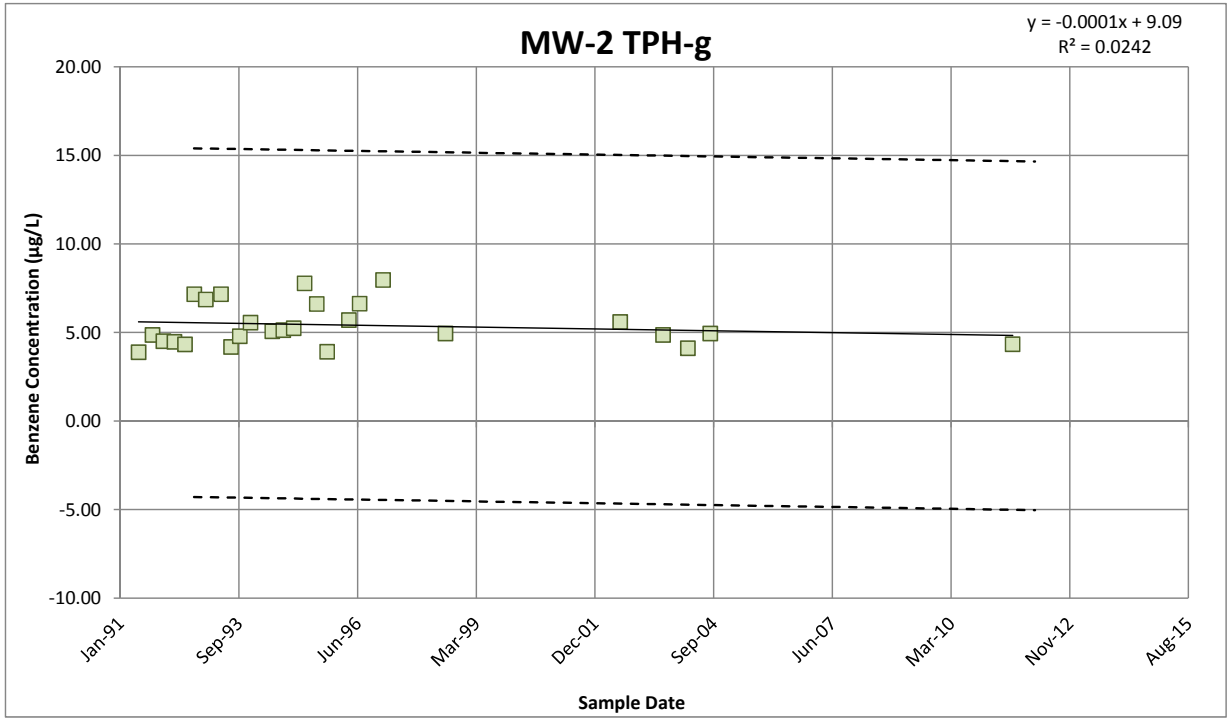
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-2
Constituent: TPH-g

Sample Date	Detected Concentration	LN Concentration
06/05/91	**49**	3.89
09/30/91	**130**	4.87
12/30/91	**91**	4.51
04/02/92	**88**	4.48
06/30/92	**76**	4.33
09/15/92	**1,300**	7.17
12/21/92	**960**	6.87
04/28/93	**1,300**	7.17
07/23/93	**66**	4.19
10/05/93	**120**	4.79
01/03/94	**260**	5.56
07/05/94	**160**	5.08
10/06/94	**170**	5.14
01/02/95	**190**	5.25
04/03/95	**2,400**	7.78
07/14/95	**750**	6.62
10/10/95	**50**	3.91
04/10/96	**300**	5.70
07/09/96	**760**	6.63
01/24/97	**2,900**	7.97
07/03/98	**140**	4.94
07/15/02	**270**	5.60
07/11/03	**130**	4.87
02/04/04	**61**	4.11
08/11/04	**140**	4.94
08/03/11	**77**	4.34



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.155689716
R Square	0.024239288
Adjusted R Square	-0.016417409
Standard Error	1.225779147
Observations	26

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.895802412	0.895802412	0.596194231	0.447570943
Residual	24	36.06082844	1.502534518		
Total	25	36.95663085			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	9.090003512	4.769570412	1.905832754	0.068718002	-0.753905933	18.93391296	0.929831028	17.250176
X Variable 1	-0.000104484	0.000135318	-0.772136148	0.447570943	-0.000383766	0.000174798	-0.000335997	0.000127029

Abbreviations:

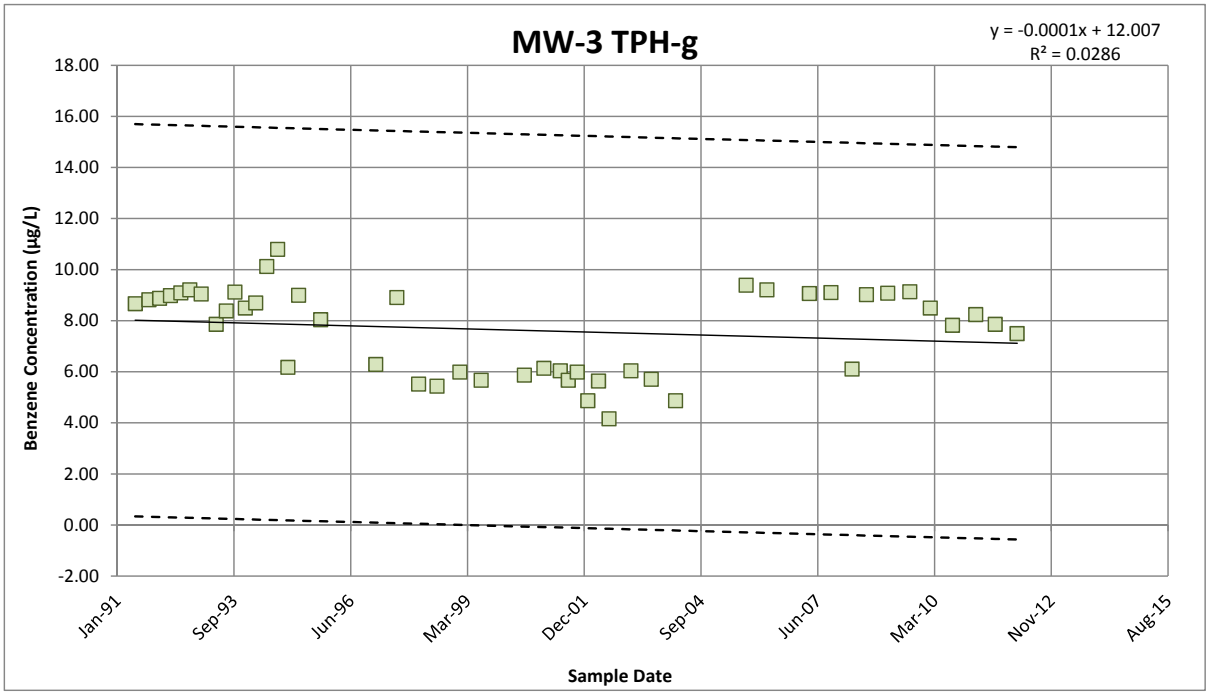
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-3
Constituent: TPH-g

Sample Date	Detected Concentration	LN Concentration
06/05/91	**5,800**	8.67
09/30/91	**6,800**	8.82
12/30/91	**7,200**	8.88
04/02/92	**8,000**	8.99
06/30/92	**8,900**	9.09
09/15/92	**10,000**	9.21
12/21/92	**8,500**	9.05
04/28/93	**2,600**	7.86
07/23/93	**4,400**	8.39
10/05/93	**9,200**	9.13
01/03/94	**4,900**	8.50
04/02/94	**6,000**	8.70
07/05/94	**25,000**	10.13
10/06/94	**49,000**	10.80
01/02/95	**480**	6.17
04/03/95	**8,100**	9.00
10/10/95	**3,100**	8.04
01/24/97	**540**	6.29
07/23/97	**7,400**	8.91
01/26/98	**250**	5.52
07/03/98	**230**	5.44
01/14/99	**400**	5.99
07/15/99	**290**	5.67
07/19/00	**354**	5.87
01/02/01	**464**	6.14
05/23/01	**420**	6.04
07/30/01	**290**	5.67
10/15/01	**400**	5.99
01/14/02	**130**	4.87
04/15/02	**280**	5.63
07/15/02	**64**	4.16
01/18/03	**420**	6.04
07/11/03	**300**	5.70
02/04/04	**130**	4.87
09/30/05	**12,000**	9.39
03/27/06	**10,000**	9.21
03/27/07	**8,700**	9.07
09/28/07	**9,000**	9.10
03/26/08	**450**	6.11
07/28/08	**8,300**	9.02
01/26/09	**8,800**	9.08
08/03/09	**9,300**	9.14
01/25/10	**4,900**	8.50
08/03/10	**2,500**	7.82
02/17/11	**3,800**	8.24
08/03/11	**2,600**	7.86
02/07/12	**1,800**	7.50



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.169255655
R Square	0.028647477
Adjusted R Square	0.007061865
Standard Error	1.666172131
Observations	47

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.684357355	3.684357355	1.327156122	0.255395493
Residual	45	124.9258307	2.776129571		
Total	46	128.610188			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	12.00712971	3.813242801	3.148797582	0.002909818	4.326864576	19.68739485	5.603065294	18.41119413
X Variable 1	-0.000119484	0.000103716	-1.152022622	0.255395493	-0.000328379	8.94119E-05	-0.000293668	5.47005E-05

Abbreviations:

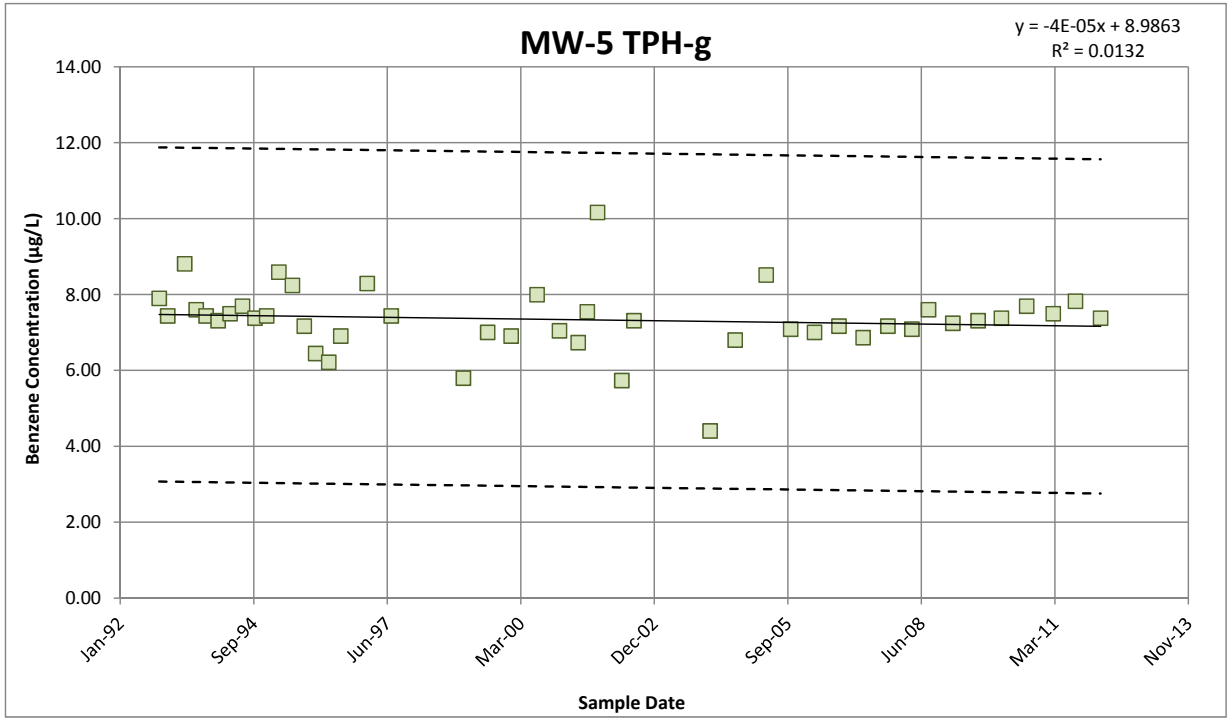
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-5
Constituent: TPH-g

Sample Date	Detected Concentration	LN Concentration
10/19/92	**2,700**	7.90
12/21/92	**1,700**	7.44
04/28/93	**6,700**	8.81
07/23/93	**2,000**	7.60
10/05/93	**1,700**	7.44
01/03/94	**1,500**	7.31
04/02/94	**1,800**	7.50
07/05/94	**2,200**	7.70
10/06/94	**1,600**	7.38
01/02/95	**1,700**	7.44
04/03/95	**5,400**	8.59
07/14/95	**3,800**	8.24
10/10/95	**1,300**	7.17
01/03/96	**630**	6.45
04/10/96	**500**	6.21
07/09/96	**1,000**	6.91
01/24/97	**4,000**	8.29
07/23/97	**1,700**	7.44
01/14/99	**330**	5.80
07/15/99	**1,100**	7.00
01/07/00	**1,000**	6.91
07/19/00	**2,980**	8.00
01/02/01	**1,150**	7.05
05/23/01	**840**	6.73
07/30/01	**1,900**	7.55
10/15/01	**26,000**	10.17
04/15/02	**310**	5.74
07/15/02	**1,500**	7.31
02/04/04	**82**	4.41
08/11/04	**900**	6.80
03/31/05	**5,000**	8.52
09/30/05	**1,200**	7.09
03/27/06	**1,100**	7.00
09/27/06	**1,300**	7.17
03/27/07	**960**	6.87
09/28/07	**1,300**	7.17
03/26/08	**1,200**	7.09
07/28/08	**2,000**	7.60
01/26/09	**1,400**	7.24
08/03/09	**1,500**	7.31
01/25/10	**1,600**	7.38
08/03/10	**2,200**	7.70
02/17/11	**1,800**	7.50
08/03/11	**2,500**	7.82
02/07/12	**1,600**	7.38



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.114714498
R Square	0.013159416
Adjusted R Square	-0.009790365
Standard Error	0.880011643
Observations	45

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.444053103	0.444053103	0.573400507	0.453040409
Residual	43	33.30008115	0.774420492		
Total	44	33.74413426			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	8.986331582	2.183390267	4.115769736	0.000171385	4.583105519	13.38955764	5.315898169	12.65676499
X Variable 1	-4.46155E-05	5.89192E-05	-0.757232135	0.453040409	-0.000163437	7.42064E-05	-0.000143663	5.44319E-05

Abbreviations:

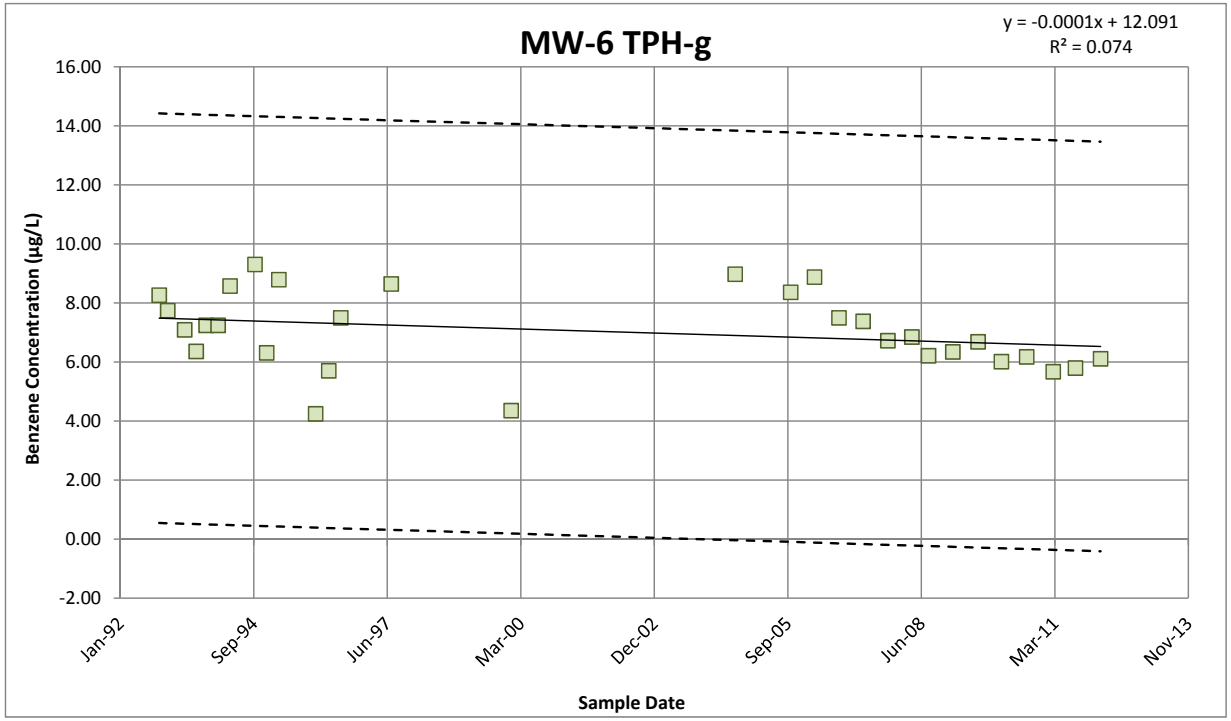
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-6
Constituent: TPH-g

Sample Date	Detected Concentration	LN Concentration
10/19/92	**3,900**	8.27
12/21/92	**2,300**	7.74
04/28/93	**1,200**	7.09
07/23/93	**580**	6.36
10/05/93	**1,400**	7.24
01/03/94	**1,400**	7.24
04/02/94	**5,300**	8.58
10/06/94	**11,000**	9.31
01/02/95	**550**	6.31
04/03/95	**6,600**	8.79
01/03/96	**70**	4.25
04/10/96	**300**	5.70
07/09/96	**1,800**	7.50
07/23/97	**5,700**	8.65
01/07/00	**78**	4.36
08/11/04	**7,900**	8.97
09/30/05	**4,300**	8.37
03/27/06	**7,200**	8.88
09/27/06	**1,800**	7.50
03/27/07	**1,600**	7.38
09/28/07	**830**	6.72
03/26/08	**940**	6.85
07/28/08	**500**	6.21
01/26/09	**570**	6.35
08/03/09	**800**	6.68
01/25/10	**410**	6.02
08/03/10	**480**	6.17
02/17/11	**290**	5.67
08/03/11	**330**	5.80
02/07/12	**450**	6.11



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.272062736
R Square	0.074018132
Adjusted R Square	0.040947351
Standard Error	1.285209487
Observations	30

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.696932464	3.696932464	2.2381731	0.1458275
Residual	28	46.24937588	1.651763424		
Total	29	49.94630835			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	12.09103134	3.387361545	3.569454038	0.00131533	5.152335855	19.02972683	6.328685924	17.85337676
X Variable 1	-0.000135903	9.08412E-05	-1.496052506	0.1458275	-0.000321983	5.01765E-05	-0.000290436	1.86296E-05

Abbreviations:

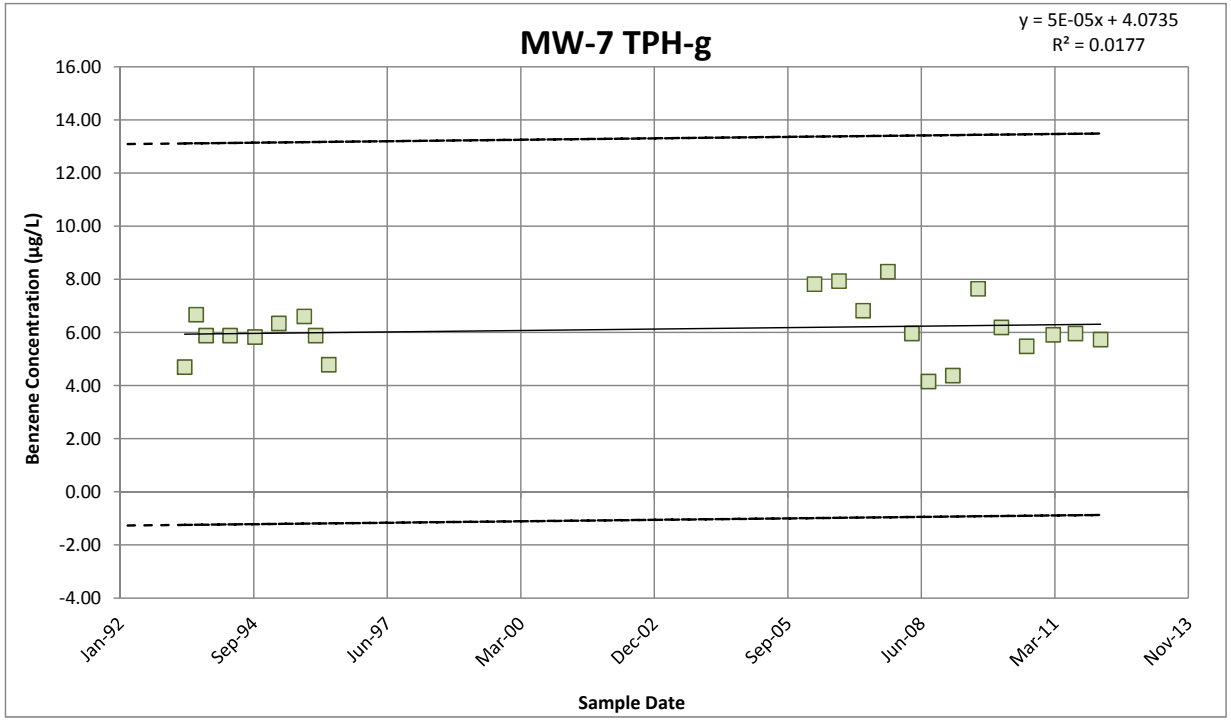
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-7
Constituent: TPH-g

Sample Date	Detected Concentration	LN Concentration
04/28/93	**110**	4.70
07/23/93	**790**	6.67
10/05/93	**360**	5.89
04/02/94	**360**	5.89
10/06/94	**340**	5.83
04/03/95	**570**	6.35
10/10/95	**740**	6.61
01/03/96	**360**	5.89
04/10/96	**120**	4.79
03/27/06	**2,500**	7.82
09/27/06	**2,800**	7.94
03/27/07	**920**	6.82
09/28/07	**4,000**	8.29
03/26/08	**390**	5.97
07/28/08	**64**	4.16
01/26/09	**80**	4.38
08/03/09	**2,100**	7.65
01/25/10	**490**	6.19
08/03/10	**240**	5.48
02/17/11	**370**	5.91
08/03/11	**390**	5.97
02/07/12	**310**	5.74



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.132921752
R Square	0.017668192
Adjusted R Square	-0.031448398
Standard Error	1.128214644
Observations	22

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.457875461	0.457875461	0.359719436	0.555396955
Residual	20	25.45736565	1.272868283		
Total	21	25.91524111			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	4.073482879	3.442387636	1.183330673	0.250553519	-3.107211881	11.25417764	-1.863665792	10.01063155
X Variable 1	5.46037E-05	9.10417E-05	0.599766151	0.555396955	-0.000135306	0.000244513	-0.000102418	0.000211625

Abbreviations:

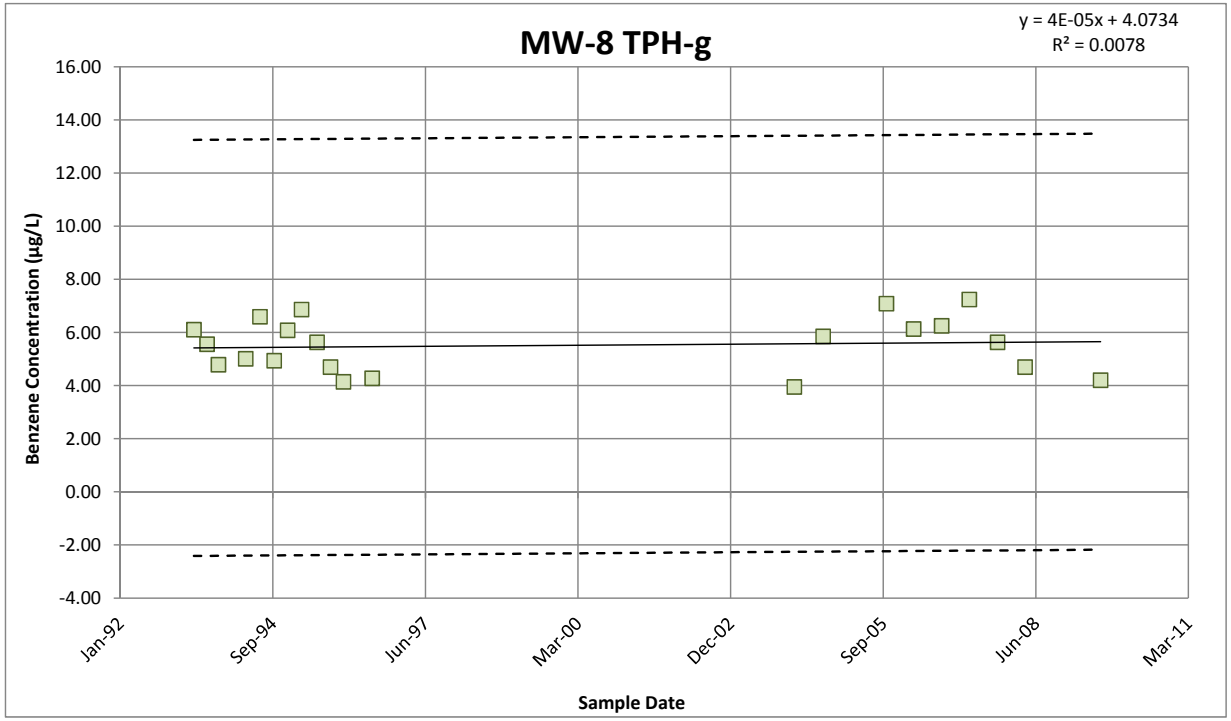
LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

Well ID: MW-8
Constituent: TPH-g

Sample Date	Detected Concentration	LN Concentration
04/28/93	**450**	6.11
07/23/93	**260**	5.56
10/05/93	**120**	4.79
04/02/94	**150**	5.01
07/05/94	**730**	6.59
10/06/94	**140**	4.94
01/02/95	**440**	6.09
04/03/95	**960**	6.87
07/14/95	**280**	5.63
10/10/95	**110**	4.70
01/03/96	**63**	4.14
07/09/96	**72**	4.28
02/04/04	**52**	3.95
08/11/04	**350**	5.86
09/30/05	**1,200**	7.09
03/27/06	**460**	6.13
09/27/06	**520**	6.25
03/27/07	**1,400**	7.24
09/28/07	**280**	5.63
03/26/08	**110**	4.70
08/03/09	**67**	4.20



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.088095322
R Square	0.007760786
Adjusted R Square	-0.044462331
Standard Error	1.027899555
Observations	21

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.157016128	0.157016128	0.148608245	0.704150961
Residual	19	20.07497243	1.056577496		
Total	20	20.23198856			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	4.073382116	3.742038574	1.088546266	0.289969432	-3.758794615	11.90555885	-2.397099493	10.54386373
X Variable 1	3.94515E-05	0.000102339	0.3854974	0.704150961	-0.000174747	0.00025365	-0.000137507	0.00021641

Abbreviations:

LN Natural Log

Notes:

(1) Upper and lower bounds are shown as dashed lines at 95% confidence
(2) Linear regressions were performed on log-normalized concentration data.

ARCADIS

Appendix **G**

Remedial Alternative Cost Estimate

Remedial Alternative 1 (RA1)	
Monitored Natural Attenuation	
Remedial Alternative 1 - Key Assumptions	
Remedial alternative duration assumes 35 years are required to achieve cleanup goals for benzene, MTBE, and TPPH	
Semi-annual sampling and reporting for 25 years	
Annual sampling and reporting for 10 years	
Monitoring for MNA parameters in select wells within existing monitoring network	
Total anticipated remedial alternative duration: 35 years	
Remedial Alternative 1 Tasks	**Estimated Cost**
Semi-annual sampling and reporting (25 years, $70,000/year)	$1,750,000
Annual sampling and reporting (10 years, $35,000/year)	$350,000
Site decommissiong and well abandonment	$50,000
Lifecycle Cost Totals (RA1):	**$2,150,000**

Remedial Alternative 2 (RA2)	
Air Sparge (AS)/Soil Vapor Extraction (SVE)	
Remedial Alternative 2 - Key Assumptions	
Pilot study will be completed to determine key design parameters (2 AS wells, 1 SVE well)	
Full-scale AS/SVE system includes installation of 20 AS wells, 15 SVE wells, distribution piping, and remediation system equipment	
AS/SVE system O&M for 4 years	
Semi-annual sampling and reporting for 6 years (4 years during active treatment, 2 years post-treatment)	
Monitoring for MNA parameters in select wells within existing monitoring network	
Total anticipated remedial alternative duration: 6 years	
Remedial Alternative 2 Tasks	**Estimated Cost**
AS/SVE Pilot Study	
Work plan preparation	$20,000
Permitting (Air Permit)	$8,000
Pilot study well installation (2 AS wells and 1 SVE well)	$15,000
Perform AS/SVE Pilot Study	$50,000
RAP preparation and system design	$50,000
Full-Scale AS/SVE System	
Installation of 20 AS wells and 15 SVE wells	$125,000
Installation of full-scale AS/SVE system (including major system components, trenching, distribution piping, utility connection, and remediation building)	$290,000
Quarterly system O&M (4 years, $45,000/year)	$180,000
Utility Usage (4 years, $15,000/year)	$60,000
Semi-annual sampling and reporting (6 years, $70,000/year)	$510,000
Site decommissiong and well abandonment	$100,000
Lifecycle Cost Totals (RA2):	**$1,408,000**

Remedial Alternative 3 (RA3)	
Multi-Phase Extraction (MPE)	
Remedial Alternative 3 - Key Assumptions	
Pilot study will be completed to determine key design parameters (2 extraction wells)	
Full-scale MPE system includes installation of 15 MPE wells, distribution piping, and remediation system equipment	
MPE system O&M for 4 years	
Semi-annual sampling and reporting for 6 years (4 years during active treatment, 2 years post-treatment)	
Monitoring for MNA parameters in select wells within existing monitoring network	
Total anticipated remedial alternative duration: 6 years	
Remedial Alternative 3 Tasks	**Estimated Cost**
MPE Pilot Study	
Work plan preparation	$20,000
Permitting (Air Permit, POTW)	$8,000
Pilot study well installation (2 extraction wells)	$10,000
Perform MPE Pilot Study	$50,000
RAP preparation and system design	$50,000
Full-Scale MPE System	
Installation of 15 MPE wells	$100,000
Installation of full-scale MPE system (including major system components, trenching, distribution piping, utility connection, and remediation building)	$200,000
Monthly system O&M and annual utility usage (4 years, $80,000/year)	$320,000
Utility Usage (4 years, $20,000/year)	$80,000
Semi-annual sampling and reporting (6 years, $70,000/year)	$280,000
Site decommissiong and well abandonment	$90,000
Lifecycle Cost Total (RA3):	**$1,208,000**

Remedial Alternative 4 (RA4)	
In-Situ Enhanced Bioremediation	
Remedial Alternative 4 - Key Assumptions	
Pilot injection study will be completed to determine key design parameters (2 injection wells)	
Full-scale system includes installation of 25 injection wells, distribution piping, and remediation system equipment	
Bioremediation system O&M for 4 years	
Semi-annual sampling and reporting for 8 years (4 years during active treatment, 4 years post-treatment)	
Monitoring for MNA parameters in select wells within existing monitoring network	
Total anticipated remedial alternative duration: 8 years	
Remedial Alternative 4 Tasks	**Estimated Cost**
Pilot Injection Study	
Work plan preparation	$20,000
Pilot injection study well installation (2 injection wells)	$10,000
Perform Pilot Injection Study	$50,000
RAP preparation and system design	$50,000
Full-Scale Bioremediation System	
Installation of 25 injection wells	$100,000
Installation of full-scale Bioremediation system (including major system components, trenching, distribution piping, utility connection, and remediation building)	$200,000
Monthly system O&M and annual utility usage (4 years, $80,000/year)	$320,000
Utility Usage (4 years, $20,000/year)	$80,000
Semi-annual sampling and reporting (8 years, $70,000/year)	$560,000
Site decommissiong and well abandonment	$80,000
Lifecycle Cost Total (RA4):	**$1,470,000**

Remedial Alternative 5 (RA5)	
In-Situ Chemical Oxidation (ISCO)	
Remedial Alternative 5 - Key Assumptions	
Pilot injection study will be completed to determine key design parameters (2 injection wells)	
Full-scale system includes installation of 40 injection wells, distribution piping, and remediation system equipment	
4 persulfate injection events over 2 years	
Quaterly sampling and semi-annual reporting for 2 years during injections	
Semi-annual sampling and reporting for 4 years following injections	
Monitoring for MNA parameters in select wells within existing monitoring network	
Total anticipated remedial alternative duration: 6 years	
Remedial Alternative 5 Tasks	**Estimated Cost**
Pilot Injection Study	
Work plan preparation	$20,000
Pilot injection study well installation (2 injection wells, 1 dose response well)	$10,000
Perform Pilot Injection Study	$50,000
RAP preparation and system design	$50,000
Full-Scale ISCO System	
Installation of 40 ISCO injection wells	$160,000
Perform semi-annual persulfate injections (4 events, $120,000/event)	$480,000
Quaterly sampling and semi-annual reporting for persulfate injection performance assessment (2 years, $100,000/year)	$200,000
Semi-annual sampling and reporting (6 years, $70,000/year)	$420,000
Site decommissiong and well abandonment	$200,000
Lifecycle Cost Total (RA5):	**$1,590,000**