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Alameda County  
Environmental Health

June 5, 2009

Paresh C. Khatri  
Hazardous Materials Specialist

Alameda County Health Agency  
Department of Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

**RE: Groundwater Monitoring Report – Second Quarter 2009**

Foothill Mini Mart  
6600 Foothill Boulevard, Oakland, California  
Fuel Leak Case No. RO0000175  
GeoTracker Global ID: T0600102286

Dear Mr. Khatri:

On behalf of Mr. Ravi Sekhon and pursuant to Alameda County Environmental Health's February 6, 2009 letter, Environmental Risk Specialties Corporation (ERS) has completed the 2009 second quarter groundwater monitoring/sampling for the subject site, and prepared the *Groundwater Monitoring Report – Second Quarter 2009*. Attached with this electronic file, please find this report for your review and comments.

If you have questions, please feel free to call the undersigned at (925) 938-1600 ext. 108. Your assistance on this site is very appreciated.

Sincerely,  
ERS



Jim Ho, Ph.D., P.E.  
Principal Engineer

Cc: Ravi Sekhon, 21696 Knuppe Place, Castro Valley, CA 94552

Mr. Paresh C. Khatri  
Hazardous Material Specialist

Alameda County Environmental Health  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

**RE: Sekhon Gas Station**

6600 Foothill Boulevard  
Oakland, California, 94605  
Fuel Leak Case No. RO0000175  
GeoTracker Global ID: T0600102286  
UST Cleanup Fund Claim No. 14095

Dear Mr. Khatri:

As the responsible party of the above-referenced project location, I have reviewed the document entitled "*Groundwater Monitoring Report – Second Quarter 2009*", prepared by Environmental Risk Specialties Corporation (ERS), of Walnut Creek, California. I declare, under penalty of perjury, that the information and/or recommendations contained in this document or report are true and correct to the best of my knowledge.

Sincerely,



Mr. Ravi Sekhon

Date: 0-6-05-09

# Groundwater Monitoring Report – Second Quarter 2009

Former Sekhon Gas Station  
6600 Foothill Boulevard  
Oakland, CA 94605  
Fuel Leak Case No. RO0000175

Submitted by:

Mr. Ravi Sekhon

Prepared by:

Environmental Risk Specialties Corporation  
Walnut Creek, California

June 2009

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## 1. INTRODUCTION

On behalf of Mr. Ravi Sekhon, Environmental Risk Specialties Corporation (ERS) conducted the Second Quarter 2009 (2Q09) groundwater monitoring event on May 7, 2009, for the site located at 6600 Foothill Boulevard, Oakland, California. Mr. Sekhon is a responsible party for the subsurface contamination of the former Sekhon Gas Station (Foothill Mini Mart) located at the subject address, and also the Claimant of the UST Cleanup Fund (Claimant # 14095).

All of the existing monitoring wells, MW-1 through MW-6, were gauged and sampled during 2Q09 groundwater monitoring event. Wells MW-1 through MW-3 are located on the subject property, well MW-4 is located on the property with an address of 6620 Foothill Boulevard (former Dairy Mart Milk owned by Mr. Le Blanc) east of the subject property, and wells MW-5 and MW-6 are located on the southern edge of Foothill Boulevard south of the subject property (see Figure 2). Monitoring wells MW-1 through MW-3 were installed on June 4, 2001, and wells MW-4 through MW-6 were installed on June 26, 2002.

All of the existing monitoring wells were purged and sampled using the Low-Flow Rate Purging (LRP) and Sampling Method (Puls and Barcelona, 1996). The following analytical methods were used to analyze for concerned compounds: EPA Method 8015B (M) for the total petroleum hydrocarbons as gasoline (TPH-g), EPA Method 8260B for Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) and fuel oxygenates; including Methyl Tertiary Butyl Ether (MTBE), Tertiary Butyl Alcohol (TBA), and ethanol.

Following the field gauging and sampling activities conducted on May 7, 2009, ERS also has prepared a *Groundwater Monitoring Report – Second Quarter 2009*. This report presents the groundwater monitoring activities, monitoring results, discussions and findings, conclusions and recommendations, and the forecast of activities for the subject site.

## **2. BACKGROUND**

### **2.1 Site Description**

The Site is located at 6600 Foothill Boulevard, Oakland, California, on the northeastern corner of Havenscourt Boulevard and Foothill Boulevard (Figure 1). Ground surface elevation at the site is approximately 60 feet above msl. Regional topography of the site slopes gently toward the south-southwest. The site is located in an area with mixed commercial and residential uses. It is currently occupied by a retail gasoline station (Golden Gasoline) that includes a convenience store and two gasoline dispenser islands. Each dispenser island has two dispensers.

The property is bounded by an empty commercial building to the east, Foothill Boulevard to the south, Havenscourt Boulevard to the west and Evergreen Cemetery to the north. Across Foothill Boulevard, south of the subject site, and located at the southeast corner of the intersection of Havenscourt Boulevard and Foothill Boulevard, is an empty lot formerly used as a gas station. Adjacent to this empty lot is a two-story residential building with a store. The site plan is shown in Figure 2.

The site is located in the foothills of the Oakland Hills to the north. San Francisco Bay is located approximately two miles to the west of the property, and San Leandro Bay is approximately two miles southwest of the property. The Frick Jr. High School, Luther Burbank School, and Markham School are located within 2,000 feet of the property.

### **2.2 Site History**

The site has been a retail gas station since 1959 and was formerly operated as Shell, ARCO, and BEACON gasoline stations. The underground storage tank (UST) system of the former gas stations consisted of one 8,000-gallon, single wall, steel UST, two 10,000-gallon, single wall, fiberglass USTs, two dispenser islands, and two dispensers on each dispenser island. Mr. Ravi Sekhon purchased the property from the BEACON gas station in 1998.

As part of the UST system upgrade, a suspected leakage of the 8,000-gallon steel UST was noticed in November 1998. Consequently, the steel UST and associated dispensers were removed on December 16, 1998, and the leakage was reported in January 1999. Mr. Steve Crawford of the City of Oakland Fire Department was on site during the tank removal to observe site conditions and to direct sample collections. At Mr. Crawford's direction, two soil samples were collected individually from the eastern and western sidewalls of the UST pit and three soil samples were collected from beneath the dispenser islands. Since the pipe trench between the dispensers and UST pit was less than 20 feet, Mr. Crawford did not require that pipe trench samples be collected. The sampling results from beneath the dispenser islands and from the UST pit sidewall were forwarded to the Alameda County Environmental Health (ACEH) on January 11, 1999. In addition, on December 31, 1998, staff of Edd Clark & Associates collected one grab groundwater sample. A copy of these sample results was also forwarded to

the ACEH (AARS, 2003). Review of all laboratory reports showed that, with the exception of 25 ppb of toluene in the east dispenser island soil sample, the only detected compound in the soil was MTBE. The water sample from the pit showed that TPH-gasoline, BTEX, and MTBE were detected in the groundwater.

Following the removal of the 8,000-gallon steel UST on December 16, 1998, P&D Environmental (P&D) of Oakland, California, was retained by Mr. Sekhon to provide consulting services. During P&D's site visit on January 9, 1999, approximately 6 inches of groundwater was observed at the bottom of the UST pit, from which a steel UST had just been removed. The measured depth to groundwater was 8.0 feet below ground surface (bgs). Sheen was observed on the water in the UST pit. However, no petroleum hydrocarbon odors were detected in any of the soil at the site. Based on a January 11, 1999 telephone conversation between Mr. Crawford of the City of Oakland Fire Department and the staff of P&D, Mr. Crawford indicated that there was nothing remarkable about the site, and no evidence of contamination other than MTBE, which was reported in the laboratory reports.

Based on the above observations and the sampling results, P&D recommended that the UST pit be backfilled, the upgrade of the remaining UST system be completed, and that a groundwater investigation be performed to determine the extent and origin of petroleum hydrocarbons in groundwater. Subsequently, prior to backfilling, groundwater was pumped from the UST pit and stored in above ground storage tanks pending carbon filtration and discharge to the storm drain with an approved San Francisco Bay Regional Water Quality Control Board temporary groundwater discharge permit. In addition, the stockpile soil generated during UST removal was characterized, profiled and removed from the site to the BFI Vasco Road Landfill in Livermore, California (P&D Environmental, 1999). Additionally, to complete the UST system upgrade, two fiberglass USTs were kept at the site, new dispensers with dispenser pans and sensors, double walled piping, overfill and overspill protection, a sump with a sensor for each UST, and an automatic tank gauging system were installed, and the pit was backfilled in January and February 1999.

Mr. Sekhon retained Advanced Assessment And Remediation Services (AARS) to conduct subsequent groundwater investigation. AARS conducted a preliminary site assessment in June 2001, supervised the installation of monitoring wells MW-1, MW-2, and MW-3 on June 4, 2001, and conducted quarterly sampling on June 13, 2001 (AARS, 2001) and March 21, 2002 (AARS, 2002a). The results of the preliminary site investigation, as well as the June 2001 and March 2002 quarterly monitoring and sampling, confirmed the presence of elevated petroleum hydrocarbons and MTBE in monitoring well MW-2 near the backfilled UST pit. AARS conducted an additional site investigation by installing three monitoring wells MW-4, MW-5, and MW-6 and two soil borings. These monitoring wells were installed on June 26, 2002, and an additional groundwater sampling event was performed on July 9, 2002 (AARS, 2002b). After that, AARS conducted six monitoring and sampling events between July 2003 and November 2005. The analytical results (AARS, 2006) indicated an elevated concentration of petroleum hydrocarbons in MW-4 and the farthest downgradient monitoring well MW-6, as well as



elevated MTBE concentrations in monitoring wells MW-1, MW-2, and MW-6. Results of those monitoring events suggested that off-site migration of petroleum hydrocarbons and MTBE might have occurred. Thus, ACEH requested additional site characterization to define the lateral and vertical extent of the groundwater impact (see ACEH's March 28, 2008 letter posted on Alameda County Environmental Cleanup Oversight Programs' ftp site).

In addition to the above activities, all the existing monitoring wells MW-1 through MW-6 were surveyed again on August 4, 2008 due to issues regarding former well coordinates (ERS, 2008a). The revised top of casing (TOC) elevations and the construction data of the existing monitoring wells are presented in Table 1. The revised TOC elevations also have been uploaded to the GeoTracker.

### **2.3 Previous Site Investigations**

To assess the nature and extent of groundwater contamination, P&D prepared and submitted a work plan for a preliminary site investigation. After this work plan was approved by ACEH, Mr. Sekhon retained AARS to supervise the drilling of three soil borings to a maximum depth of 25 feet bgs conducted by Exploration Geoservices of San Jose, California, on June 4, 2001. After being sampled and screened at five-foot intervals, these soil borings were converted into monitoring wells MW-1 through MW-3. One sample from each borehole was delivered for laboratory analysis based on: the groundwater depth, smell of odors, and Photo Ionization Detector (PID) reading. Collected soil samples and groundwater samples from wells MW-1 through MW-3 were analyzed for TPH-g by EPA Method 8015M, and analyzed for BTEX and MTBE by EPA Method 8020. Elevated MTBE concentrations in soil and groundwater samples were found from MW-2 (0.29 mg/Kg and 94,000µg/L, respectively). EPA Method 8260 confirmed the above data. The investigation results are presented in the *Groundwater Quality Investigation* report (AARS, 2001).

A work plan was approved by ACEH (AARS, 2002c) and an additional site investigation was performed in June 2002. AARS supervised drilling and sampling of five borings, SB-1, SB-2, MW-4, MW-5, and MW-6, to a maximum depth of 20 feet bgs by Exploration Geoservices, on June 26 and 27, 2002. Soil samples from these five borings were collected in the same manner as in the 2001 preliminary investigation. Three borings were converted into monitoring wells MW-4 through MW-6 after soil sampling. As in 2001, soil and groundwater samples were analyzed for TPH-g, BTEX, and MTBE using the same EPA methods. The 2002 additional investigation revealed that elevated MTBE concentrations of 37,600, 28,300, 18,600, and 11,300 µg/L were found in wells MW-2, MW-4, MW-5, and MW-6, respectively. Elevated MTBE concentrations of 593, 4,290, and 1160 mg/Kg were found in soil samples collected from borings MW-4, MW-5, and MW-6, respectively, at a depth of 10 feet bgs. The 2002 additional investigation (AARS, 2002b) suggests that both TPH-g and MTBE have migrated to the southeast of the subject property following the groundwater flow. Prior to soil sampling and well installation, a horizontal conduit study and well search was also performed. No significant horizontal and vertical conduits were identified during 2002 investigation.

A work plan was approved by ACEH (AARS, 2003) for another site investigation performed in August 2005 (AARS, 2005). AARS supervised drilling of 12 soil borings, SB-3 through SB-14 by Gregg Drilling and Testing, Inc. of Martinez, California, on August 10 and 11, 2005. Soil borings SB-3 and SB-4 were drilled to 20 feet bgs; soil borings SB-5, SB-6 and SB-10 through SB-14 were drilled to 17 feet bgs. Soil boring SB-7 was drilled to 30 feet bgs, and SB-8 and SB-9 were drilled to 28 feet bgs. Soil samples were collected from the above borings at five-foot intervals and analyzed for TPH-g, BTEX, and MTBE. Multiple soil samples were collected from borings SB-7, SB-8, and SB-9 based on the change of lithology or PID reading. Temporary well casings were installed in all soil borings for groundwater collection. Since borings SB-9, SB-13, and SB-14 were dry, groundwater samples were not collected (see Table 2). Groundwater was collected from other locations within the screened interval of 10 to 20 feet bgs. Collected soil and groundwater samples were analyzed for TPH-g by EPA Method 8015M, and for BTEX and MTBE by EPA Method 8021B.

The 2005 investigation revealed the following conditions:

- Highly clayey soil exists nearby the UST pit. Thus, the migration of dissolved hydrocarbons in groundwater is limited.
- The hydrocarbon plume is primarily confined to the vicinity of the removed tank pit area and has migrated to the southeast following the direction of groundwater flow.
- Groundwater samples collected from MW-2, MW-4, MW-6, SB-7, and SB-8 detected TPH-g concentrations between 91 and 9,300 µg/L (SB-8), and benzene concentrations between non-detect to 470 µg/L.
- Although MTBE was detected in all monitoring wells and most soil borings (non-detected only in soil borings SB-5 and SB-6), with concentrations ranging from 13 (SB-11) to 23,000 µg/L (SB-7), elevated MTBE concentrations were detected in monitoring wells MW-1, MW-2, MW-4, and MW-6, and soil borings SB-7 and SB-8.
- Significant levels of MTBE were detected in soil borings SB-7, SB-8, and SB-9 near the UST pit. TPH-g concentration containing strongly aged gasoline or diesel range compounds between 1.7 and 200 mg/Kg was detected in these soil borings.
- Due to the high mobility of MTBE, the delineated MTBE plume boundary is much broader than the hydrocarbon plume.
- Only a low TPH-g concentration of 4.7 mg/Kg containing strongly aged gasoline or diesel range compounds was detected at SB-4. No TPH-g, BTEX, and MTBE were detected in all other soil borings located on the properties of 6601 and 6619 Foothill Boulevard. In accordance with a personal communication with Mr. Billy Jue, property owner, elevated TPH-g concentration of 13,000 µg/L, detected in groundwater from location of SB-5 located

on the property of 6619 Foothill Boulevard, with non-typical gasoline pattern, was likely associated with past railroad activities of General Motor Automotive Plant.

## **2.4 Local Geologic and Hydrogeologic Setting**

The subject property and its vicinity are located in the foothills of the Oakland Hills, as well as at the eastern edge of a broad alluvial plain on the east side of San Francisco Bay. The alluvial plain is relatively flat. The alluvial deposits consist largely of inter-fingered lenses of clayey gravel, sandy and silty clays, and sand to silty clay mixtures. Individual units are discontinuous and have low correlation with distance.

Groundwater under the subject site is often shallow. The average groundwater depths under the subject site on June 4, 2001 and August 11, 2005, were 9.83 and 8.17 feet bgs, respectively. However, the average groundwater depth off site measured on August 11, 2005 was 7.00 feet bgs. Local groundwater elevation varies with rainfall and seasons. The general groundwater flow direction ranges between west and southwest toward the San Francisco Bay or San Leandro Bay.

## **2.5 Groundwater Monitoring History**

As mentioned above, existing monitoring wells were installed separately in June 2001 and 2002. However, the above wells have never been monitored regularly every quarter between 2001 and 2005. All wells were only monitored quarterly for one full year from July 2003 to May 2004 (see Table 2). Wells MW-1 through MW-3 were gauged only twice each year between 2002 and 2005, and wells MW-4 through MW-6 were gauged and sampled twice each year between 2003 and 2005. AARS conducted a final monitoring event on November 30, 2005 (AARS, 2006).

Mr. Ravi Sekhon retained ERS on July 9, 2008, to manage this site cleanup and closure project. Thus, at the request of ACEH in a letter dated July 24, 2008 posted on Alameda County Environmental Cleanup Oversight Programs' ftp site, quarterly groundwater monitoring resumed on August 8, 2008.

## **2.6 Contaminants of Concern**

Cumulative groundwater sampling data of all the sampling events between June 2001 and November 2005 (Table 2) shows that elevated concentrations of dissolved hydrocarbons, including TPH-g and/or benzene, as well as fuel oxygenates, including MTBE and/or TBA, have been detected from on-site monitoring wells MW-1 and MW-2, and off-site monitoring wells MW-4, MW-5, and MW-6. Thus, TPH-g, benzene, MTBE, and TBA are the contaminants of concern for the subject site.

### 3. GROUNDWATER MONITORING ACTIVITIES

All of the 6 monitoring wells for the subject site were gauged and sampled on May 7<sup>th</sup>, 2009. Before gauging, all well lids were opened and allowed to equilibrate for approximately 30 minutes. Depth to water was measured in order from wells with the lowest contaminant concentrations to the highest based on the 1Q09 data.

All existing wells MW-1 through MW-6 were gauged and sampled using the Low-Flow Rate Purging (LRP) and Sampling Method (Puls and Barcelona, 1996). The purge rate was calibrated prior to the first purge to establish the flow-rate. The pump was set to a rate of 0.3 liters per minute (L/min). Depth to water (DTW) and water quality parameters were measured in three-minute intervals. Water quality parameters: pH, temperature, dissolved oxygen (DO), specific conductance (SC), and oxidation-reduction potential (ORP) were measured within the flow-through cell. The water quality parameters were measured using an YSI 6820 instrument, which was calibrated prior to use and decontaminated between wells.

When parameters stabilized according to the low-flow sampling protocol (ASTM, 2002), the purging rate was lowered to approximately 0.2 L/min, the discharge tube was disconnected from the flow-through cell, and samples were collected directly from the dedicated tubing. Appendix A provides copies of the groundwater depth and well purging data sheets recorded in the field.

Water samples were collected, labeled and stored in a chilled ice chest with ice. The samples were delivered to the Kiff Analytical, LLC of Davis, California, a State of California certified laboratory, under standard chain-of-custody protocols. Kiff Analytical performed analysis for TPH-g by EPA Method 8015B (M), and analyses for BTEX and fuel oxygenates by EPA Method 8260B. Appendix B includes copies of the laboratory reports and chain-of-custody.

## 4. GROUNDWATER MONITORING RESULTS

LRP was used to purge and sample each monitoring well during 2Q09. The groundwater purging rate for each well was set at 0.3 liter per minute (L/min). Groundwater gauging indicated that local groundwater was above the top of the well screen for wells MW-1, MW-2, MW-4, and MW-6 and below the top of the well screen for wells MW-3 and MW-5. Thus, the stinger (tubing) for purging/sampling was placed near to the bottom of the well screen.

During 2Q09, again, no sheen or product is visible. Only slight odors are identified in wells MW-5 and MW-6. Groundwater in all the monitoring wells has no visible color and very low turbidity. The water quality measurements reveal that, except for well MW-1 (pH less than 6 and ORP values are positive), local groundwater quality is relatively homogeneous (pH greater than 6.3 and ORP values are negative). MW-1 is the only well with a positive ORP (greater than 80 mV) and lower pH value (less than 5.9). Although the DO concentration of the local groundwater is consistently less than 1 mg/L, the dissolved concentrations of MW-4 and MW-5 are less than 0.1 mg/L. The above water quality parameters indicate that the local groundwater is anaerobic and reductive. In addition to the purging rate and the stinger depth mentioned above, the water quality parameters (pH, temperature, DO, SC, and ORP) and the time required for reaching stabilization of water quality are listed in Table 3. The total volume of water purged from the six monitoring wells was approximately 8 gallons.

### 4.1 Groundwater Elevation and Flow

The historical data since June 2001 indicate that, maximum and minimum groundwater depths frequently exist in monitoring wells MW-3/MW-1 and MW-4, respectively. During 2Q09, maximum and minimum groundwater depths again occurred in wells MW-3 (8.98 feet bgs) and MW-4 (4.86 feet bgs), respectively. Groundwater elevation was calculated by subtracting measured depth to groundwater from the revised top of casing elevation. The top of casing (TOC) elevations and the well construction data for wells MW-1 through MW-6 is presented in Table 1. Calculated groundwater elevations for the 2Q09 monitoring event are listed in Table 2. The calculated groundwater elevation ranges from 53.33 ft above msl (MW-4) to 50.96 ft above msl (MW-3) in 2Q09. The average groundwater elevation (52.21 ft above msl) of 2Q09 is only 0.74 feet higher than the average groundwater elevation (51.47 ft above msl) of 1Q09. Most importantly, the 2Q09 groundwater elevations in wells MW-2 through MW-4 are 0.3 – 0.4 feet higher than the associated 1Q09 elevations. Rather, the 2Q09 groundwater elevation in well MW-1 is 2.29 feet higher than the associated 1Q09 elevation. The associated groundwater elevation contours are plotted in Figure 3.

Based on the contoured potentiometric surface shown in Figure 3, the primary groundwater flow is in the southwest-west direction with a horizontal hydraulic gradient of approximately 0.015 ft/ft. The groundwater flow distribution determined for the 2Q09 monitoring event is similar to all the groundwater flows observed since February 2004. The delineated groundwater flow direction and calculated hydraulic gradient are presented in Table 2 and Figure 3.

## 4.2 Concentration Level and Distribution of Groundwater Contaminants

The 2Q09 groundwater sampling again reveals that the on-site TPH-g concentrations (from 410 to 860 µg/L) are lower than the off-site TPH-g concentrations (from 1,900 to 5,800 µg/L). The 2Q09 TPH-g concentrations in on-site monitoring wells MW-1 (420 µg/L) and MW-2 (860 µg/L) are the highest since February/May 2004. A maximum TPH-g concentration is also found in well MW-3 in 2Q09 since 2001. Similarly, the highest benzene concentration of 32 µg/L is found in off-site well MW-6. Except for well MW-6, the BTEX concentrations in other monitoring wells are either insignificant or less than their associated method reporting limits.

Again in 2Q09, the highest TPH-g concentration (5,800 µg/L) was detected in off-site well MW-6, and the highest MTBE concentration (210 µg/L) was detected in on-site well MW-1. Although the MTBE concentration (9.7 µg/L) of MW-2 located near the UST pit is relatively low, this well has the highest TBA concentration (12,000 µg/L), which is a degradation product of MTBE. Conversely, although the on-site well MW-1 has the highest MTBE concentration (210 µg/L), the associated TBA concentration (110 µg/L) is relatively low compared with the TBA concentrations of 12,000, 900, 1,000, and 460 µg/L detected in wells MW-2, MW-3, MW-4, and MW-6, respectively. This situation is shown in Figure 6.

Using the laboratory analytical data (Appendix B), spatial concentration distributions for the contaminants of concern, i.e., TPH-g, benzene, and MTBE/TBA, are plotted in Figures 4 through 6. Comparing the data obtained from the sampling events conducted on August 11, 2005 (AARS, 2005) and November 30, 2005 (AARS, 2006) with the sampling data exhibited in Figures 4 through 6, significant variations for the concentration levels and plume boundaries have occurred since 2005.

## 5. FINDINGS

Historical groundwater monitoring data shows that local groundwater flow frequently occurred in the southward direction, along with a greater hydraulic gradient (AARS, 2004a; 2004b; 2005; 2006). This has caused the southward migration of TPH-g, benzene, and MTBE from the on-site UST pit area. The above situation has been shown in 3Q08, 4Q08, and 1Q09, and is confirmed in 2Q09 by the lower TPH-g concentrations (410 – 860 µg/L) in on-site wells MW-1 through MW-3 and higher TPH-g concentration (1,900 – 5,800 µg/L) in off-site wells MW-4 through MW-6. In addition, although migration of TPH-g is mainly southward, the TPH-g plume boundary becomes broader. Based on the 3Q08, 4Q08, 1Q09, and 2Q09 data, the lateral range of the TPH-g plume is expanding.

Similar to TPH-g, benzene also has migrated off site. However, compared with the TPH-g plume, the benzene plume has greatly diminished compared with the TPH-g plume because benzene is more mobile and volatile, and gasoline contains more TPH-g than benzene. This finding is clearly shown in Figure 5 of the 2005 site characterization and 3Q05 monitoring report (AARS, 2005), Figure 5 of the 4Q05 groundwater monitoring report (AARS, 2006), and Figure 5 of the 3Q08, 4Q08, and 1Q09 groundwater monitoring reports. However, the 2Q09 sampling indicates that the benzene plume has stabilized.

Comparing the change of the benzene/TPH-g plumes with the change of MTBE plume, the effect of dilution and dispersion (natural attenuation) apparently has a stronger influence for MTBE, as opposed to TPH-g and benzene. The MTBE plume has been greatly diminished because the solubility of MTBE is much higher than the solubilities of benzene and TPH-g, and consequently, MTBE is more mobile than benzene and TPH-g. Since a northwestern component of local groundwater flow exists, the MTBE plume has been split into two smaller plumes. This effect is shown in Figure 6 of the 2005 site characterization and 3Q05 monitoring report (AARS, 2005), Figure 6 of the 4Q05 groundwater monitoring report (AARS, 2006), and in Figure 6 of the 3Q08 and 4Q08 groundwater monitoring reports. The diminishing trend of MTBE is clearly identified in wells MW-1 and MW-4 (Figure 7). However, similar to benzene, the MTBE concentrations in wells MW-2, MW-3, MW-5, and MW-6 appear stable in 2Q09.

In addition to the above, more findings are listed below:

- The TPH-g concentrations of wells MW-1 through MW-5 increase significantly. The 2Q09 TPH-g concentrations in wells MW-1 and MW-2 are the highest since February/May 2004, and a maximum TPH-g concentration is also found in well MW-3 in 2Q09. Conversely, the off-site TPH-g concentration remains unchanged in well MW-6.
- Although the MTBE concentration reduces from 610 to 210 µg/L in MW-1, the MTBE concentrations remain at similar levels for wells MW-2 through MW-6.

- Like TPH-g and MTBE, benzene has migrated off site from the UST area. The resulting plume center is near well MW-6. Although the benzene concentrations in wells MW-1 through MW-5 have declined to less than the reporting limits, the concentration level at MW-6 remains elevated at 32 µg/L.
- The highest TBA concentration (12,000 µg/L) was detected in well MW-2 located near the UST pit where the MTBE concentration (9.7 µg/L) is relatively low. Conversely, although on-site well MW-1 has the highest MTBE concentration (210 µg/L), the associated TBA concentration (110 µg/L) is relatively low compared with the TBA concentrations in wells MW-2, MW-3, MW-4, and MW-6.
- TBA concentrations increased in wells MW-2 and MW-3. MTBE concentrations decreased in wells MW-1, MW-2, MW-4, and MW-5.



## 6. CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

(1) TPH-g concentrations in on-site wells MW-1 through MW-3 increased significantly, especially in well MW-2. Both MTBE and benzene concentrations in downgradient/off-site well MW-6 remain unchanged. Also, the lateral range of the TPH-g plume is expanding. The above observations strongly suggest the existence of residual petroleum hydrocarbons at the subject site.

(2) The extremely high MTBE concentration of 94,000 µg/L detected in well MW-2 near/downgradient of the UST pit in June 2001 has greatly reduced to the range of 9.7 to 12 µg/L, between August 2008 and May 2009. Conversely, within the same period, the TBA concentration of 980 µg/L detected in well MW-2 in June 2001 has greatly increased to the range of 11,000 to 17,000 µg/L. Although the above data suggest the existence of natural attenuation of MTBE in groundwater within the source area, water quality near the subject site has not been improved.

(3) The 2Q09 groundwater elevations in wells MW-2 through MW-4 are 0.3 – 0.4 feet higher than the associated 1Q09 elevations. The 2Q09 groundwater elevation in well MW-1 is 2.29 feet higher than the associated 1Q09 elevation. The higher groundwater elevation near well MW-1, and the groundwater recharge that occurred in the winter season, may have caused the increase of TPH-g concentrations in wells MW-1 through MW-5. This condition further suggests the presence of residual petroleum hydrocarbons in the vadose zone soil under the subject site.

(4) Cumulative groundwater data indicates that the TPH-g impact under the subject site remains unchanged and the center of the TPH-g plume is near off-site well MW-6. Conversely, the MTBE concentrations both on-/off-site have declined from the  $10^5/10^4$  to  $10^2/10^1$  orders of magnitude. Based on the distinct physical and biochemical characteristics of MTBE and TPH-g, as well as their existing concentration levels, groundwater impact of MTBE does not appear as significant as that of TPH-g.

(5) The historical groundwater flow distribution and the cumulative MTBE concentration data for well MW-1 indicate that the northward migration of MTBE from the tank pit area is influenced by groundwater flow. Conversely, the change of MTBE concentration is influenced by the biodegradation of MTBE within the source area and the dispersion/dilution of MTBE in groundwater (See the MTBE concentration pulse for MW-1 in Figure 7).

(6) The lateral range of the MTBE plume has shrunk greatly since 2005 due to the fact that MTBE is extremely mobile when groundwater flow is significant; and biodegradation of MTBE has occurred in the source area. As a result, the groundwater impact of MTBE is limited to areas near well MW-1 and MW-6.

(7) Although the MTBE plume has been split, comparatively higher MTBE/TBA groundwater impact exists on site near the tank pit area (see Figure 6). Conversely, a higher level of petroleum hydrocarbon impact is found off site (see Figures 4 and 5).

### **Recommendations**

Results of the quarterly monitoring from 3Q08 to 2Q09 indicate that:

- MTBE/TBA are the major contaminants under the subject site.
- The off-site groundwater has been significantly impacted by petroleum hydrocarbons.

Both the 1Q09 and 2Q09 groundwater data indicate that the TPH-g, benzene, and MTBE concentrations in off-site wells MW-4 through MW-6 are either stable or slightly increasing. Based on the Site Conceptual Model (ERS, 2008b) and the quarterly groundwater monitoring results, it is reasonable to conclude that contaminated soil still exists on site near the UST area. Prior to the implementation of an interim remedial measure or final site cleanup for the “source” areas near the tank pit to eliminate off-site groundwater contamination, the 2009 site characterization proposed in *Data Gap Work Plan Addendum* (ERS, 2009) should be implemented as soon as possible so that a Feasibility Study Report and/or a Corrective Action Plan can be submitted so that interim or final site remediation can be conducted.

## 7. FORECAST ACTIVITIES

(1) A request for postponing the 2009 site characterization (NOTE: According to ACEH's February 6, 2009 letter, the associated soil and groundwater investigation report is due on May 4, 2009) was sent to ACEH via an electronic transmittal on April 4, 2009. Pending the resolution of three issues described in the April 4, 2009 transmittal, the 2009 site characterization activities have not been scheduled. At present, in addition to the permit fee issue ERS is encountering, ERS has not been able to locate the property owner of 6601 Foothill Boulevard, Harrison Huynh and Jeanette Kim. Thus, the monitoring wells MW-8A/MW-8B proposed in the *Data Gap Work Plan Addendum* (ERS, 2009) may have to be relocated. Also, Mr. Abdul Ghaffar, the property owner and the responsible party, has not provided required documents that include the Liability Insurance Certificate and a copy of the Grand Deed to allow ERS to submit the application for an encroachment permit to the City of Oakland.

(2) The 3Q09 quarterly groundwater monitoring and sampling will be conducted on August 6, 2009.

## REFERENCES

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**CERTIFICATION**

This document was prepared under the supervision of a State of California Professional Engineer at Environmental Risk Specialties Corporation (ERS). All statements, conclusions, and recommendations are based solely upon published results from previous consultants, field observations by ERS, and laboratory analysis performed by a California DHS-certified laboratory related to the work performed by ERS.

Information, interpretation, and methods presented herein are for the sole use of the client and regulating agency. The service performed by ERS has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the property. No other warranty, expressed or implied, is made.

Sincerely,

ENVIRONMENTAL RISK SPECIALTIES CORPORATION

Jim Ho, PE #C68639



# **TABLES**

**Table 1**  
**Well Construction Data**  
6600 Foothill Boulevard, Oakland, California

Well ID	Date Installed	Casing Diameter	Borehole Diameter	Total Depth	Screened Interval	Sand Interval	Bentonite Seal	Cement	Slot Size	Sand Size
		(inches)	(inches)	(feet)	(feet bgs)	(feet bgs)	(feet bgs)	(feet bgs)	(inches)	
MW-1	6/4/2001	2	8	25	10 - 25	8 - 25	6 - 8	0 - 6	0.01	Lonestar #2
MW-2	6/4/2001	2	8	25	10 - 25	8 - 25	6 - 8	0 - 6	0.01	Lonestar #2
MW-3	6/4/2001	2	8	25	10 - 25	8 - 25	6 - 8	0 - 6	0.01	Lonestar #2
MW-4	6/26/2002	2	8	20	7.5 - 20	6 - 20	5 - 6	0 - 5	0.01	Lonestar #2
MW-5	6/26/2002	2	8	20	7.5 - 20	6 - 20	5 - 6	0 - 5	0.01	Lonestar #2
MW-6	6/26/2002	2	8	20	7.5 - 20	6 - 20	5 - 6	0 - 5	0.01	Lonestar #2



**TABLE 2**

**Cumulative Groundwater Elevation and Analytical Data**

6600 Foothill Boulevard, Oakland, California

Monitoring Wells	Total Depth Drilled (ft bgs)	Date Sampled	Top of Casing Elevation (ft, above msl)	Depth to Water (ft, below TOC)	Water Elevation (ft, above msl) <sup>(1)</sup>	Groundwater Flow Direction	GW Gradient (ft/ft)	TPH-g (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)	TBA (ug/L)	ETBE, DIPE, TAME, METH, ETH (ug/L)	1,2-DCA (ug/L)	1,2-EDB (ug/L)
Analysis Methods								EPA 8015M	EPA 8021B/EPA 8260B <sup>(2)</sup>					EPA 8260B			
Maximum Contaminant Level <sup>^</sup>								NA	5	1,000	700	10,000	5	12 (Ca.)	NA	5	0.05
MW-1	25	6/13/2001	100.00*	9.36	90.64	SE	0.05	ND	ND	ND	ND	ND	130	NA	--	--	--
		3/21/2002	100.00*	7.96	92.04	SE	0.024	95	ND	ND	ND	ND	72.5	NA	--	--	--
		7/9/2002	100.00*	8.51	91.49	SE	0.014	ND	ND	ND	ND	ND	208	NA	--	--	--
		7/11/2003	160.25	8.66	151.59	SE	0.012	ND	0.7	ND	ND	1.2	636	NA	--	--	--
		11/13/2003	160.25	8.10	152.15	SE	0.012	ND<5000#	ND	ND	ND	ND	72,000	22,000	--	--	--
		2/19/2004	160.25	8.24	152.01	NW - SW	0.008	1,350	460	ND	ND	ND	82,000	8,630	--	--	--
		5/21/2004	160.25	8.51	151.74	NW - SW	0.019	ND	ND<50	ND<50	ND<50	ND<100	12,000	ND<1000	--	--	--
		8/11/2005	160.25	8.34	151.91	SW	0.008	ND	ND	ND	ND	ND	4,900	NA	--	--	--
		11/30/2005	160.25	9.86	150.39	NW - SW	0.018	ND<250	ND<2.5	ND<2.5	ND<2.5	ND<2.5	8,400	NA	--	--	--
		8/8/2008	60.02	10.62	49.40	NWN - SW	0.031-0.017	390	<1.5	<1.5	<1.5	<1.5	720	7.4J	<1.5, Meth<300, Eth<15	<1.5	<1.5
		11/5/2008	60.02	10.78	49.24	NWN - SWW	0.039-0.016	350	<5.0	<10	<10	<10	580	<100	<20, Eth<1,000	--	--
2/6/2009	60.02	9.05	50.97	W	0.015	150	<1.5	<1.5	<1.5	<1.5	610	120	<1.5, Meth<600, Eth<15	--	--		
5/7/2009	60.02	6.76	53.26	SWW	0.015	420	<0.50	<0.50	<0.50	<0.50	210	110	<0.50, Meth<150, Eth<5.0	--	--		
MW-2	25	6/13/2001	98.71*	10.44	88.27	SE	0.05	5,800	160	210	290	980	94,000	980	--	--	--
		3/21/2002	98.71*	8.18	90.53	SE	0.024	452	3.4	ND	1.6	2.1	79,100	NA	--	--	--
		7/9/2002	98.71*	8.35	90.36	SE	0.014	497	61.6	ND	ND	1.6	37,600	NA	--	--	--
		7/11/2003	158.97	7.58	151.39	SE	0.012	553	48.9	ND	ND	ND	38,200	NA	--	--	--
		11/13/2003	158.97	8.01	150.96	SE	0.012	ND<2500#	NS	ND	ND	ND	47,000	11,000	--	--	--
		2/19/2004	158.97	6.43	152.54	NW - SW	0.008	4,390	410	265	160	490	26,700	3,930	--	--	--
		5/21/2004	158.97	6.83	152.14	NW - SW	0.019	1,150	254	ND<200	ND<200	ND<400	24,600	ND<4000	--	--	--
		8/11/2005	158.97	7.31	151.66	SW	0.008	91	ND	1.1	ND	ND	6,500	NA	--	--	--
		11/30/2005	158.97	7.98	150.99	NW - SW	0.018	69	ND	1.4	ND	ND	2,300	NA	--	--	--
		8/8/2008	58.74	7.19	51.55	NWN - SW	0.031-0.017	300	<9.0	<9.0	<9.0	<9.0	9.8	17,000	<9.0, Meth<900, Eth<90	<9.0	<9.0
		11/5/2008	58.74	7.14	51.60	NWN - SWW	0.039-0.016	510	<0.50	<1.0	<1.0	<1.0	12	13,000	<2.0, Eth<100	--	--
2/6/2009	58.74	6.92	51.82	W	0.015	50	<4.0	<4.0	<4.0	<4.0	10	11,000	<4.0, Meth<400, Eth<40	--	--		
5/7/2009	58.74	6.53	52.21	SWW	0.015	860	<4.0	<4.0	<4.0	<4.0	9.7	12,000	<4.0, Meth<400, Eth<40	--	--		
MW-3	25	6/13/2001	99.90*	9.69	90.21	SE	0.05	300	1	ND	0.07	2	450	NA	--	--	--
		3/21/2002	99.90*	8.80	91.10	SE	0.024	274	1.1	ND	1	2.5	7,520	NA	--	--	--
		7/9/2002	99.90*	9.33	90.57	SE	0.014	ND	ND	ND	ND	ND	40.8	NA	--	--	--
		7/11/2003	160.17	9.35	150.82	SE	0.012	ND	ND	ND	ND	ND	24.3	NA	--	--	--
		11/13/2003	160.17	8.85	151.32	SE	0.012	ND	ND	ND	ND	ND	37	27	--	--	--
		2/19/2004	160.17	8.46	151.71	NW - SW	0.008	83	ND	ND	ND	ND	42.7	508	--	--	--
		5/21/2004	160.17	9.09	151.08	NW - SW	0.019	ND	ND	ND	ND	ND	54	1100	--	--	--
		8/11/2005	160.17	8.87	151.30	SW	0.008	ND	ND	ND	ND	ND	27	NA	--	--	--
		11/30/2005	160.17	9.73	150.44	NW - SW	0.018	ND	ND	ND	ND	ND	28	NA	--	--	--
		8/8/2008	59.94	9.64	50.30	NWN - SW	0.031-0.017	99	<0.50	<0.50	<0.50	<0.50	4.5	130	<0.50, Meth<80, Eth<5.0	<0.50	<0.50
		11/5/2008	59.94	9.33	50.61	NWN - SWW	0.039-0.016	55	<0.50	<1.0	<1.0	<1.0	4.5	500	<2.0, Eth<100	--	--
2/6/2009	59.94	9.37	50.57	W	0.015	100	<0.50	<0.50	<0.50	<0.50	5.3	770	<0.50, Meth<100, Eth<5.0	--	--		
5/7/2009	59.94	8.98	50.96	SWW	0.015	410	<0.50	<0.50	<0.50	<0.50	5.5	900	<0.50, Meth<50, Eth<5.0	--	--		

**TABLE 2**  
**Cumulative Groundwater Elevation and Analytical Data**  
6600 Foothill Boulevard, Oakland, California

Monitoring Wells	Total Depth Drilled (ft bgs)	Date Sampled	Top of Casing Elevation (ft, above msl)	Depth to Water (ft, below TOC)	Water Elevation (ft, above msl) <sup>(1)</sup>	Groundwater Flow Direction	GW Gradient (ft/ft)	TPH-g (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)	TBA (ug/L)	ETBE, DIPE, TAME, METH, ETH (ug/L)	1,2-DCA (ug/L)	1,2-EDB (ug/L)
Analysis Methods								EPA 8015M	EPA 8021B/EPA 8260B <sup>(2)</sup>					EPA 8260B			
Maximum Contaminant Level <sup>^</sup>								NA	5	1,000	700	10,000	5	12 (Ca.)	NA	5	0.05
MW-4	20	7/9/2002	98.19 <sup>*</sup>	8.14	90.05	SE	0.014	9,680	43	17	369	1990	28,300	NA	--	--	--
		7/11/2003	158.42	6.73	151.69	SE	0.012	3,170	16.5	6.4	71.7	240	16,600	NA	--	--	--
		11/13/2003	158.42	6.54	151.88	SE	0.012	ND<1000#	49	ND	340	900	16,000	4,500	--	--	--
		2/19/2004	158.42	4.37	154.05	NW - SW	0.008	7,230	107	7	497	1063	14,300	1,440	--	--	--
		5/21/2004	158.42	5.79	152.63	NW - SW	0.019	9,340	194	ND	309	860	7,380	ND<2000	--	--	--
		8/11/2005	158.42	6.65	151.77	SW	0.008	3,000	15	24	87	190	1,200	NA	--	--	--
		11/30/2005	158.42	6.05	152.37	NW - SW	0.018	4,300	18	28	84	130	340	NA	--	--	--
		8/8/2008	58.19	5.91	52.28	NWN - SW	0.031-0.017	3,600	0.53	0.61	5.6	1.5	24	1,800	<0.50, Meth<80, Eth<5.0	<0.50	<0.50
		11/5/2008	58.19	5.33	52.86	NWN - SWW	0.039-0.016	2,000	0.58	<1.0	6.8	1.2	31	760	<2.0, Eth<100	--	--
		2/6/2009	58.19	5.15	53.04	W	0.015	3,400	0.81	<0.50	10	1.2	39	1,400	<0.50, Meth<200, Eth<5.0	--	--
		<b>5/7/2009</b>	<b>58.19</b>	<b>4.86</b>	<b>53.33</b>	<b>SWW</b>	<b>0.015</b>	<b>4,500</b>	<b>0.73</b>	<b>&lt;0.50</b>	<b>7.4</b>	<b>1.2</b>	<b>29</b>	<b>1,000</b>	<b>&lt;0.50, Meth&lt;200, Eth&lt;5.0</b>	--	--
MW-5	20	7/9/2002	97.81 <sup>*</sup>	8.16	89.65	SE	0.014	275	30.2	ND	ND	3	18,600	NA	--	--	--
		7/11/2003	158.03	7.94	150.09	SE	0.012	890	10	0.6	ND	7.1	5,090	NA	--	--	--
		11/13/2003	158.03	7.41	150.62	SE	0.012	ND<1000#	ND	ND	ND	ND	3,400	3,100	--	--	--
		2/19/2004	158.03	6.14	151.89	NW - SW	0.008	1,310	ND	0.7	ND	2.2	438	1,340	--	--	--
		5/21/2004	158.03	7.42	150.61	NW - SW	0.019	1,960	9.7	0.7	ND	ND	214	436	--	--	--
		8/11/2005	158.03	7.67	150.36	SW	0.008	410**	ND	3.3	ND	ND	100	NA	--	--	--
		11/30/2005	158.03	8.51	149.52	NW - SW	0.018	240**	ND	1.8	ND	1.4	82	NA	--	--	--
		8/8/2008	57.80	7.59	50.21	NWN - SW	0.031-0.017	1,900	<0.50	<0.50	<0.50	4.0	8.6	510	<0.50, Meth<50, Eth<5.0	<0.50	<0.50
		11/5/2008	57.80	6.91	50.89	NWN - SWW	0.039-0.016	1,600	<0.50	<1.0	<1.0	1.1	4.8	170	<2.0, Eth<100	--	--
		2/6/2009	57.80	6.98	50.82	W	0.015	680	<0.50	<0.50	<0.50	2.2	5.5	110	<0.50, Meth<200, Eth<5.0	--	--
		<b>5/7/2009</b>	<b>57.80</b>	<b>6.43</b>	<b>51.37</b>	<b>SWW</b>	<b>0.015</b>	<b>1,900</b>	<b>0.72</b>	<b>0.91</b>	<b>&lt;0.50</b>	<b>2.3</b>	<b>4.3</b>	<b>60</b>	<b>&lt;0.50, Meth&lt;50, Eth&lt;5.0</b>	--	--
MW-6	20	7/9/2002	97 <sup>*</sup>	7.45	89.55	SE	0.014	12,000	432	22	637	1740	11,300	NA	--	--	--
		7/11/2003	157.24	7.98	149.26	SE	0.012	2,970	534	6.3	70.1	278	18,000	NA	--	--	--
		11/13/2003	157.24	7.47	149.77	SE	0.012	ND<2500#	300	ND	ND	52	18,000	ND	--	--	--
		2/19/2004	157.24	5.09	152.15	NW - SW	0.008	5,340	184	5	65	127	5,310	4,260	--	--	--
		5/21/2004	157.24	6.38	150.86	NW - SW	0.019	6,110	340	12.7	205	308.8	3,900	4,060	--	--	--
		8/11/2005	157.24	6.68	150.56	SW	0.008	6,100	470	48	23	30	3,200	NA	--	--	--
		11/30/2005	157.24	7.43	149.81	NW - SW	0.018	3,700	310	30	16	12	3,400	NA	--	--	--
		8/8/2008	57.01	6.23	50.78	NWN - SW	0.031-0.017	6,500	63	2.0	42	98	230	810	<0.50, TAME<0.66, Meth<200, Eth<8.0	<0.50	<0.50
		11/5/2008	57.01	5.35	51.66	NWN - SWW	0.039-0.016	4,800	74	<5.0	23	42	340	950	<10, Eth<500	--	--
		2/6/2009	57.01	5.44	51.57	W	0.015	5,800	34	1.1	16	38	140	690	<0.50, Meth<200, Eth<5.0	--	--
		<b>5/7/2009</b>	<b>57.01</b>	<b>4.91</b>	<b>52.10</b>	<b>SWW</b>	<b>0.015</b>	<b>5,800</b>	<b>32</b>	<b>1.2</b>	<b>14</b>	<b>37</b>	<b>150</b>	<b>460</b>	<b>&lt;0.50, Meth&lt;100, Eth&lt;5.0</b>	--	--

TABLE 2 Cumulative Groundwater Elevation and Analytical Data 6600 Foothill Boulevard, Oakland, California																	
Monitoring Wells	Total Depth Drilled (ft bgs)	Date Sampled	Top of Casing Elevation (ft, above msl)	Depth to Water (ft, below TOC)	Water Elevation (ft, above msl) <sup>(1)</sup>	Groundwater Flow Direction	GW Gradient (ft/ft)	TPH-g (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Xylenes (ug/L)	MTBE (ug/L)	TBA (ug/L)	ETBE, DIPE, TAME, METH, ETH (ug/L)	1,2-DCA (ug/L)	1,2-EDB (ug/L)
Analysis Methods								EPA 8015M	EPA 8021B/EPA 8260B <sup>(2)</sup>					EPA 8260B			
Maximum Contaminant Level <sup>^</sup>								NA	5	1,000	700	10,000	5	12 (Ca.)	NA	5	0.05
SB-1/GW	20	6/27/2002	--	--	--	--		554	1	0.8	11.6	76.2	74.1	NA	--	--	--
SB-2/GW	20	6/27/2002	--	--	--	--		3000	95.6	10.2	394	831	485*	NA	--	--	--
SB-3/GW	20	8/11/2005	--	--	--	--		ND	ND	ND	ND	ND	32	NA	--	--	--
SB-4/GW	20	8/11/2005	--	--	--	--		160**	ND	ND	ND	ND	180	NA	--	--	--
SB-5/GW	17	8/10/2005	--	--	--	--		13000**	ND<5.0	260	ND<5.0	ND<5.0	ND<50	NA	--	--	--
SB-6/GW	17	8/10/2005	--	--	--	--		ND	ND	ND	ND	ND	ND	NA	--	--	--
SB-7/GW	30	8/11/2005	--	--	--	--		2900	19	ND<10	160	ND	23000	NA	--	--	--
SB-8/GW	28	8/11/2005	--	--	--	--		9300	230	10	460	1500	11000	NA	--	--	--
SB-10/GW	17	8/10/2005	--	--	--	--		ND	ND	ND	ND	ND	16	NA	--	--	--
SB-11/GW	17	8/10/2005	--	--	--	--		ND	ND	ND	ND	ND	13	NA	--	--	--
SB-12/GW	17	8/10/2005	--	--	--	--		ND	ND	ND	ND	ND	ND	NA	--	--	--

**Notes:**

TPH-g total petroleum hydrocarbons as gasoline

MTBE Methyl Tertiary Butyl Ether

TBA Tertiary Butyl Alcohol

ETBE Ethyl-tetra-butyl ether

DIPE Diisopropyl ether

TAME Tertiary-amyl methyl ether

METH Methanol

ETH Ethanol

1,2-DCA 1,2-Dichloroethane

1,2-EDB 1,2-Dibromoethane

SB Soil Boring

GW Grab Ground Water

ND = "non-detect" or below the Method Reporting Limits

NA = Not Available

<sup>^</sup> US EPA Drinking Water Standard

\* The top of casing (TOC) elevations originally surveyed on June 13, 2001 used MW-1 as the common datum with an assumed elevation of 100.00 feet above mean sea level (MSL). All other TOC elevations were surveyed relative to MW-1. All the wells were again surveyed per GeoTracker standard on July 11, 2003, by PLS Surveys, Inc., a California licensed surveyor. All elevations are reported with respect to feet above mean sea level (MSL).

+ Confirmed by GC/MS method 8260B

\*\* Laboratory reported does not match gasoline pattern

# See Laboratory explanations (dated November 26 & December 8, 2003)

<sup>(1)</sup> The TOC elevations reported in all previous groundwater monitoring reports are incorrect. The datum elevation adopted previously was revised on August 4, 2008 using City of Oakland datum (NAD83). The revised TOC elevations are converted to mean sea level elevation and used to calculate all the groundwater elevations.

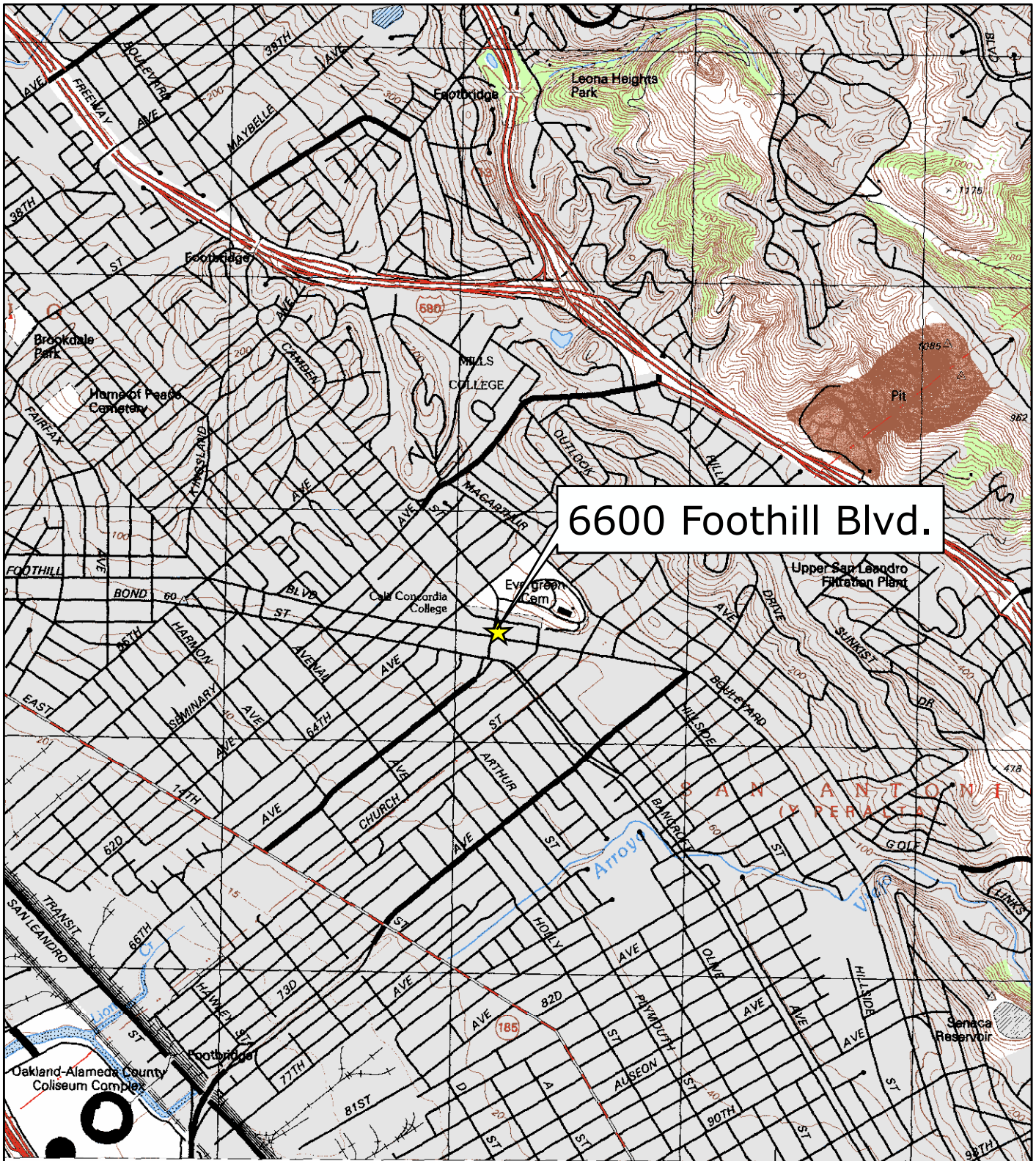
<sup>(2)</sup> EPA 8260B adopted since 8/8/2008

ug/L - microgram per liter (part per billion)

**Table 3**  
**Field Measured Water Quality Parameters**  
6600 Foothill Boulevard, Oakland, California

Monitoring Wells	Date	Purging Time	pH	Temperature	Specific Conductivity	DO	ORP
		(minutes)	(SU)	(°F)	(µmhos/cm)	(mg/l)	(mV)
MW-1	08/08/08	26	5.76	73.43	491	0.58	149.3
	11/05/08	22	5.86	72.11	453	0.06	132.7
	02/06/09	30	6.13	66.79	541	0.01	152
	<b>05/07/09</b>	<b>19</b>	<b>5.98</b>	<b>67.17</b>	<b>399</b>	<b>0.30</b>	<b>93.3</b>
MW-2	08/08/08	21	6.39	75.47	788	0.82	-33.4
	11/05/08	22	6.36	74.96	739	0.16	-10.9
	02/06/09	32	6.52	67.15	889	0.06	-25
	<b>05/07/09</b>	<b>25</b>	<b>6.38</b>	<b>67.88</b>	<b>678</b>	<b>0.19</b>	<b>-40.4</b>
MW-3	08/08/08	19	6.31	72.81	290	0.53	-37.6
	11/05/08	18	6.5	73.71	259	0.37	-18.5
	02/06/09	28	6.63	69.21	384	0.1	-66
	<b>05/07/09</b>	<b>13</b>	<b>6.48</b>	<b>68.82</b>	<b>333</b>	<b>0.12</b>	<b>-69.7</b>
MW-4	08/08/08	27	6.58	73.5	638	0.56	-59.2
	11/05/08	20	6.74	72.92	470	0.16	-86.8
	02/06/09	18	6.93	64.38	561	0.01	-97
	<b>05/07/09</b>	<b>19</b>	<b>6.72</b>	<b>68.04</b>	<b>405</b>	<b>0.09</b>	<b>-79.4</b>
MW-5	08/08/08	29	6.35	70.41	307	0.63	-54.1
	11/05/08	24	6.63	71.54	368	0.24	-70.1
	02/06/09	15	6.91	64.4	279	0.01	-98
	<b>05/07/09</b>	<b>13</b>	<b>6.68</b>	<b>66.27</b>	<b>224</b>	<b>0.08</b>	<b>-104.5</b>
MW-6	08/08/08	19	6.18	70.71	595	0.52	-18.8
	11/05/08	16	6.47	68.52	608	0.05	-57.3
	02/06/09	15	6.87	62.94	604	0.01	-71
	<b>05/07/09</b>	<b>16</b>	<b>6.67</b>	<b>64.99</b>	<b>422</b>	<b>0.14</b>	<b>-82.8</b>

# FIGURES



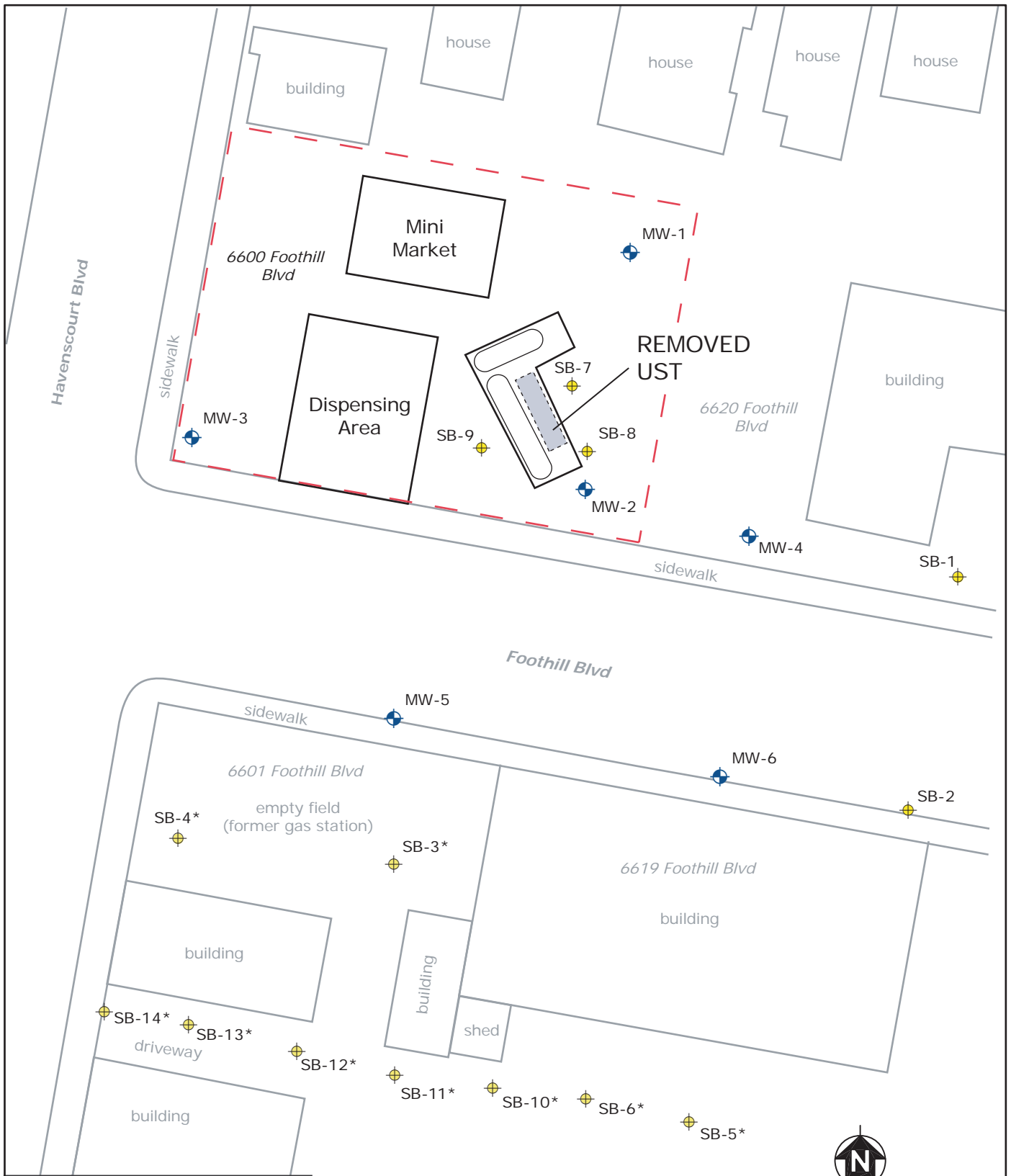
**6600 Foothill Blvd.**






0 1,000 2,000 Feet  
1 inch = 2,000 feet

**Vicinity Map**  
6600 Foothill Blvd, Oakland, CA

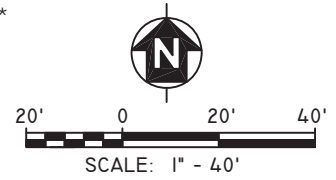
Figure  
**1**  
ers



**LEGEND**

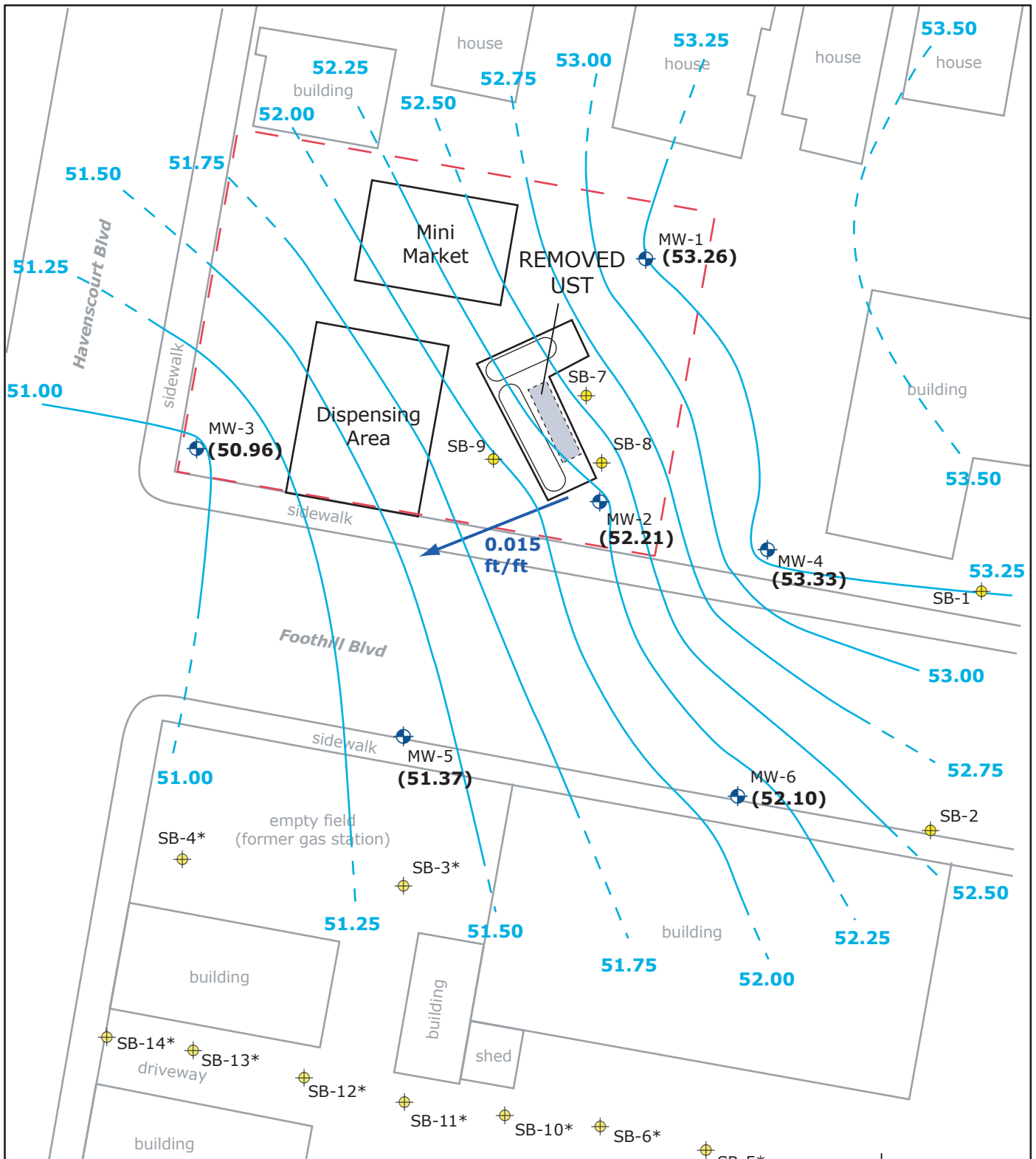
-  MW-3 Monitoring Well
-  SB-8 Soil Boring (2002 & 2005)
-  Approximate Property Boundary

\* = location approximate



**Site Plan**  
6600 Foothill Blvd, Oakland, CA 94605

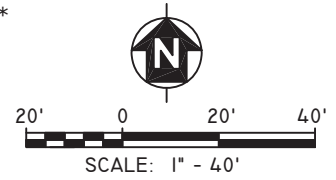
Figure  
**2**  
**ers**



**LEGEND**

- MW-3 Monitoring Well
- SB-8 Soil Boring (2002 & 2005)
- Groundwater Contour
- Approximate Property Boundary
- Groundwater Flow Direction

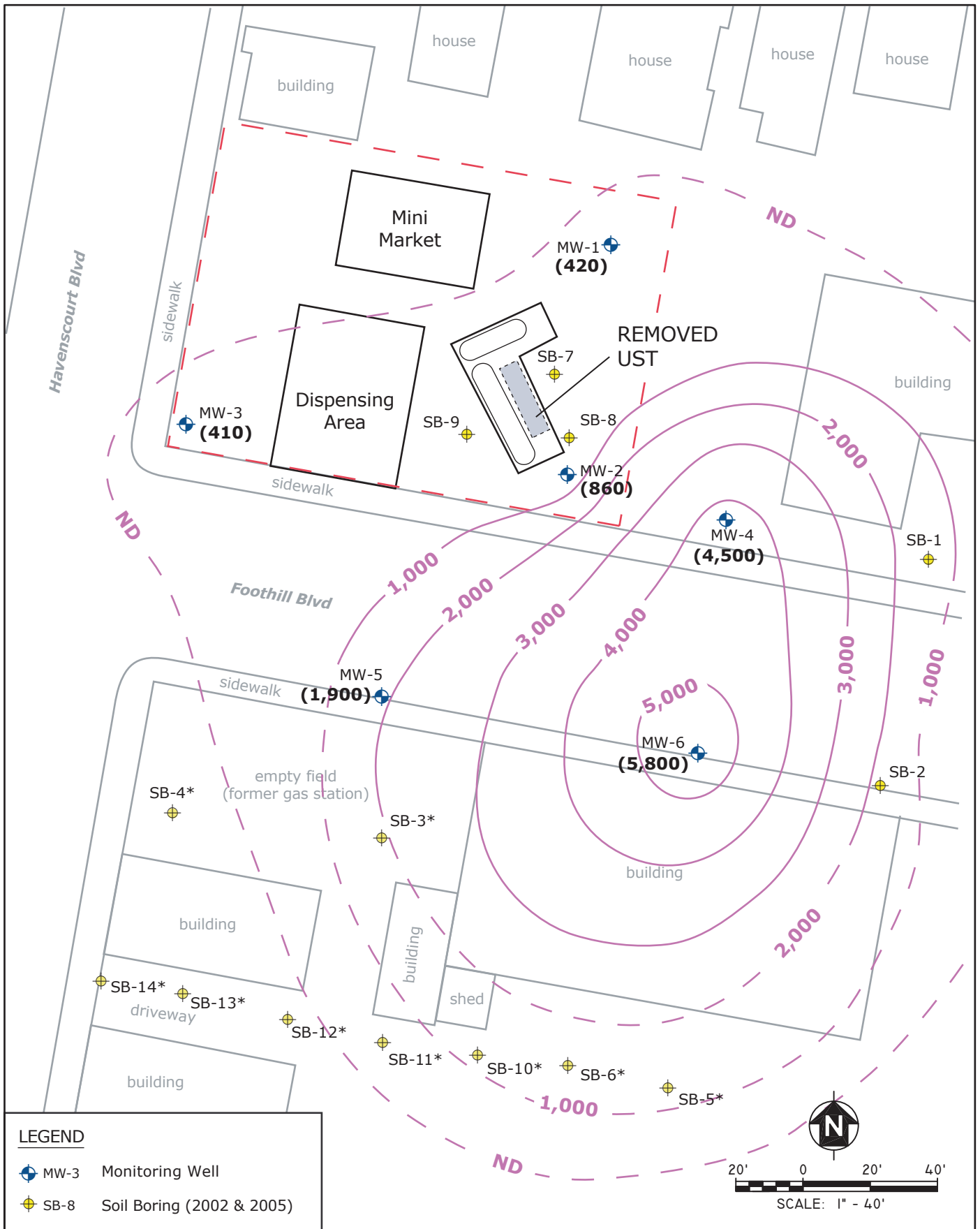
\* = location approximate



**Groundwater Elevation Contours**  
 (May 7, 2009)  
 6600 Foothill Blvd, Oakland, CA 94605

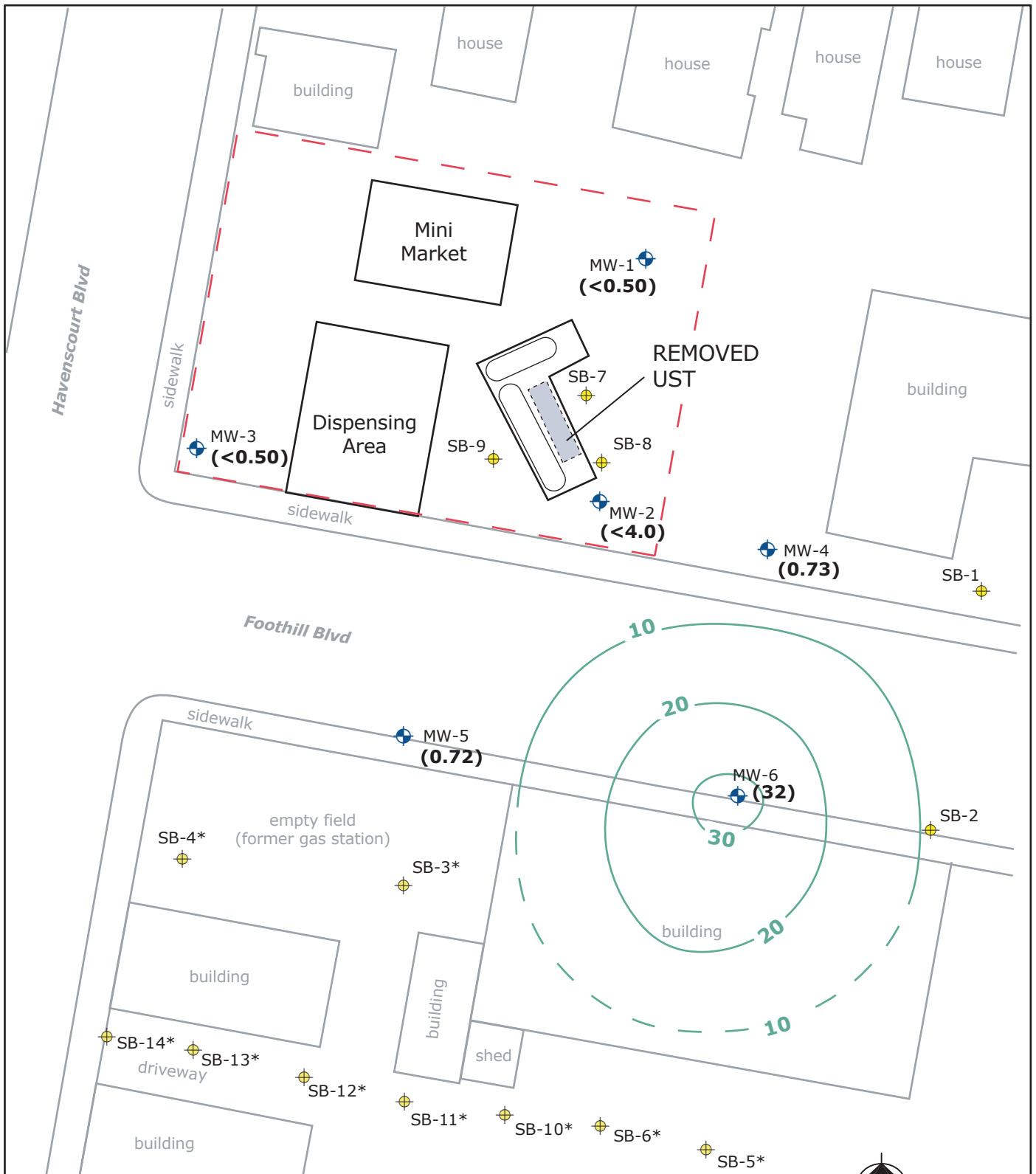
Figure  
**3**  
 ers









**TPHg Concentration Contours**  
(May 7, 2009)  
6600 Foothill Blvd, Oakland, CA 94605

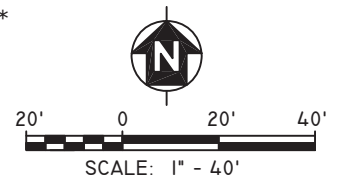
Figure  
**4**  
ers



**LEGEND**

-  MW-3 Monitoring Well
-  SB-8 Soil Boring (2002 & 2005)
-  Approximate Property Boundary
-  Benzene Concentration Contour

\* = location approximate.  
Benzene concentrations in units of  $\mu\text{g/L}$ .



**Benzene Concentration Contours**

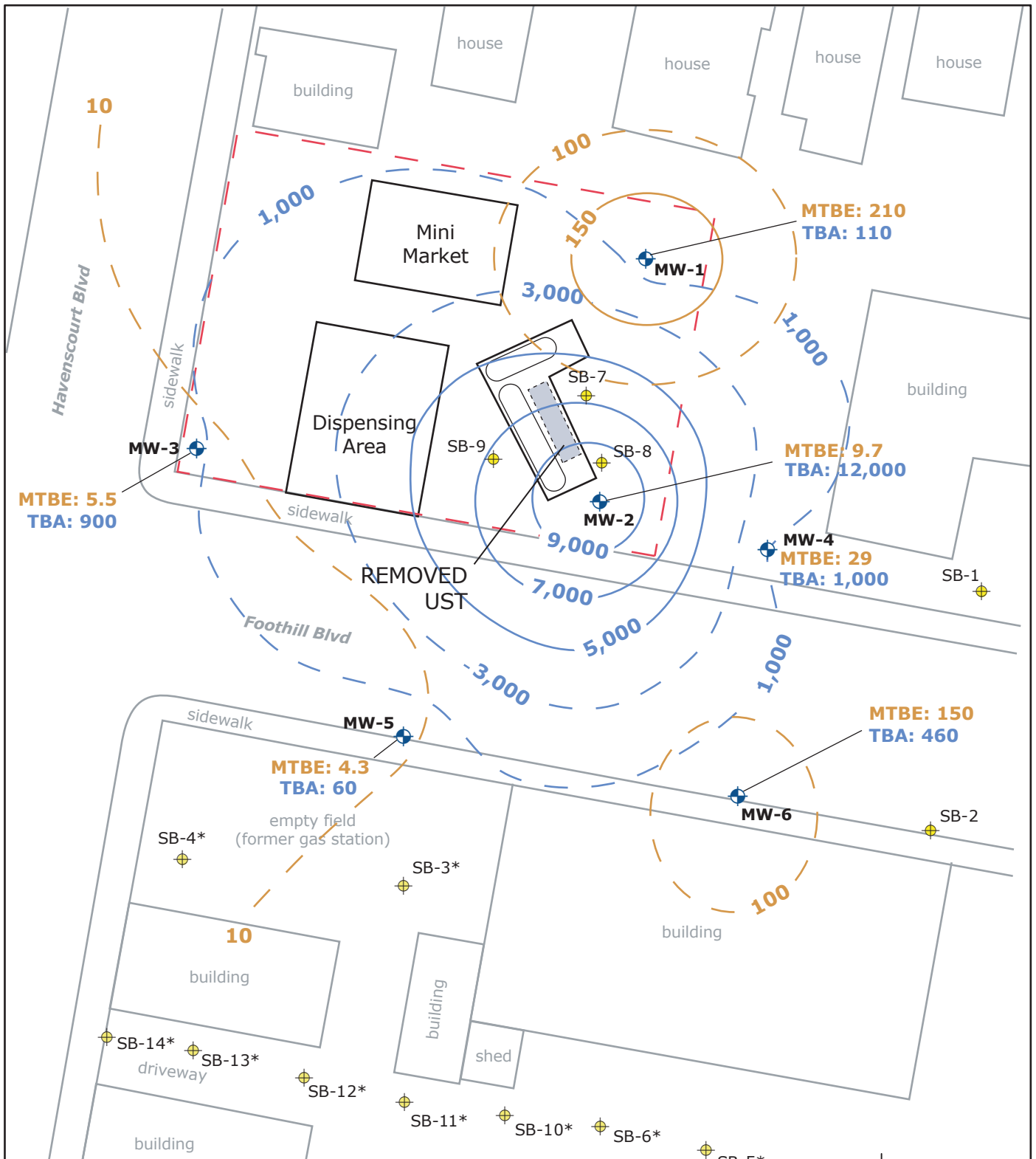
(May 7, 2009)

6600 Foothill Blvd, Oakland, CA 94605

Figure

5

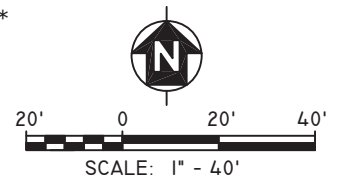
ers



**LEGEND**

- MW-3 Monitoring Well
- SB-8 Soil Boring (2002 & 2005)
- Approximate Property Boundary
- MTBE Concentration Contour
- TBA Concentration Contour

\* = location approximate.  
 MTBE and TBA concentrations in units of µg/L.



**MTBE and TBA Concentration Contours**

(May 7, 2009)

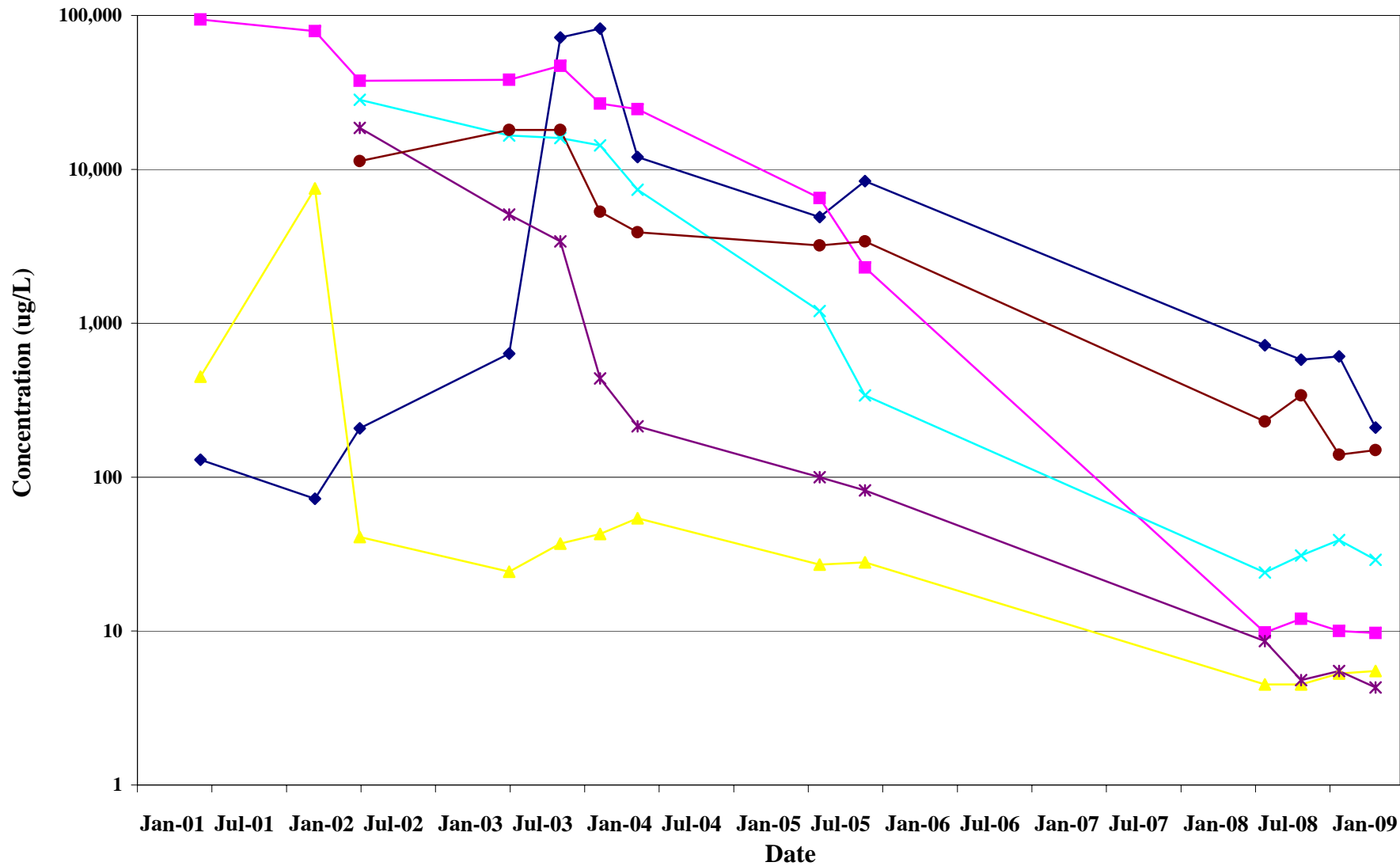
6600 Foothill Blvd, Oakland, CA 94605

Figure

6

ers

**Figure 7**  
**MTBE Concentration Change Over Time**



◆ MW-1    ■ MW-2    ▲ MW-3    × MW-4    \* MW-5    ● MW-6

# APPENDIX A

# Monitoring Well Gauging and Purging Data Sheet

Date: 5/7/09		Project No. Sekhon		Site: 6600 Foothill		Location: Oakland, CA		Initials: LTL	
Purge Method: Peri			Gauging Time: 0935	Gauging Time:	Purge Starting Time: 1018	Purge Ending Time:		Sampling Method: Peri	
Well ID	Diameter (in)	Depth to Bottom (ft)	Initial Depth to Water from TOC (ft)	Equilibrated Depth to Water from TOC (ft)	Static Water Column (ft)	Casing Volume (gal)	Purged Volume (gal) Liters	Depth to Product (ft)	Note:
MW-1	2"	24.52	6.76	6.76	17.76	2.90			
MW-2	2"	24.62	6.53	6.53	18.09	2.95			
MW-3	2"	24.01	8.98	8.98	15.03	2.45			
MW-4	2"	19.91	4.86	4.86	15.05	2.46			
MW-5	2"	19.69	6.43	6.43	13.26	2.17			
MW-6	2"	19.39	4.91	4.91	14.48	2.37			
			⇒						
Casing Volume = Static Water Column x Conversion Factor					Conversion Factor: 2-in well = 0.163 gal/ft, 4-in well = 0.653 gal/ft, 6-in well = 1.469 gal/ft				
Total purged volume from all wells (gals):									

*all wells allowed to equilibrate approx. 20 min prior to gauging.*

**Monitor Well Data Sheet**

Site Name: Sekhon Gas Station	Well/Sample ID: MW-1
Location: 6600 Foothill Blvd, Oakland CA	Initial Depth to Water (DTW): 6.76
Client: Sekhon	Total Well Depth (TD): 24.52
Sampler: LTL	Well Diameter: 2"
Date: 5/7/09	1 Casing Volume: 2.90
Purge Method: Peristaltic Pump	Purge Rate: 0.3 L/min
Sample Method: Low Flow	Sampling Rate: 0.2 L/min
2" well x 1 foot = 0.6 liters	
4" well x 1 foot = 2.4L	

Time	pH	SC	DO	Temp	DTW	Cumulative Volume	ORP	Notes
hh:mm	SU	µmhos/cm	mg/l	°F	feet	liters	mV	
1123	6.01	371	0.38	67.20	8.30	1.2	64.9	
1126	5.94	366	0.31	67.16	9.06	2.1	82.6	
1129	5.94	369	0.31	67.14	9.60	3	86.9	
1132	5.94	380	0.34	67.13	10.08	3.9	90.9	
1135	5.94	384	0.32	67.15	10.11	4.8	93.6	
1138	5.98	399	0.30	67.17	10.10	5.7	93.3	

Did Well Dewater?	No	Start Purge Time:	1119	DTW prior to sample:	10.10
Casing volumes Purged:	/	Stop Purge Time:	1138	Start Sample Time:	1138
Length of Tubing (ft):	~25'	Total Liters Purged:	5.7	Total Sample Volume:	240 mL
Well Recharge:	moderate	Turbidity:	very low	Color:	none
Odor:	no	Sheen:	no	Product Thinkness (in):	N/A

Notes:

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**Monitor Well Data Sheet**

Site Name: Sekhon Gas Station	Well/Sample ID: MW-2
Location: 6600 Foothill Blvd, Oakland CA	Initial Depth to Water (DTW): 6.53
Client: Sekhon	Total Well Depth (TD): 24.62
Sampler: LTL	Well Diameter: 2"
Date: 5/7/09	1 Casing Volume: 2.95 gal
Purge Method: Peristaltic Pump	Purge Rate: 0.30 L/min
Sample Method: Low Flow	Sampling Rate: 0.2 L/min
2" well x 1 foot = 0.6 liters	4" well x 1 foot = 2.4L

Time	pH	SC	DO	Temp	DTW	Cumulative Volume	ORP	Notes
hh:mm	SU	µmhos/cm	mg/l	°F	feet	liters	mV	
1022	6.31	697	0.17	67.77	8.50	1.2	-52.8	
1025	6.30	689	0.31	67.60	9.53	2.1	-54.0	
1028	6.31	683	0.28	67.58	10.06	3	-52.0	
1031	6.31	681	0.25	67.61	10.39	3.9	-50.7	
1034	6.36	678	0.25	67.66	10.72	4.8	-48.4	
1037	6.38	676	0.22	67.54	10.97	5.7	-48.1	slowed rate to 0.2 L/min
1040	6.39	677	0.19	67.79	11.11	6.3	-42.9	
1043	6.38	678	0.19	67.88	11.26	6.9	-40.4	

Did Well Dewater?	No	Start Purge Time:	1018	DTW prior to sample:	11.26
Casing volumes Purged:	/	Stop Purge Time:	1043	Start Sample Time:	1043
Length of Tubing (ft):	~26	Total Liters Purged:	6.9	Total Sample Volume:	240 mL
Well Recharge:	poor	Turbidity:	very low	Color:	none
Odor:	none	Sheen:	none	Product Thickness (in):	N/A

Notes:



**Monitor Well Data Sheet**

Site Name: Sekhon Gas Station	Well/Sample ID: MW-3
Location: 6600 Foothill Blvd, Oakland CA	Initial Depth to Water (DTW): 8.98
Client: Sekhon	Total Well Depth (TD): 24.01
Sampler: LTL	Well Diameter: 2"
Date: 5/7/09	1 Casing Volume: 2.45 gal
Purge Method: Peristaltic Pump	Purge Rate: 0.3 L/min
Sample Method: Low Flow	Sampling Rate: 0.2 L/min
2" well x 1 foot = 0.6 liters	4" well x 1 foot = 2.4L

Time	pH	SC	DO	Temp	DTW	Cumulative Volume	ORP	Notes
hh:mm	SU	µmhos/cm	mg/l	°F	feet	liters	mV	
1101	6.55	351	0.14	68.71	9.24	1.2	-59.6	
1104	6.51	345	0.13	68.73	9.26	2.1	-65.1	
1107	6.49	338	0.13	68.70	9.29	3	-68.5	
1110	6.48	333	0.12	68.82	9.30	3.9	-69.7	

Did Well Dewater?	no	Start Purge Time:	1057	DTW prior to sample:	9.30
Casing volumes Purged:	/	Stop Purge Time:	1110	Start Sample Time:	1110
Length of Tubing (ft):	~24'	Total Liters Purged:	3.9	Total Sample Volume:	240 mL
Well Recharge:	good	Turbidity:	very low	Color:	none
Odor:	no	Sheen:	no	Product Thickness (in):	N/A

Notes:

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**Monitor Well Data Sheet**

Site Name: Sekhon Gas Station	Well/Sample ID: MW-4
Location: 6600 Foothill Blvd, Oakland CA	Initial Depth to Water (DTW): 4.86
Client: Sekhon	Total Well Depth (TD): 19.91
Sampler: LTL	Well Diameter: 2"
Date: 5/7/09	1 Casing Volume: 2.46
Purge Method: Peristaltic Pump	Purge Rate: 0.3 L/min
Sample Method: Low Flow	Sampling Rate: 0.2 L/min
2" well x 1 foot = 0.6 liters	4" well x 1 foot = 2.4L

Time	pH	SC	DO	Temp	DTW	Cumulative Volume	ORP	Notes
hh:mm	SU	µmhos/cm	mg/l	°F	feet	liters	mV	
1243	6.69	408	0.19	67.46	6.25	1.2	-83.3	
1246	6.69	406	0.14	67.60	6.62	2.1	-85.4	
1249	6.71	404	0.12	67.67	6.99	3	-88.0	
1252	6.71	404	0.15	67.63	7.19	3.9	-88.9	slowed rate to 0.2 L/min
1255	6.73	404	0.12	67.95	7.03	<del>4.5</del> 4.5	-89.0	
1258	6.72	405	0.09	68.04	7.02	5.1	-79.4	
Did Well Dewater?	No	Start Purge Time:	1239	DTW prior to sample:	7.02			
Casing volumes Purged:	/	Stop Purge Time:	1258	Start Sample Time:	1258			
Length of Tubing (ft):	~20'	Total Liters Purged:	5.1	Total Sample Volume:	240 mL			
Well Recharge:	moderate	Turbidity:	very low	Color:	none			
Odor:	no	Sheen:	no	Product Thinkness (in):	N/A			

Notes:

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**Monitor Well Data Sheet**

Site Name: Sekhon Gas Station	Well/Sample ID: MW-5
Location: 6600 Foothill Blvd, Oakland CA	Initial Depth to Water (DTW): 6.43
Client: Sekhon	Total Well Depth (TD): 19.69
Sampler: LTL	Well Diameter: 2"
Date: 5/7/09	1 Casing Volume: 2.17 gal
Purge Method: Peristaltic Pump	Purge Rate: 0.3 L/min
Sample Method: Low Flow	Sampling Rate: 0.2 L/min
2" well x 1 foot = 0.6 liters	4" well x 1 foot = 2.4L

Time	pH	SC	DO	Temp	DTW	Cumulative Volume	ORP	Notes
hh:mm	SU	µmhos/cm	mg/l	°F	feet	liters	mV	
1154	6.67	225	0.12	66.44	7.20	1.2	-96.2	
1157	6.70	224	0.08	66.36	7.45	2.1	-102.4	
1200	6.71	224	0.08	66.30	7.54	3	-104.7	
1203	6.68	224	0.08	66.27	7.63	3.9	-104.5	

Did Well Dewater?	No	Start Purge Time:	1150	DTW prior to sample:	7.63
Casing volumes Purged:	/	Stop Purge Time:	1203	Start Sample Time:	1203
Length of Tubing (ft):	~20'	Total Liters Purged:	3.9	Total Sample Volume:	240ml
Well Recharge:	good	Turbidity:	very low	Color:	none
Odor:	slight	Sheen:	no	Product Thinkness (in):	N/A

Notes:

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**Monitor Well Data Sheet**

Site Name: Sekhon Gas Station	Well/Sample ID: MW-6
Location: 6600 Foothill Blvd, Oakland CA	Initial Depth to Water (DTW): 4.91
Client: Sekhon	Total Well Depth (TD): 19.39
Sampler: LTL	Well Diameter: 2"
Date: 5/7/09	1 Casing Volume: 2.37 gal
Purge Method: Peristaltic Pump	Purge Rate: 0.3 L/min
Sample Method: Low Flow	Sampling Rate: 0.2 L/min
2" well x 1 foot = 0.6 liters	4" well x 1 foot = 2.4L

Time	pH	SC	DO	Temp	DTW	Cumulative Volume	ORP	Notes
hh:mm	SU	µmhos/cm	mg/l	°F	feet	liters	mV	
1215	6.66	443	0.23	65.00	5.54	1.2	-78.4	
1218	6.70	439	0.17	64.96	5.76	2.1	-82.7	
1221	6.68	428	0.15	64.98	5.85	3	-81.7	
1224	6.68	424	0.17	65.02	5.87	3.9	-82.5	
1227	6.67	422	0.14	64.99	5.88	4.8	-82.8	
Did Well Dewater?	No	Start Purge Time:	1211	DTW prior to sample:	5.88			
Casing volumes Purged:	—	Stop Purge Time:	1227	Start Sample Time:	1227			
Length of Tubing (ft):	~20'	Total Liters Purged:	4.8	Total Sample Volume:	240 uL			
Well Recharge:	good	Turbidity:	very low	Color:	none			
Odor:	slight TPH	Sheen:	No	Product Thickness (in):	N/A			

Notes:

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# APPENDIX B



Report Number : 68406

Date : 05/12/2009

Jim Ho  
Environmental Risk Services Corporation  
1600 Riviera Avenue, Suite 310  
Walnut Creek, CA 94596

Subject : 6 Water Samples  
Project Name : Former Sekhon Gas Station  
Project Number : 6600 FHB

Dear Dr. Ho,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink, appearing to read "Joel Kiff".

Joel Kiff



Report Number : 68406

Date : 05/12/2009

Subject : 6 Water Samples  
Project Name : Former Sekhon Gas Station  
Project Number : 6600 FHB

## Case Narrative

The Method Reporting Limit for Methanol has been increased due to the presence of an interfering compound for samples MW-1, MW-4, and MW-6.



Report Number : 68406

Date : 05/12/2009

Project Name : **Former Sekhon Gas Station**

Project Number : **6600 FHB**

Sample : **MW-1**

Matrix : Water

Lab Number : 68406-01

Sample Date :05/07/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
<b>Toluene</b>	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
<b>Ethylbenzene</b>	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
<b>Total Xylenes</b>	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
<b>Methyl-t-butyl ether (MTBE)</b>	<b>210</b>	0.50	ug/L	EPA 8260B	05/09/2009
<b>Diisopropyl ether (DIPE)</b>	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
<b>Ethyl-t-butyl ether (ETBE)</b>	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
<b>Tert-amyl methyl ether (TAME)</b>	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
<b>Tert-Butanol</b>	<b>110</b>	5.0	ug/L	EPA 8260B	05/09/2009
<b>Methanol</b>	< 150	150	ug/L	EPA 8260B	05/08/2009
<b>Ethanol</b>	< 5.0	5.0	ug/L	EPA 8260B	05/09/2009
1,2-Dichloroethane-d4 (Surr)	99.4		% Recovery	EPA 8260B	05/09/2009
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	05/09/2009





Report Number : 68406

Date : 05/12/2009

Project Name : **Former Sekhon Gas Station**

Project Number : **6600 FHB**

Sample : **MW-2**

Matrix : Water

Lab Number : 68406-02

Sample Date :05/07/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	< 4.0	4.0	ug/L	EPA 8260B	05/07/2009
<b>Toluene</b>	< 4.0	4.0	ug/L	EPA 8260B	05/07/2009
<b>Ethylbenzene</b>	< 4.0	4.0	ug/L	EPA 8260B	05/07/2009
<b>Total Xylenes</b>	< 4.0	4.0	ug/L	EPA 8260B	05/07/2009
<b>Methyl-t-butyl ether (MTBE)</b>	9.7	4.0	ug/L	EPA 8260B	05/07/2009
<b>Diisopropyl ether (DIPE)</b>	< 4.0	4.0	ug/L	EPA 8260B	05/07/2009
<b>Ethyl-t-butyl ether (ETBE)</b>	< 4.0	4.0	ug/L	EPA 8260B	05/07/2009
<b>Tert-amyl methyl ether (TAME)</b>	< 4.0	4.0	ug/L	EPA 8260B	05/07/2009
<b>Tert-Butanol</b>	12000	20	ug/L	EPA 8260B	05/07/2009
<b>Methanol</b>	< 400	400	ug/L	EPA 8260B	05/07/2009
<b>Ethanol</b>	< 40	40	ug/L	EPA 8260B	05/07/2009
1,2-Dichloroethane-d4 (Surr)	96.9		% Recovery	EPA 8260B	05/07/2009
Toluene - d8 (Surr)	99.1		% Recovery	EPA 8260B	05/07/2009



Report Number : 68406

Date : 05/12/2009

Project Name : **Former Sekhon Gas Station**

Project Number : **6600 FHB**

Sample : **MW-3**

Matrix : Water

Lab Number : 68406-03

Sample Date :05/07/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Toluene</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Ethylbenzene</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Total Xylenes</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Methyl-t-butyl ether (MTBE)</b>	<b>5.5</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Diisopropyl ether (DIPE)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Ethyl-t-butyl ether (ETBE)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Tert-amyl methyl ether (TAME)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Tert-Butanol</b>	<b>900</b>	5.0	ug/L	EPA 8260B	05/07/2009
<b>Methanol</b>	<b>&lt; 50</b>	50	ug/L	EPA 8260B	05/07/2009
<b>Ethanol</b>	<b>&lt; 5.0</b>	5.0	ug/L	EPA 8260B	05/07/2009
1,2-Dichloroethane-d4 (Surr)	99.7		% Recovery	EPA 8260B	05/07/2009
Toluene - d8 (Surr)	96.6		% Recovery	EPA 8260B	05/07/2009



Report Number : 68406

Date : 05/12/2009

Project Name : **Former Sekhon Gas Station**

Project Number : **6600 FHB**

Sample : **MW-4**

Matrix : Water

Lab Number : 68406-04

Sample Date :05/07/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	<b>0.73</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Toluene</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Ethylbenzene</b>	<b>7.4</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Total Xylenes</b>	<b>1.2</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Methyl-t-butyl ether (MTBE)</b>	<b>29</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Diisopropyl ether (DIPE)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Ethyl-t-butyl ether (ETBE)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Tert-amyl methyl ether (TAME)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Tert-Butanol</b>	<b>1000</b>	5.0	ug/L	EPA 8260B	05/07/2009
<b>Methanol</b>	<b>&lt; 200</b>	200	ug/L	EPA 8260B	05/07/2009
<b>Ethanol</b>	<b>&lt; 5.0</b>	5.0	ug/L	EPA 8260B	05/07/2009
1,2-Dichloroethane-d4 (Surr)	95.0		% Recovery	EPA 8260B	05/07/2009
Toluene - d8 (Surr)	92.3		% Recovery	EPA 8260B	05/07/2009



Report Number : 68406

Date : 05/12/2009

Project Name : **Former Sekhon Gas Station**

Project Number : **6600 FHB**

Sample : **MW-5**

Matrix : Water

Lab Number : 68406-05

Sample Date :05/07/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	<b>0.72</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Toluene</b>	<b>0.91</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Ethylbenzene</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Total Xylenes</b>	<b>2.3</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Methyl-t-butyl ether (MTBE)</b>	<b>4.3</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Diisopropyl ether (DIPE)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Ethyl-t-butyl ether (ETBE)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Tert-amyl methyl ether (TAME)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/07/2009
<b>Tert-Butanol</b>	<b>60</b>	5.0	ug/L	EPA 8260B	05/07/2009
<b>Methanol</b>	<b>&lt; 50</b>	50	ug/L	EPA 8260B	05/07/2009
<b>Ethanol</b>	<b>&lt; 5.0</b>	5.0	ug/L	EPA 8260B	05/07/2009
1,2-Dichloroethane-d4 (Surr)	95.2		% Recovery	EPA 8260B	05/07/2009
Toluene - d8 (Surr)	98.2		% Recovery	EPA 8260B	05/07/2009



Report Number : 68406

Date : 05/12/2009

Project Name : **Former Sekhon Gas Station**

Project Number : **6600 FHB**

Sample : **MW-6**

Matrix : Water

Lab Number : 68406-06

Sample Date :05/07/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	<b>32</b>	0.50	ug/L	EPA 8260B	05/08/2009
<b>Toluene</b>	<b>1.2</b>	0.50	ug/L	EPA 8260B	05/08/2009
<b>Ethylbenzene</b>	<b>14</b>	0.50	ug/L	EPA 8260B	05/08/2009
<b>Total Xylenes</b>	<b>37</b>	0.50	ug/L	EPA 8260B	05/08/2009
<b>Methyl-t-butyl ether (MTBE)</b>	<b>150</b>	0.50	ug/L	EPA 8260B	05/08/2009
<b>Diisopropyl ether (DIPE)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/08/2009
<b>Ethyl-t-butyl ether (ETBE)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/08/2009
<b>Tert-amyl methyl ether (TAME)</b>	<b>&lt; 0.50</b>	0.50	ug/L	EPA 8260B	05/08/2009
<b>Tert-Butanol</b>	<b>460</b>	5.0	ug/L	EPA 8260B	05/08/2009
<b>Methanol</b>	<b>&lt; 100</b>	100	ug/L	EPA 8260B	05/08/2009
<b>Ethanol</b>	<b>&lt; 5.0</b>	5.0	ug/L	EPA 8260B	05/08/2009
1,2-Dichloroethane-d4 (Surr)	88.6		% Recovery	EPA 8260B	05/08/2009
Toluene - d8 (Surr)	92.0		% Recovery	EPA 8260B	05/08/2009

**QC Report : Method Blank Data**Project Name : **Former Sekhon Gas Station**Project Number : **6600 FHB**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	05/06/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	05/06/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	05/06/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	05/06/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	05/06/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	05/06/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	05/06/2009
Methanol	< 50	50	ug/L	EPA 8260B	05/06/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	05/06/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	05/06/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	05/06/2009
1,2-Dichloroethane-d4 (Surr)	103		%	EPA 8260B	05/06/2009
Toluene - d8 (Surr)	96.0		%	EPA 8260B	05/06/2009

Benzene	< 0.50	0.50	ug/L	EPA 8260B	05/07/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	05/07/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	05/07/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	05/07/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	05/07/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	05/07/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	05/07/2009
Methanol	< 50	50	ug/L	EPA 8260B	05/07/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	05/07/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	05/07/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	05/07/2009
1,2-Dichloroethane-d4 (Surr)	97.4		%	EPA 8260B	05/07/2009
Toluene - d8 (Surr)	103		%	EPA 8260B	05/07/2009

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
Toluene	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
Diisopropyl ether (DIPE)	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
Ethanol	< 5.0	5.0	ug/L	EPA 8260B	05/09/2009
Ethyl-t-butyl ether (ETBE)	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	05/09/2009
Tert-amyl methyl ether (TAME)	< 0.50	0.50	ug/L	EPA 8260B	05/09/2009
1,2-Dichloroethane-d4 (Surr)	100		%	EPA 8260B	05/09/2009
Toluene - d8 (Surr)	103		%	EPA 8260B	05/09/2009

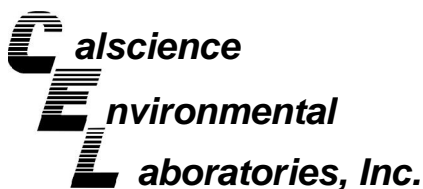
**QC Report : Matrix Spike/ Matrix Spike Duplicate**Project Name : **Former Sekhon Gas Station**Project Number : **6600 FHB**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
Benzene	68371-09	<0.50	40.5	40.6	41.1	41.0	ug/L	EPA 8260B	5/6/09	101	101	0.462	70-130	25
Methyl-t-butyl ether	68371-09	8.8	40.6	40.7	45.0	44.7	ug/L	EPA 8260B	5/6/09	89.0	88.1	0.968	70-130	25
Tert-Butanol	68371-09	<5.0	201	201	220	200	ug/L	EPA 8260B	5/6/09	109	99.4	9.56	70-130	25
Toluene	68371-09	<0.50	40.0	40.1	38.5	38.5	ug/L	EPA 8260B	5/6/09	96.2	96.1	0.157	70-130	25
Benzene	68405-05	1.6	40.6	40.6	43.1	41.7	ug/L	EPA 8260B	5/7/09	102	98.9	3.49	70-130	25
Methyl-t-butyl ether	68405-05	110	40.7	40.7	149	143	ug/L	EPA 8260B	5/7/09	99.8	87.2	13.6	70-130	25
Tert-Butanol	68405-05	10	201	201	202	210	ug/L	EPA 8260B	5/7/09	95.3	99.5	4.28	70-130	25
Toluene	68405-05	<0.50	40.1	40.1	40.2	34.8	ug/L	EPA 8260B	5/7/09	100	86.8	14.4	70-130	25
Benzene	68411-16	<0.50	40.6	40.6	40.0	40.9	ug/L	EPA 8260B	5/9/09	98.6	101	2.22	70-130	25
Methyl-t-butyl ether	68411-16	<0.50	40.7	40.7	34.7	36.3	ug/L	EPA 8260B	5/9/09	85.3	89.2	4.49	70-130	25
Tert-Butanol	68411-16	<5.0	201	201	203	199	ug/L	EPA 8260B	5/9/09	101	98.9	1.74	70-130	25
Toluene	68411-16	<0.50	40.1	40.1	40.1	41.0	ug/L	EPA 8260B	5/9/09	100	102	2.09	70-130	25

**QC Report : Laboratory Control Sample (LCS)**Project Name : **Former Sekhon Gas Station**Project Number : **6600 FHB**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.6	ug/L	EPA 8260B	5/6/09	104	70-130
Methyl-t-butyl ether	40.7	ug/L	EPA 8260B	5/6/09	104	70-130
Tert-Butanol	201	ug/L	EPA 8260B	5/6/09	101	70-130
Toluene	40.1	ug/L	EPA 8260B	5/6/09	101	70-130
Benzene	40.6	ug/L	EPA 8260B	5/7/09	103	70-130
Methyl-t-butyl ether	40.7	ug/L	EPA 8260B	5/7/09	105	70-130
Tert-Butanol	201	ug/L	EPA 8260B	5/7/09	93.0	70-130
Toluene	40.1	ug/L	EPA 8260B	5/7/09	101	70-130
Benzene	40.6	ug/L	EPA 8260B	5/9/09	97.7	70-130
Methyl-t-butyl ether	40.7	ug/L	EPA 8260B	5/9/09	85.7	70-130
Tert-Butanol	201	ug/L	EPA 8260B	5/9/09	98.5	70-130
Toluene	40.1	ug/L	EPA 8260B	5/9/09	100	70-130





May 14, 2009

Joel Kiff  
Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95616-6593

Subject: **CalScience Work Order No.: 09-05-0694**  
**Client Reference: Former Sekhon Gas Station**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 5/8/2009 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard CalScience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in cursive script that reads 'Amanda Porter'.

CalScience Environmental  
Laboratories, Inc.  
Amanda Porter  
Project Manager

## Analytical Report



Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95616-6593

Date Received: 05/08/09  
Work Order No: 09-05-0694  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: Former Sekhon Gas Station

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	09-05-0694-1-B	05/07/09 11:38	Aqueous	GC 11	05/13/09	05/14/09 05:00	090513B01

Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	420	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	78	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	09-05-0694-2-B	05/07/09 10:43	Aqueous	GC 11	05/13/09	05/14/09 05:34	090513B01

Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	860	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	77	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	09-05-0694-3-B	05/07/09 11:10	Aqueous	GC 11	05/13/09	05/14/09 06:07	090513B01

Comment(s): -The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	410	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	79	38-134			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

## Analytical Report



Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95616-6593

Date Received: 05/08/09  
Work Order No: 09-05-0694  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: Former Sekhon Gas Station

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	09-05-0694-4-B	05/07/09 12:58	Aqueous	GC 11	05/13/09	05/14/09 06:41	090513B01

Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	4500	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	263	38-134		2	

MW-5	09-05-0694-5-B	05/07/09 12:03	Aqueous	GC 11	05/13/09	05/14/09 07:14	090513B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	1900	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	112	38-134			

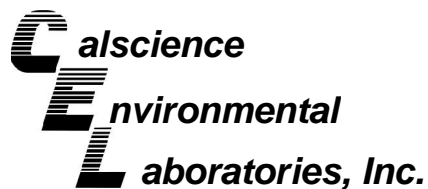
MW-6	09-05-0694-6-B	05/07/09 12:27	Aqueous	GC 11	05/13/09	05/14/09 08:21	090513B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	5800	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	170	38-134		2	

Method Blank	099-12-436-3,234	N/A	Aqueous	GC 11	05/13/09	05/14/09 00:00	090513B01
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Parameter	Result	RL	DF	Qual	Units
TPH as Gasoline	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	76	38-134			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



## Quality Control - Spike/Spike Duplicate



Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95616-6593

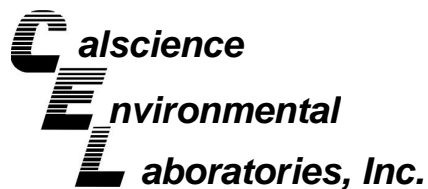
Date Received: 05/08/09  
Work Order No: 09-05-0694  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project Former Sekhon Gas Station

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-05-0786-1	Aqueous	GC 11	05/13/09	05/14/09	090513S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Gasoline	87	86	68-122	1	0-18	

RPD - Relative Percent Difference , CL - Control Limit



## Quality Control - LCS/LCS Duplicate



Kiff Analytical  
2795 2nd Street, Suite 300  
Davis, CA 95616-6593

Date Received: N/A  
Work Order No: 09-05-0694  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: Former Sekhon Gas Station

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-436-3,234	Aqueous	GC 11	05/13/09	05/13/09	090513B01

<u>Parameter</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
TPH as Gasoline	84	85	78-120	1	0-10	

RPD - Relative Percent Difference , CL - Control Limit

Work Order Number: 09-05-0694

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.





2795 Second Street, Suite 300  
 Davis, CA 95618  
 Lab: 530.297.4800  
 Fax: 530.297.4808

Calscience  
 7440 Lincoln Way  
 Garden Grove, CA 92841-1427  
 714-895-5494

COC No.

0684  
 68406

Project Contact (Hardcopy or PDF to): **Troy Turpen** EDF Report? **YES** Chain-of-Custody Record and Analysis Request

Company/Address: **Kiff Analytical** Recommended but not mandatory to complete this section: **Analysis Request** Due Date:

Phone No.: **530-297-4800** FAX No.: **530-297-4808** Sampling Company Log Code: **ERWC** Global ID: **T0600102286**

Project Number: **6600 FHB** P.O. No.: **68406** Deliverables to (Email Address): **inbox@kiffanalytical.com**

Project Name: **Former Sekhon Gas Station** Container / Preservative Matrix

Project Address: **Sampling** 40mL VOA / HCl Water TPH as Gasoline BY EPA 8015

Sample Designation Date Time

Sample Designation	Date	Time	40mL VOA / HCl	Water	TPH as Gasoline BY EPA 8015	Analysis Request										Due Date:	For Lab Use Only				
MW-1	05/07/09	11:38	3	X	X															May 14, 2009	1
MW-2	05/07/09	10:43	3	X	X																2
MW-3	05/07/09	11:10	3	X	X																3
MW-4	05/07/09	12:58	3	X	X																4
MW-5	05/07/09	12:03	3	X	X																5
MW-6	05/07/09	12:27	3	X	X																6

Relinquished by: *[Signature]* Kiff Analytical Date: **05/07/09** Time: **1900** Received by: \_\_\_\_\_ Remarks:

Relinquished by: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_ Received by: \_\_\_\_\_

Relinquished by: **ONT2ACB10232037038** Date: **5/8/09** Time: **0915** Received by Laboratory: *[Signature]* Bill to: **Accounts Payable**

**SAMPLE RECEIPT FORM**

Cooler 1 of 1

CLIENT: KIPP ANALYTICAL

DATE: 5 / 8 / 09

**TEMPERATURE:** (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 2.1 °C - 0.2 °C (CF) = 1.9 °C     Blank     Sample

Sample(s) outside temperature criteria (PM/APM contacted by: \_\_\_\_\_).

Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature:     Air     Filter     Metals Only     PCBs Only    Initial: WWS

**CUSTODY SEALS INTACT:**

Cooler     \_\_\_\_\_     No (Not Intact)     Not Present     N/A    Initial: WWS

Sample     \_\_\_\_\_     No (Not Intact)     Not Present    Initial: WWS

**SAMPLE CONDITION:**

	Yes <input checked="" type="checkbox"/>	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> COC not relinquished. <input type="checkbox"/> No date relinquished. <input type="checkbox"/> No time relinquished.			
Sampler's name indicated on COC.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct containers and volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**CONTAINER TYPE:**

**Solid:**     4ozCGJ     8ozCGJ     16ozCGJ     Sleeve     EnCores®     TerraCores®     \_\_\_\_\_

**Water:**     VOA     VOAh     VOAn<sub>2</sub>     125AGB     125AGBh     125AGBp     1AGB     1AGBna<sub>2</sub>     1AGBs

500AGB     500AGJ     500AGJs     250AGB     250CGB     250CGBs     1PB     500PB     500PBna

250PB     250PBn     125PB     125PBzna     100PB     100PBna<sub>2</sub>     \_\_\_\_\_     \_\_\_\_\_     \_\_\_\_\_

**Air:**     Tedlar®     Summa®     \_\_\_\_\_    **Other:**     \_\_\_\_\_    **Checked/Labeled by:** WWS

**Container:**    C: Clear    A: Amber    P: Plastic    G: Glass    J: Jar (Wide-mouth)    B: Bottle (Narrow-mouth)    **Reviewed by:** WWS

**Preservative:**    h: HCL    n: HNO<sub>3</sub>    na<sub>2</sub>: Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>    Na: NaOH    p: H<sub>3</sub>PO<sub>4</sub>    s: H<sub>2</sub>SO<sub>4</sub>    zna: ZnAc<sub>2</sub>+NaOH    f: Field-filtered    **Scanned by:** WWS





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 Davis, CA 95616  
 Lab: 530.297.4800  
 Fax: 530.297.4802

SRG # / Lab No. 68406

Project Contact (Hardcopy or PDF To): Logan Linderman		California EDF Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Chain-of-Custody Record and Analysis Request</b>																					
Company / Address: Environmental Risk Services 1600 Riviera Ave, Suite 310, Walnut Creek, CA. 94596		Sampling Company Log Code: ERWC		<b>Analysis Request</b>												<b>TAT</b>									
Phone #: (925) 938-1600	Fax #:	Global ID: T0600102286																						<input type="checkbox"/> 12 hr	
Project #: 6600 FHB	P.O. #:	PDF/EDF Deliverable To (Email Address): <u>jho@erscorp.us</u>																						<input type="checkbox"/> 24 hr	
Project Name: Former Sekhon Gas Station		Sampler Signature: <i>[Signature]</i>																						<input type="checkbox"/> 48hr	
Project Address: 6600 Foothill Blvd., Oakland, CA.		Sampling		Container				Preservative			Matrix													<input type="checkbox"/> 72 hr	
																								<input type="checkbox"/> 1 wk	
Sample Designation		Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar	HCl	HNO <sub>3</sub>	None	Water	Soil	Air	TPH Gas (EPA 8015M)	BTEX (EPA 8260B)	7 Oxygenates (EPA 8260B)	Lead Scavengers (1,2 DCA, 1,2 EDB EPA 8260B)	Arsenic (EPA 6010)	Lead (EPA 6010)	Mercury (EPA 7470)				<input checked="" type="checkbox"/> HOLD
MW-1	5/7/09	1138	6						X			X			X	X	X								01
MW-2		1043	6						X			X			X	X	X								02
MW-3		1110	6						X			X			X	X	X								03
MW-4		1258	6						X			X			X	X	X								04
MW-5		1203	6						X			X			X	X	X								05
MW-6		1227	6						X			X			X	X	X								06
Relinquished by: <i>[Signature]</i>		Date 5/7/09	Time 1411	Received by:		Remarks:																			
Relinquished by:		Date	Time	Received by:		Bill to:																			
Relinquished by:		Date 050709	Time 1411	Received by Laboratory: <i>[Signature]</i> KIFF Analytical		<b>For Lab Use Only: Sample Receipt</b>																			
		Temp °C 3.0	Initials TJB	Date 050709	Time 1627	Therm. ID # IR-5	Coolant Present <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No																		