

METROVATION

March 27, 2015

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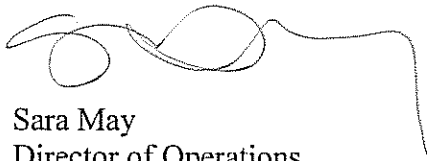
Mr. Jerry Wickham
Senior Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: Terradev Jefferson LLC Property
645 Fourth Street, Oakland, CA 94607
Fuel Leak Case No. RO0003001
Blue Rock Project No. ASE-1

Dear Mr. Wickham,

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.

Sincerely,



Sara May
Director of Operations
Metrovation, LLC, managing agent for
Terradev Jefferson, LLC

Attachment:

Blue Rock Environmental, Inc.'s *Additional Site Characterization Report* dated March 27, 2015.



Mr. Jerry Wickham
Senior Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

March 27, 2015

Re: Additional Site Characterization Report

Terradev Jefferson LLC Property
645 4th Street, Oakland, CA 94607
Fuel Leak Case No. RO0003001
Blue Rock Project No. ASE-1

Dear Mr. Wickham,

This report, prepared by Blue Rock Environmental, Inc. (Blue Rock) on behalf of Terradev Jefferson, LLC, presents the results of additional assessment activities at the subject site. The work was proposed in Blue Rock's *Report for Geophysical Survey and Additional Site Characterization Workplan* dated September 18, 2014 and was approved by the Alameda County Environmental Health Services [ACEHS] in their letter dated October 13, 2014. The work focused on assessing soil and groundwater quality upgradient of the subject to evaluate the presence of nearby sources of fuel impact to the subsurface and passive soil gas sampling within the building to evaluate the relationship of impacts documented near the subject tank and those previously detected further downgradient. The results of this work suggest that presence of an upgradient off-site source gasoline impact to the subsurface that has migrated to, and below, the subject site.

Background

Site Description and UST Discovery / Removal

The site is located southeast of the intersection of 4th Street and Martin Luther King Jr. Way in Oakland, California (Figures 1 and 2). The site consists of a single story commercial building, bounded closely on the sides and back by other commercial buildings. One single-walled steel underground storage tank (UST) was discovered beneath the sidewalk immediately adjacent to the front of the building during renovation in 2006 (Figure 2).

Phase I Environmental Site Assessments completed in support of the purchase (1999) and for refinancing (2006) indicated that no sign of an underground tank was observed during associated site inspections. The Phase I author also interviewed persons knowledgeable with the property from the 1950s until the time of the Phase I; the interviewees could recollect no underground tank being used during the period of their familiarity.

A review of Sanborn Fire Insurance Maps revealed no evidence of subject site use that would potentially require an underground tank, and as such it is difficult to discern precisely when the tank was installed or operated. Based on the Phase I interviews, it is assumed the tank was installed and last used prior to the 1950s. State and local regulations require the proper abandonment of tanks that are no longer used to store or dispense fuels, thus the abandonment work after tank discovery in 2006.

According to Golden Gate Tank Removal, Inc. (Golden Gate), after consultation with the City of Oakland, it was determined that building structural considerations prohibited physical tank removal and that in-place abandonment was the appropriate means to close the subject UST. Therefore, Golden Gate abandoned the UST in-place by triple washing followed by filling it to capacity with concrete slurry on September 5, 2006. Abandonment was performed with the permission and under the oversight of the City of Oakland Fire Prevention Bureau. Details of this event are presented in Golden Gate's *Tank Closure Report* dated September 21, 2006.

Golden Gate reported that the UST contained gasoline with an approximate holding capacity of 1,000-gallons, measuring approximately 10 feet in length and 4 feet in diameter. The bottom of the UST was estimated to be located 7.5 to 8 feet below ground surface (ft bgs). The fill port was reported to be located at the west end of the tank.

At the direction of the Oakland Fire Department, two holes were cored in the bottom of the cleaned tank prior to its abandonment to enable the collection of samples of underlying material. Golden Gate reported that the soil beneath the tank was wet, but that groundwater was not encountered. Soil samples were collected at a depth of 9 ft bgs. The samples were analyzed for concentrations of total petroleum hydrocarbons as diesel (TPHd), gasoline (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and the five fuel oxygenates (MTBE, TBA, ETBE, DIPE, and TAME). Results of analysis of the sampled sediments indicated the presence of residual fuel hydrocarbons in both samples, with concentrations higher in the sample collected from the western end of the tank. This sample contained TPHg at 10,000 mg/kg and benzene at 130 mg/kg.

Summary of Investigation Activities

Subsurface investigation began in 2009. A total of eight soil borings have been drilled (B-1 through B-6, CB-1, and CB-2), and three extraction wells (DPE-1 through DPE-3) and three sub-slab soil vapor points (VP-1 through VP-3) have been installed at the site. A summary of well construction details is included in Table 1, and summaries of soil, groundwater, and sub-slab soil vapor sample analytical data are included in Tables 2, 3, and 4, respectively.

Physiography and Hydrogeology

The subject site is located in a commercial/industrial neighborhood along the San Francisco Bay-Margin. The site is set at an elevation of approximately 16 feet above mean sea level (ft msl) and local topography dips gently in a southerly direction toward the Oakland Inner Harbor, which is located approximately 1,250 feet from the subject UST (Figure 1).

The site is underlain predominantly by varying gradations of sand. The upper six feet generally consists of a brown sand (SP-SM), which has been interpreted as fill material. Native soil underlying the fill consists of a gray and yellow-brown sandy clay (CL) unit from ~6 – 7 ft bgs and a mottled red-brown and gray clayey sand (SC) from ~7 – 14 ft bgs, a brown sand (SP) from ~14 – 16 ft bgs, and gray clayey sand (SC) from ~ 16 – 20 ft bgs, the maximum depth explored.

Groundwater is present in unconfined conditions at a depth of approximately 9 ft bgs. Groundwater flow, based on data from the nearby Allen Property site, flows in an overall southerly direction towards the Oakland Inner Harbor, with calculated flow direction from individual monitoring events ranging from south-southwesterly, southerly, to south-southeasterly.

Potential Constituents of Concern Detected in the Subsurface

Gasoline range hydrocarbons are present in soil and groundwater proximal to the abandoned UST. Interestingly, the gasoline additive methyl tert-butyl ether (MTBE) is also present. The addition of MTBE to gasoline began as early as 1979, and its use became ubiquitous in California by March 1996 to meet Clean Air Act standards at that time. However, its use in California was banned as of January 1, 2004. Although it is uncertain when the subject UST was removed from service, it is not expected to have been in service during MTBE's lifespan as a gasoline additive in California.

Blue Rock obtained historical Sanborn Fire Insurance maps, historical aerial photographs, city directories, a database records review summary, and individual regulatory case files for two nearby LUST sites to better understand potential nearby sources and past site use.

Blue Rock understands that an upgradient property at the southeast corner of 5th Street and Martin Luther King Jr. Way was formerly used as a gas station, the case name for which is "Grove Auto Repair" (Global ID T06000101350). Sanborn maps indicate that property was used as a gasoline station from at least the early 1950s. ACEHS file documents indicate that five USTs (two 4,000-gallon, two 6,000-gallon, and one 550-gallon capacities) were removed in 1983. In 1988, approximately 1,000 cubic yards were excavated from the former UST area and disposed off-site. The Grove Auto Repair case received regulatory closure in 1993. The former fuel system layout and investigation points for that site are shown on Figure 2. It is notable the area of the former southern dispenser island appears not to have been investigated, nor was the southerly extent of dissolved-phase fuel hydrocarbons detected in former well MW-3 ever delineated in the direction of the subject site.

The “Allen Property” case (Global ID T0600108713) is located at the southwest corner of 4th Street and Martin Luther King Jr. Way. The Allen Property UST (10,000-gallon capacity) was abandoned in-place in 1993. The site received regulatory case closure in 2014. The former fuel system layout and investigation points for that site are shown on Figure 2. The lateral extent of the Allen Property dissolved-phase fuel plume was delineated in the direction of the subject site by Allen well MW-2.

The database records search map also shows an “Oil/Gas” pipeline running down the west side of Martin Luther King Jr. Way; however, the specific product conveyed in the pipeline is unknown.

The abandoned subject UST is located beneath the sidewalk along 4th Street, at the upgradient edge of a city block. The location of densely packed, occupied buildings has limited implementation of a traditional environmental investigation (i.e. an array of downgradient borings and wells). The nearest location for the construction of downgradient monitoring wells is the street or sidewalk along 3rd Street, on the other side of the city block. Review of the previous UST studies at nearby sites (Allen Property at 325 Martin Luther King Jr. Way and Markus Hardware at 632-638 Second Street) suggest that a 3rd Street location for downgradient monitoring wells might be far from the expected downgradient edge of the plume to serve any practical purpose.

The lateral extent of groundwater impact has been defined to the southwest of the subject UST by grab groundwater samples from borings B-3, B-4, and B-5, which were drilled inside interior service hallways with concrete floors. Fuel hydrocarbons were detected in the sample from B-6, located approximately 110 feet south of the subject UST.

Geophysical Survey for Other Potential Tanks

In August 2014, Blue Rock supervised Norcal Geophysical Consultants, Inc. (Norcal) in performance of the geophysical survey to evaluate the sidewalk area around the subject UST to evaluate the presence of other potential UST(s) in the area. The area investigated was approximately 90 feet long by 17 feet wide encompassing the location of the subject UST. Techniques employed consisted of electromagnetic survey and ground penetrating radar. No anomalous survey results suggestive of additional USTs were found in the search area. Please see Blue Rock’s *Report for Geophysical Survey and Additional Site Characterization Workplan* dated September 18, 2014.

Secondary Source Removal

Amicus Environmental evaluated investigative and remedial options available at the site in their September 13, 2009 correspondence. It was noted that corrective actions would be necessarily constrained by the location of the abandoned UST relative to existing development - i.e. assessment proximally downgradient is prohibited, inadequate space to build a traditional fixed in-situ remediation system, and remedial excavation would undermine the existing building. Yet the persistence of elevated concentrations of gasoline range hydrocarbons in the subsurface merited remedial action. As a result, the use of mobile high-vacuum extraction (HVDPE) equipment was recommended as an aggressive approach to reduce the remaining gasoline mass in the vicinity of the UST for which details were proposed in the *Removal Action Workplan* dated February 3, 2010, which was conditionally approved by the ACEHS in a letter dated February 19, 2010.

First High-Vacuum Dual-Phase Extraction Event (September-October 2010)

An initial mobile HVDPE remedial event was performed at the site from September 28 to October 3, 2010 (5 days). The event was completed using a truck-mounted unit consisting of a 25-horsepower oil sealed liquid-ring pump capable of producing 29 "Hg vacuum, and a thermal oxidizer capable of treating an air flow of approximately 450 ACFM. Wells DPE-1, DPE-2, and DPE-3 were used as extraction wells. A stinger hose was lowered into each well through a vacuum tight cap and placed approximately one foot off the bottom of each well. Depth to water at the beginning of the event was approximately 9.5 ft bgs in all three wells. At the beginning of the event, influent TPHg levels at individual wells ranged from 1,700 ppmv to 3,530 ppmv; however, they dropped to less 1,000 ppmv by the end of the event. The total average hydrocarbon mass recovered was **174 lbs** (based on 122 lbs calculated from field PID data and 225 lbs calculated from lab data), which equates to an average removal rate of nearly 35 lbs/day.

Second High-Vacuum Dual-Phase Extraction Event (July 2012)

A second mobile HVDPE remedial event was performed at the site from July 9 to 24, 2012 (15days). The event was completed using a truck-mounted unit consisting of a 25-horsepower oil sealed liquid-ring pump capable of producing 29 "Hg vacuum, and a thermal oxidizer capable of treating an air flow of approximately 450 ACFM. Wells DPE-1 and DPE-2 were used as primary extraction wells, as they proved to be the most productive. A stinger hose was lowered into each well through a vacuum tight cap and placed approximately one foot off the bottom of each well. Depth to water at the beginning of the event was approximately 8.5 to 9 ft bgs, and the no free-product was observed in any of the wells. The total influent TPHg level was 1,200 ppmv at the start of the event and declined to 430 ppmv by the end of the event. The ending mass removal rate was estimated to be approximately 11 lbs/day. Blue Rock estimated the total average hydrocarbon mass recovered was approximately **249 lbs** (based on 199 lbs calculated from field PID data and 298 lbs calculated from lab data). The HVDPE unit provider (CalClean) estimated the total average hydrocarbon mass recovered was approximately **166 lbs** (based on 130 lbs calculated from field PID data and 191 lbs calculated from lab data). The difference between the mass removal estimates appears to be due to the fact that Blue Rock used flowrates from the manufacturer's blower curve based on the measured vacuum and Calclean used flowrates measured in the field with an inline flowmeter.

Cumulative Secondary Source Removal Efforts

A total hydrocarbon mass of approximately **340 to 423 lbs** has been removed by both the 2010 and 2012 events. At the beginning of the 2010 event, total inlet concentrations were 1,660 ppmv resulting in an extraction rate of approximately 90 lbs/day. By the end of the 2012 event, total inlet concentrations had declined to 430 ppmv and the extraction was approximately 10 lbs/day. Based on these data, it appears the use mobile HVDPE may have reached its effective limit and the mass appears to have been removed to the extent practicable. Additional use of mobile HVDPE may not be cost effective.

Free-Product Occurrence and Removal

Free-product was measured once in DPE-3 at a thickness of 0.13-feet in January 2011. However, following the second HVDPE event, no measurable thicknesses of free product have been observed in any of the wells.

Evaluation of Secondary Source Removal / Reduction

As presented in Blue Rock's March 11, 2013 report, a comparison of pre- and post-remedial soil quality proximal to the abandoned UST was intended to serve as a proxy for removal / reduction of the secondary source mass. The results of confirmation soil sampling are shown below.

<i>West Side of UST</i>			
Sample ID	Pre-remedial TPHg (mg/kg)	Post- Remedial TPHg (mg/kg)	CB-1 Sample ID
DPE-1-7.5'	6,500	<1.0	CB-1-7.5'
EX-W-9'	10,000	1,200	CB-1-9'
DPE-1-12'	2,300	14,000	CB-1-12'
DPE-1-15'	770	1,000	CB-1-15'

<i>East Side of UST</i>			
Sample ID	Pre-remedial TPHg (mg/kg)	Post- Remedial TPHg (mg/kg)	CB-2 Sample ID
DPE-2-6'	1.2	No sample	
EX-E-9'	920	840	CB-2-9'
DPE-2-11'	160,000	2,700	CB-2-11'
DPE-2-15'	430	380	CB-2-15'

TPHg concentrations in the upper 11 feet of soil were lower compared to pre-remedial levels, while concentrations at a depth of 12 feet and below were similar to, or higher, than pre-remedial levels. The reduction in concentrations in the upper 11 feet is expected based on historical depth to water and temporary local dewatering during the HVDPE events. Static depth to water is approximately 9 ft bgs and the intake hoses were placed at a depth of approximately 14 ft bgs in DPE-3 and 14 ft bgs in DPE-1 / DPE-2 during HVDPE extraction (i.e. one foot off the bottom of the well casing). The combined effect of the naturally occurring vadose zone and depressed water levels in each extraction well likely facilitated better vapor flow, and therefore mass removal, in the upper 11 feet of the soil column relative to soil deeper in the saturated zone. These results are indicative of secondary source reduction primarily in the upper 11 feet of the soil column.

Previous Evaluation of Risk to Potentially Sensitive Receptors

In August 2012 and January 2014, Blue Rock sampled three sub-slab soil vapor points (VP-1 through VP-3) inside the building adjacent to the closed UST (Figure 2). The points are located between approximately 6 and 38 feet south to southeast of the UST. Tracer gas (helium) leakage was minimal (i.e. equal to or less than 1%) during these events. Results from both events did not indicate a vapor intrusion risk based on comparison to Shallow Soil Gas ESLs from Table E of *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Interim 2007 (Revised 2008)* and CHHSLs published in *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties (CALEPA 2005)* for commercial / industrial land use scenarios. Details of this work were presented in Blue Rock's *Second Sub-Slab Soil Vapor Sampling Report* dated October 18, 2012 and *Additional Site Characterization Report* dated May 29, 2014. Sub-slab vapor data is summarized in Table 4.

Groundwater beneath this area of Oakland is not presently used for beneficial purposes (consumption or irrigation). Additionally, it is reasonable to assume that the shallowest water-bearing zone in the vicinity of the subject site will plausibly not be used for beneficial consumption for the indeterminate future, if ever (in terms of City habitation). The residual hydrocarbons in groundwater do not, therefore, pose a threat to human health via consumption. Drinking water is supplied to the site vicinity by East Bay Municipal Utility District.

Additional Site Characterization Activities

Upgradient Subsurface Characterization

Two borings were drilled in 4th Street, in the upgradient direction of the subject UST, to evaluate the extent of subsurface impact in that direction and possible relationship to the historical Grove Auto Repair release. This was accomplished by collection of soil and grab groundwater samples from two temporary borings located in the eastbound lane of 4th Street, located approximately 30 to 40 feet north of the subject UST (Figure 2).

Prior to drilling, Blue Rock obtained soil boring permits from the Alameda County Public Works Agency and excavation and obstruction permits were obtained from the City of Oakland (attached). The drilling locations were marked in white paint and Underground Service Alert was notified to identify utilities proximal to the proposed drilling locations. Prior to initiation of field activities, all workers reviewed a site specific Health and Safety Plan prepared by Blue Rock.

On December 29, 2014, Blue Rock supervised Gregg Drilling & Testing, Inc., a C-57-licensed contractor, in drilling and sampling activities. Drilling was completed using a direct-push drill-rig. At each drilling location, drill-rod, approximately 2.5-inches in diameter, was used to advance a boring several feet into the water table (i.e. approximately 13 to 15 ft bgs). During drilling, soil types were logged in accordance with the USCS, and field observations of potential petroleum presence were noted. Blue Rock collected three soil samples from each boring, ranging in depth from the approximately 8 ft bgs (i.e. the capillary fringe) to a depth of approximately 14 ft bgs for laboratory analysis. Each sample tube was covered with Teflon lined plastic end caps, labeled, documented on a chain-of-custody form, and placed on ice in an insulated cooler for transport to the laboratory.

Following advancement of the borings to the desired depths, a new SCH40 PVC well screen was placed in each boring to help facilitate collection of a water sample. A new disposable polyethylene bailer was used to collect a groundwater sample from each boring. Water samples were transferred to laboratory supplied containers, labeled, documented on a chain-of-custody form, and placed on ice in an insulated cooler for transport to the project laboratory.

Pace Analytical analyzed the soil and groundwater samples for concentrations of:

- TPHd by EPA Method 8015M
- TPHg by EPA Method 8260B
- BTEX by EPA Method 8260B
- MTBE and TBA by EPA Method 8260B
- 1,2-DCA and EDB by EPA Method 8260B
- Naphthalene by EPA Method 8260B

Upon completion of sampling, all boreholes were backfilled to the surface with cement and finished at the surface with asphalt. Drill-rod, hand-augers, and sampling devices were decontaminated in an Alconox® wash followed by double rinse in clean tap water to prevent cross-contamination. Soil cutting and rinseate were stored in labeled 55-gallon drums pending removal and disposal.

Passive Sampling Survey of Downgradient Area between UST and B-6

Blue Rock employed a minimally invasive passive sampling technology of Applied Geochemical Imaging, LLC (AGI) (formerly Gores-Sorber) to evaluate the area between the subject UST and B-6. This approach used nine passive sampling devices, designated S-1 through S-9, arrayed into a grid measuring approximately 110 feet by 90 feet (Figure 2). This investigation approach was aimed at gathering the maximum amount of information regarding the general distribution of petroleum hydrocarbons in the subsurface while minimizing disruption to the building occupants/operations.

This technology uses narrow diameter sample modules, consisting of an engineered sorbent material encased in a vapor permeable membrane sleeve, to passively adsorb volatile organic compounds that are then analyzed in a laboratory. The laboratory results are reported in mass of a specific compound that was adsorbed onto the sampler matrix. The results provide the user with information regarding the general distribution of the target compounds in soil and/or groundwater at any particular location.

On February 7, 2015, Blue Rock installed the passive sampling modules. At each location, a hole, approximately 1-inch or less in diameter was created using a hand-held rotary hammer. Each hole was extended to a depth of 3 ft bgs in each location, and a passive sampler was inserted, with an appropriate sized cork plug at the top to secure it. The unique sampler number was recorded for each location. The passive samplers were left in-place for seven days. On February 14, 2015, Blue Rock retrieved the samplers. Each sampler was placed in the laboratory supplied container, documented on chain-of-custody form, and shipped in an appropriate condition to AGI for analysis.

Upon completion of sampling, all sampling holes will backfilled to the surface with cement.

AGI analyzed the samples by GC/MS methods for mass per sampler of:

- Total Petroleum Hydrocarbons (TPH)
- Diesel Range Petroleum Hydrocarbons (DRPH)
- Gasoline Range Petroleum Hydrocarbons (GRPH)
- BTEX
- MTBE
- 1,2-DCA
- Naphthalene

Investigation Results

Hydrogeologic Conditions Observed

The soil types logged in borings SB-7 and SB-8 were similar to those observed in previous borings. A brown clayey sand was observed to the total depth explored in both borings ranging from 13 to 15 ft bgs. The depth to first encountered water in the borings ranged from approximately 8 to 9 ft bgs. Due to their proximity and configuration, data from the existing wells are not suitable to determinations of flow direction / gradient. Groundwater flow at the Allen Property site has been southerly, towards the Oakland Inner Harbor.

Soil Sample Analytical Results

The following section summarizes soil analytical results for this event from SB-7 and SB-8:

- TPHd concentration <1 mg/kg (SB-8 14.5) to 1,400[^] mg/kg (SB7-10.5/11)
- TPHg concentration <1 mg/kg (SB-8 14.5) to 19,000 mg/kg (SB7-10.5/11)
- Benzene concentration: 0.026 mg/kg (SB-8 14.5) to 150 mg/kg (SB7-10.5/11)
- MTBE concentration: <0.0050 mg/kg to <0.25 mg/kg (all samples)
- 1,2-DCA concentration: <0.0050 mg/kg to <0.25 mg/kg (all samples)

Notes: ^ indicates that laboratory notes that hydrocarbons are lower-boiling than typical diesel.

Soil sample laboratory data are summarized in Table 2, and the laboratory report and chain-of-custody form are attached.

Groundwater Sample Analytical Results

The following section summarizes groundwater analytical results for SB-7 and SB-8:

- TPHd concentration: 16,000[^] µg/L (SB-8) to 60,000[^] µg/L (SB-7)
- TPHg concentration: 180,000 µg/L (SB-8) to 250,000 µg/L (SB-7)
- Benzene concentration: 9,100 µg/L (SB-8) to 15,000 µg/L (SB-7)
- MTBE concentration: <40 µg/L (SB-7 and SB-8)
- 1,2-DCA concentration: 130 µg/L (SB-7 and SB-8)

Notes: ^ indicates that laboratory notes that hydrocarbons are lower-boiling than typical diesel.

Groundwater sample laboratory data are summarized in Table 3, and the laboratory report and chain-of-custody form are attached.

Passive Soil Gas Sample Results

The following section summarizes passive soil gas sample results for S-1 through S-9:

- DRPH concentration: <0.50 µg (S-4 and S-9) to 107.91 µg (S-5)
- GRPH concentration: <0.50 µg (S-7 and S-9) to 223.55 µg (S-2)
- Benzene concentration: 0.02 µg (S-4) to 48.01 µg (S-2)
- MTBE concentration: <0.02 µg (numerous samples) to 0.25 µg (S-1)
- 1,2-DCA concentration: <0.02 µg (S-7) to 3.97 µg (S-2)

Passive soil gas sampler laboratory data are summarized in Table 5, and the laboratory report and chain-of-custody form and mapping report are attached.

Discussion of Investigation Results

Elevated concentrations of gasoline were detected in soil and groundwater samples from both borings in 4th Street, which are located approximately 30 to 40 feet upgradient of the closed UST. The TPHg concentrations of 250,000 µg/L (SB-7) and 180,000 µg/L (SB-8) suggest the presence of potential free-product petroleum in those locations and are higher than those most recently detected proximal to the subject UST. These data suggest the presence of an off-site, upgradient source that is contributing to the detection of gasoline hydrocarbons proximal to the subject UST.

The passive soil gas sample results also appear to indicate that gasoline impact to the subsurface extends uninterrupted from the middle of 4th Street (i.e. SB-7 and SB-8) southerly (as documented by S-6, S-5, and S-3) to the interior atrium (where B-6 is located). Based on the widespread gasoline detections observed in the passive samplers, Blue Rock interprets this to be representative of gasoline plume in shallow groundwater, and possibly associated soil impact at the vadose zone/water table interface. This relationship is depicted by the interpreted extent of benzene in groundwater shown on Figure 3.

The distribution of MTBE detected over the course of investigation suggests that it may represent a detached plume scenario related to the apparent upgradient gasoline source.

Interestingly, sample S-1, located approximately 20 feet downgradient of the subject UST, contained relatively low levels of target constituents compared to other samples. If the subject UST were a significant source, one would expect relatively higher gasoline concentrations to be present in S-1.

Project Status and Recommendations

- A gasoline source upgradient of the subject site appears to be present. Blue Rock recommends that the ACEHS evaluate the data in this report and request appropriate property owners and/or other responsible parties to perform activities needed to evaluate sources of fuel impairment of subsurface soil and groundwater to the north and north-northeast of the subject site.
- Blue Rock does not recommend performance of additional corrective activities by Terradev Jefferson LLC for the subject UST until the presence of an upgradient fuel source is further evaluated, as recommended above.

References

- AEI Consultant, 2013, *Site Status Update and Case Closure Request*, Allen Property, 325 Martin Luther King Jr. Way, Oakland, November 5
- Amicus Strategic Environmental Consulting, 2009, letter regarding Terradev Jefferson, LLC Property, 645 Fourth Street, Oakland, March 4.
- Amicus Strategic Environmental Consulting, 2009, letter regarding Terradev Jefferson, LLC Property, 645 Fourth Street, Oakland, September 13.
- Blue Rock, 2010, *Removal Action Workplan*, 645 Fourth Street, Oakland, California, February 3.
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- Blue Rock, 2012, *Sub-Slab Soil Vapor Sampling Workplan and Project Schedule*, 645 Fourth Street, Oakland, California, April 23.
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- Blue Rock, 2012, *Second Removal Action and Groundwater Monitoring Report*, 645 Fourth Street, Oakland, California, August 16.
- Blue Rock, 2012, *Second Sub-Slab Soil Vapor Sampling Report*, 645 Fourth Street, Oakland, California, October 18.
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- Blue Rock, 2014, *Report for Geophysical Survey and Additional Site Characterization Workplan*, 645 Fourth Street, Oakland, California, September 18.
- California EPA - DTSC. 2004. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*. December 15 (Revised February 7, 2005).
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- Ninyo & Moore, 2009, *Limited Phase II Environmental Site Assessment*, 645 Fourth Street, Oakland, California, July 24.
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- San Francisco Bay RWQCB. 2008. *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater - Interim Final November 2007 (Revised May 2008)*. May.

Certification

This report was prepared under the supervision of a California Professional Geologist at Blue Rock. All statements, conclusions, and recommendations are based upon published results from past consultants, field observations by Blue Rock, and analyses performed by a state-certified laboratory as they relate to the time, location, and depth of points sampled by Blue Rock. Interpretation of data, including spatial distribution and temporal trends, are based on commonly used geologic and scientific principles. It is possible that interpretations, conclusions, and recommendations presented in this report may change, as additional data become available and/or regulations change.

Information and interpretation presented herein are for the sole use of the client and regulating agency. The information and interpretation contained in this document should not be relied upon by a third party.

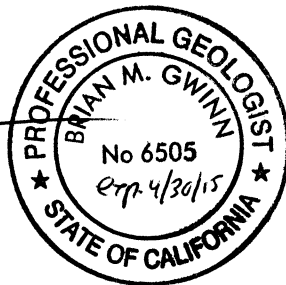
The service performed by Blue Rock has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

If you have any questions regarding this project, please contact us at (650) 522-9292.

Sincerely,
Blue Rock Environmental, Inc.



Brian Gwinn, PG
Principal Geologist



Attachments:

Figure 1: Site Location Map

Figure 2: Site Plan

Figure 3: Benzene in Groundwater – Dec. 2014

Table 1: Well Construction Data

Table 2: Soil Sample Analytical Data

Table 3: Groundwater Analytical Data

Table 4: Sub-Slab Vapor Sample Analytical Data

Table 5: Passive Soil Gas Sample Analytical Data

City of Oakland Excavation Permit

City of Oakland Obstruction Permit

Alameda County Public Works Agency Drilling Permit

Boring Logs: SB-7 and SB-8

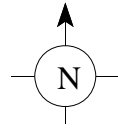
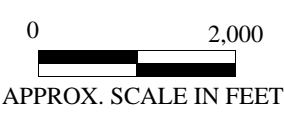
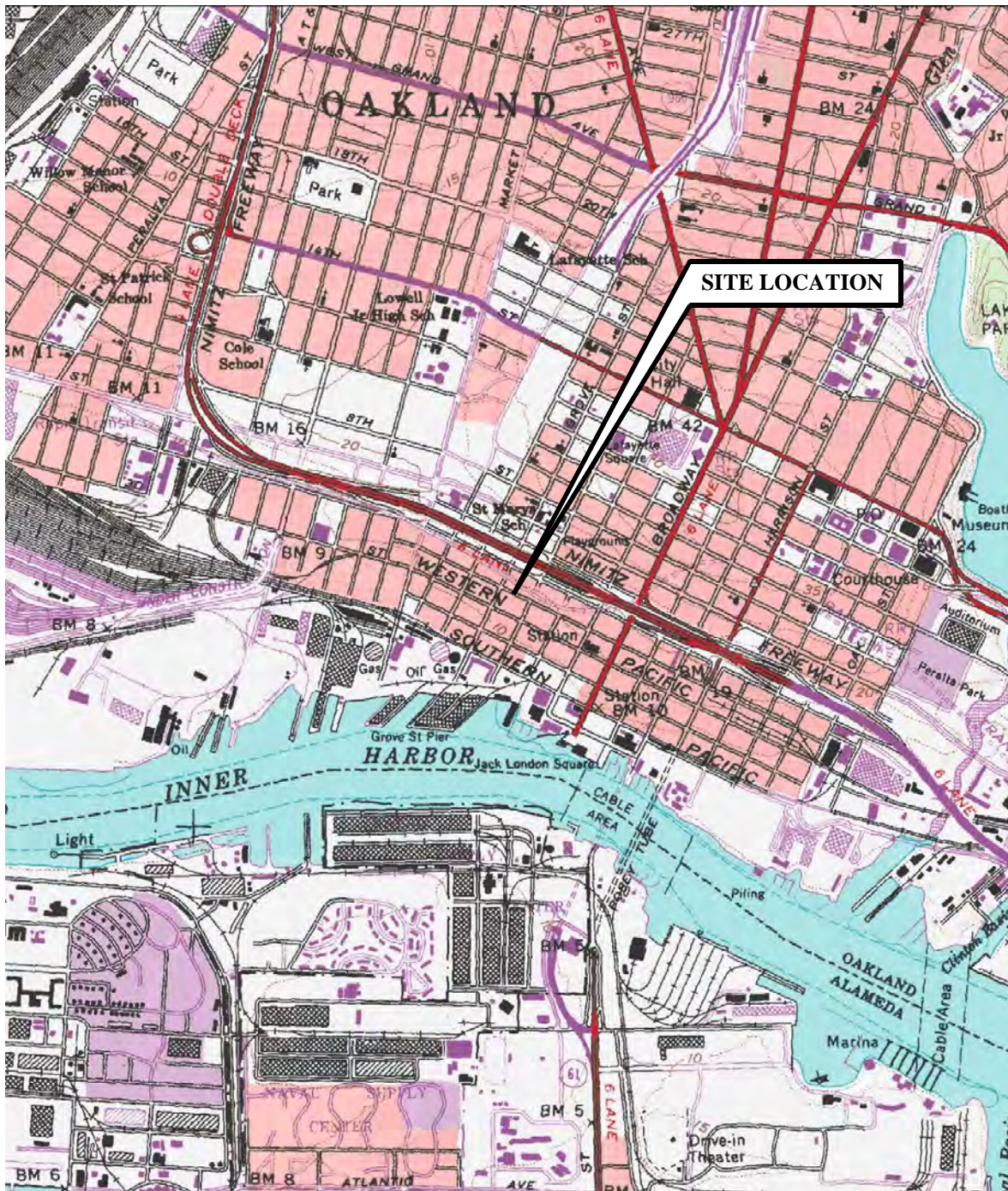
Soil and Groundwater Sample Analytical Reports

AGI Passive Sampler Laboratory Report

AGI Constituent Mapping Report

Distribution:

Ms. Sara May, Metrovation, 580 Second St. Suite 260, Oakland, CA 94607

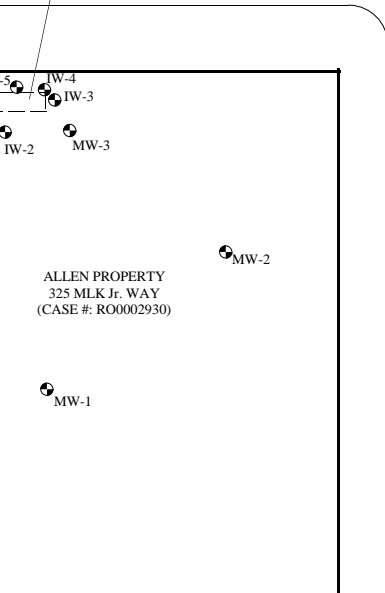
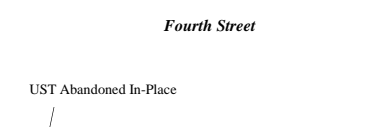
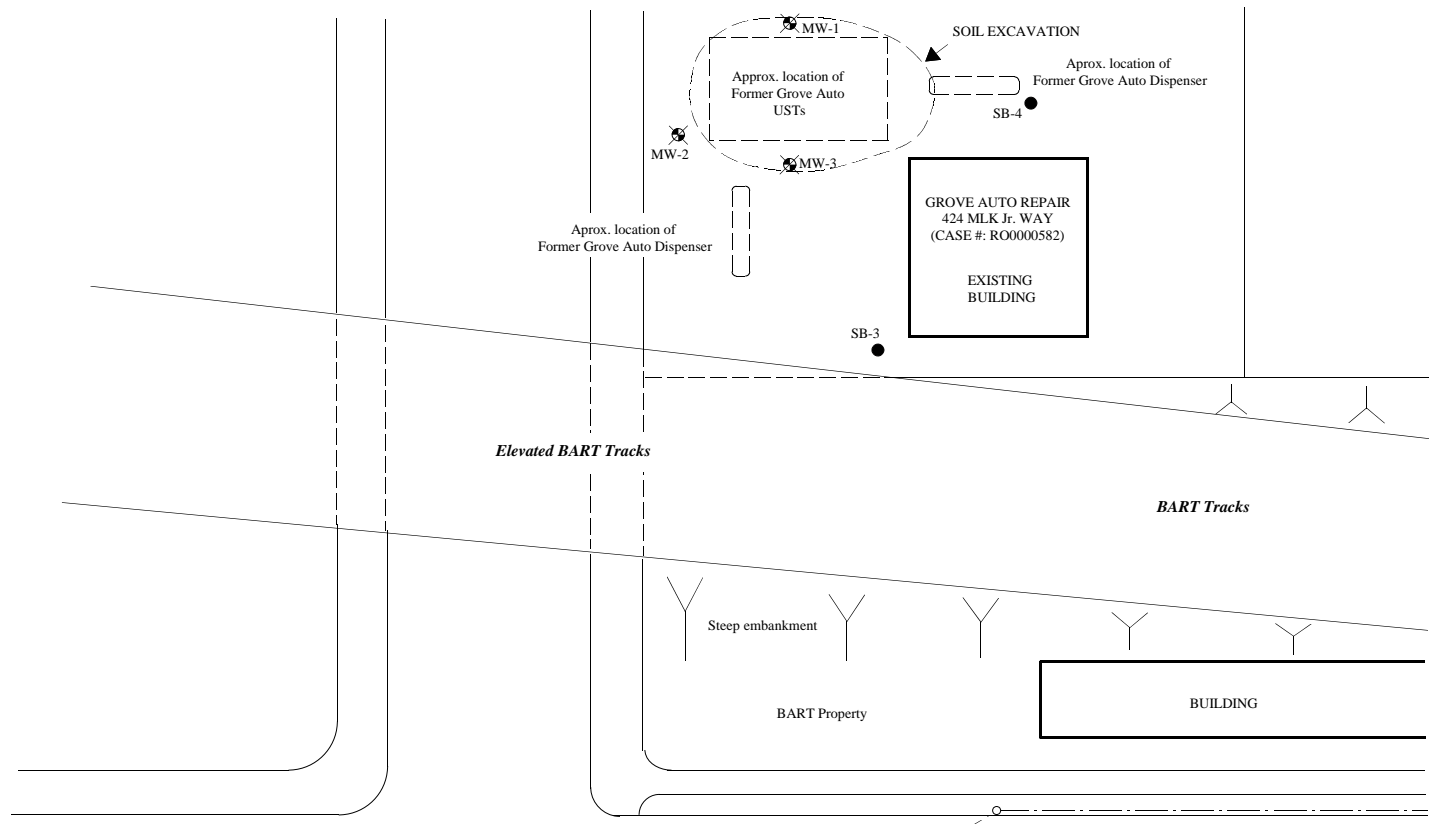


SOURCE: MyTopo.com

SITE LOCATION MAP
 Terradev Jefferson LLC Property
 645 Fourth St.
 Oakland, CA

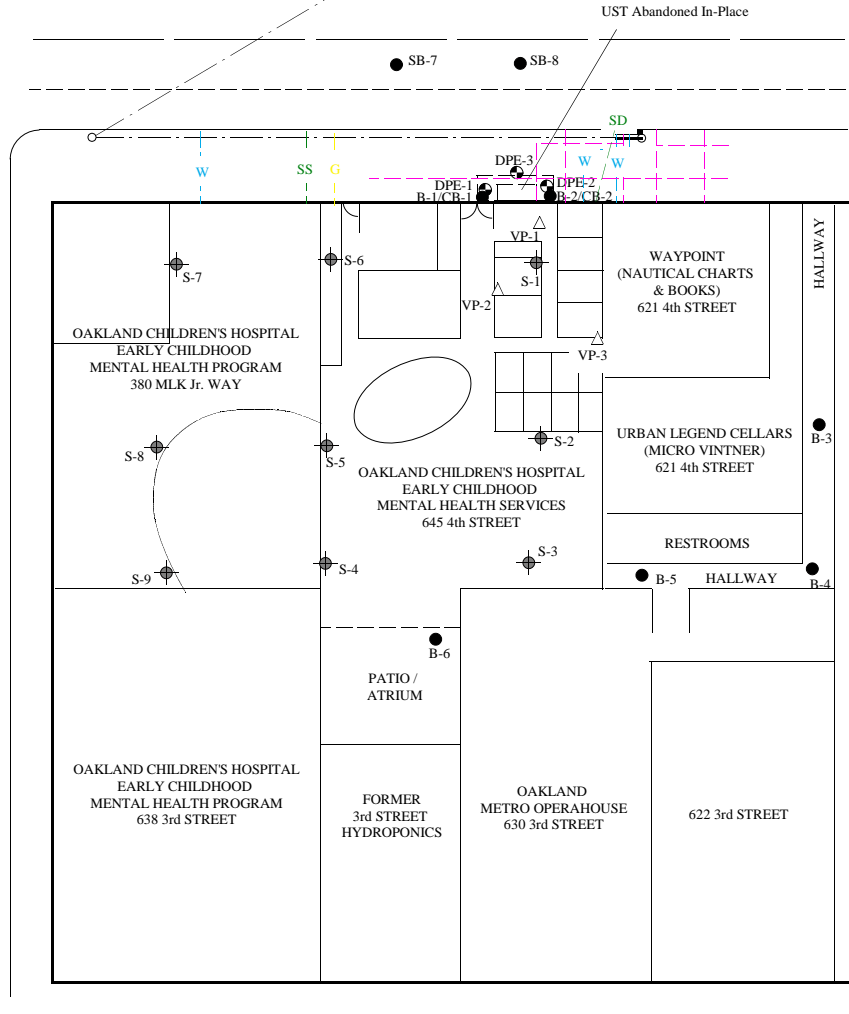


Project No. ASE-1	Figure Date 10/10	Figure 1
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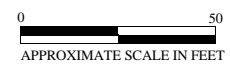
EXPLANATION

- B-6 ● SOIL BORING
- DPE-3 ⊕ PROJECT WELL
- VP-2 △ SUB-SLAB SOIL VAPOR POINT
- S-7 ⊕ PASSIVE SAMPLER

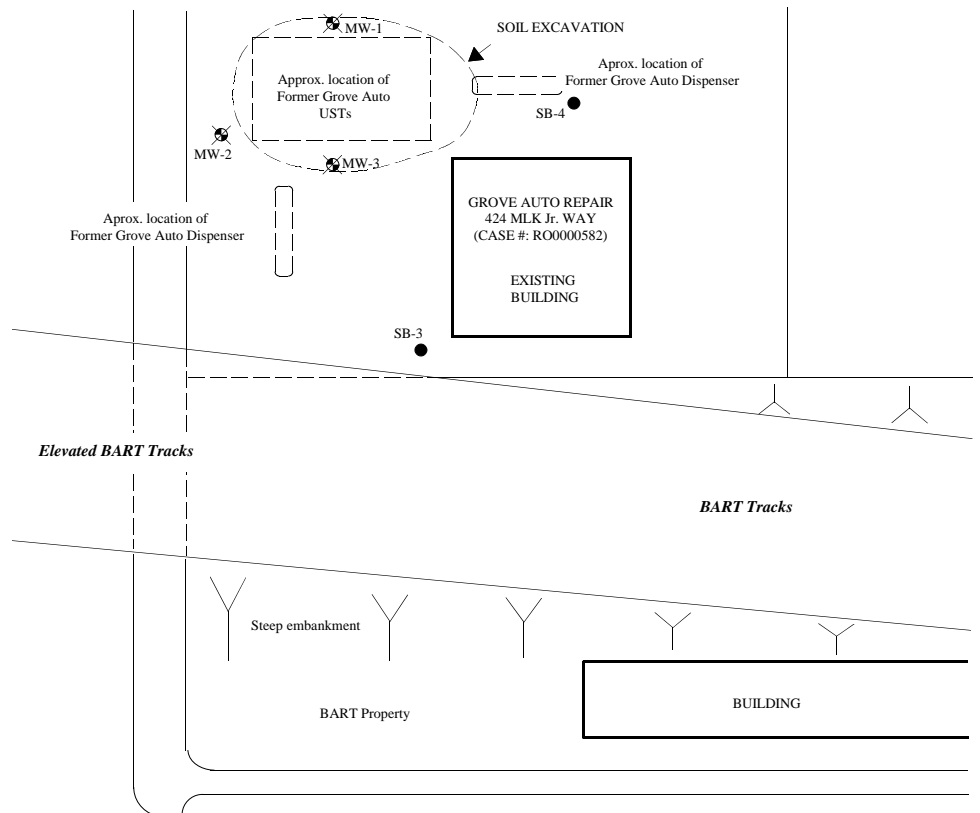
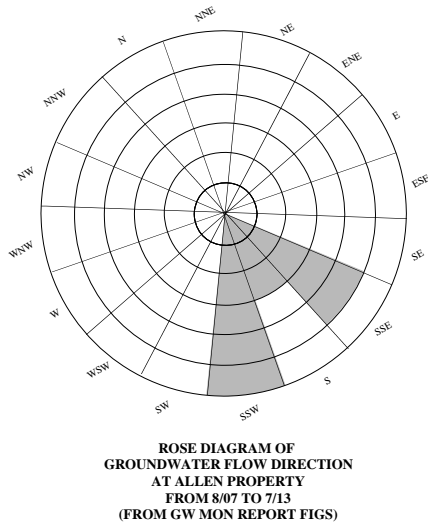


SITE PLAN
Terredev Jefferson LLC Property
645 Fourth St.
Oakland, CA

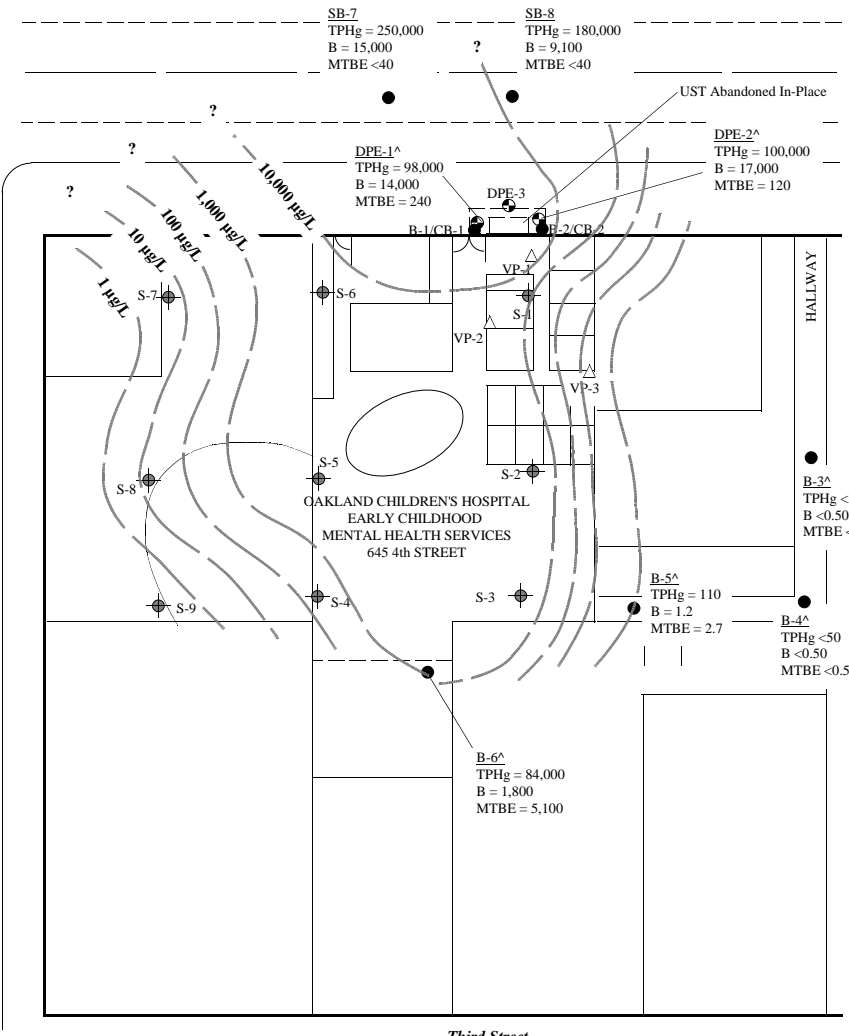
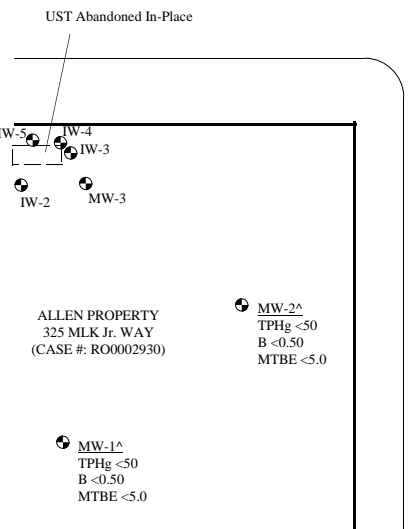
Project No. ASE-1	Figure Date 3/15	Figure 2



Third Street



Fourth Street



EXPLANATION

- B-6 ● SOIL BORING
- DPE-3 ● PROJECT WELL
- VP-2 △ SUB-SLAB SOIL VAPOR POINT
- S-7 ⊕ PASSIVE SAMPLER
- B-6^A
TPHg = 84,000
B = 1,800
MTBE = 5,100
- TPHg, BENZENE, MTBE (µg/L)
- ^ INDICATES MOST RECENT AVAILABLE DATA
- 10 µg/L
ESTIMATED BENZENE ISO-CONCENTRATION (IN µg/L)
PASSIVE SAMPLER DATA USED TO INTERPRET PLUME GEOMETRY

BENZENE IN GROUNDWATER MAP - DEC. 2014
Terredev Jefferson LLC Property
645 Fourth St.
Oakland, CA

Project No. ASE-1	Figure Date 3/15	Figure 3

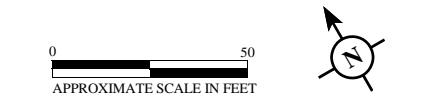


TABLE 1
Well Construction Data
 Terradev Jefferson, LLC Property
 645 Fourth Street
 Oakland, CA

Extraction Wells

Well ID	Date Installed	Total Boring Depth (ft bgs)	Casing Diameter (inches)	Screen Depth (ft bgs)	Sandpack Depth (ft bgs)	Bentonite Depth (ft bgs)	Cement Grout Depth (ft bgs)
DPE-1	9/20/10	15	2	8 - 15	7 - 15	5 - 7	0 - 5
DPE-2	9/20/10	15	2	8 - 15	7 - 15	5 - 7	0 - 5
DPE-3	9/20/10	10	2	6 - 10	5 - 10	3 - 5	0 - 3

Vapor Probes

Well ID	Date Installed	Total Probe Depth (in bgs)	Tubing Diameter (inches)	Slab Thickness (in bgs)	Screen Depth (in bgs)	Rubber Plug (in bgs)	Cement Depth (in bgs)
VP-1	6/16/12	9	0.25	6.0	~ 6 - 9	~5.0 - 6.0	0 - 5
VP-2	6/16/12	9	0.25	4.5	~ 6 - 9	~3.5 - 4.5	0 - 3.5
VP-3	6/16/12	9	0.25	4.0	~ 6 - 9	~3.0 - 4.0	0 - 3

Notes:

ft bgs Feet below ground surface.
 in bgs Inches below ground surface.

TABLE 2
Soil Sample Analytical Data
 Terradev Jefferson, LLC Property
 645 Fourth Street
 Oakland, CA

Sample ID	Depth (ft bgs)	Sample Date	TPHd			B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE,		EDB (mg/kg)	Napht. (mg/kg)
			TPHd (mg/kg)	w/SGCU (mg/kg)	TPHg (mg/kg)							ETBE, TAME (mg/kg)	1,2-DCA (mg/kg)		
<i>UST Removal Samples</i>															
8795-EX-W-9'	9	8/23/06	<120	---	10,000	130	1,000	230	1,200	<12	<100	all<12	---	---	---
8795-EX-E-9'	9	8/23/06	<25	---	920	6.8	55	18	110	<1.2	<10	all<1.2	---	---	---
<i>Investigation Samples</i>															
DPE-1-7.5	7.5	9/20/10	810 [^]	---	6,500	14	320	180	980	<0.50	<2.5	---	<0.50	0.50	---
DPE-1-12	12	9/20/10	260 [^]	---	2,300	26	160	45	240	0.71	<1.5	---	<0.30	<0.30	---
DPE-1-15	15	9/20/10	92 [^]	---	770	10	53	15	80	0.39	<0.50	---	0.11	<0.090	---
DPE-2-6	6	9/20/10	15	---	1.2	<0.0050	0.0054	<0.0050	0.021	<0.0050	<0.0050	---	<0.0050	<0.0050	---
DPE-2-11	11	9/20/10	1,200 [^]	---	160,000	1,400	10,000	3,300	19,000	<0.25	<1.5	---	<0.25	1.8	---
DPE-2-15	15	9/20/10	66 [^]	---	430	3.8	25	8.3	47	<0.50	<2.5	---	<0.050	<0.50	---
DPE-3-7	7	9/20/10	260 [^]	---	860	2.1	37	19	100	<0.10	<0.50	---	<0.10	<0.10	---
DPE-3-10	10	9/20/10	800 [^]	---	8,900	78	580	180	980	<0.25	<1.5	---	<0.25	0.82	---
CB-1-7.5	7.5	2/18/13	1.2 [*]	---	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	---	---	<0.0050	<0.0050	---
CB-1-9	9	2/18/13	110 [^]	---	1,200	2.8	55	27	150	<0.25	---	---	<0.25	<0.25	---
CB-1-12	12	2/18/13	880 [^]	---	14,000	100	850	180	1,400	0.53	---	---	<0.25	0.86	---
CB-1-15	15	2/18/13	89 [^]	---	1,000	8.4	62	15	100	<0.050	---	---	<0.050	<0.050	---
CB-2-9	9	2/18/13	120 [^]	---	840	0.44	17	20	110	<0.15	---	---	<0.15	<0.15	---
CB-2-11	11	2/18/13	110 [^]	---	2,700	23	160	48	260	<0.40	---	---	<0.40	<0.40	---
CB-2-15	15	2/18/13	45 [^]	---	380	3.9	18	6.6	34	<0.050	---	---	<0.050	<0.050	---
B-6-6'	6.5	1/11/14	340 [^]	350 [^]	1,700	0.13	8.0	12	91	<0.050	<0.25	---	<0.050	<0.050	---
B-6-10.5'	10.5	1/11/14	280 [^]	280 [^]	1,500	4.1	48	26	130	<0.25	<1.5	---	<0.25	<0.25	---
SB7-8.5/9	8.5-9	12/29/14	1.2 [^]	---	4.0	0.16	0.50	0.081	0.50	<0.0050	<0.0050	---	<0.0050	0.0070	0.043
SB7-10.5/11	10.5-11	12/29/14	1,400 [^]	---	19,000	150	1,100	330	1,800	<0.25	<1.5	---	<0.25	2.5	99
SB7-12.5/13	12.5-13	12/29/14	310 [^]	---	3,600	29	200	59	330	<0.090	<1.5	---	<0.090	0.46	23
SB-8-8.5/9	8.5-9	12/29/14	750 [^]	---	6,600	30	290	120	580	<0.25	<1.5	---	<0.25	0.38	38
SB-8 11.5/12	11.5-12	12/29/14	170 [^]	---	1,400	6.4	54	22	130	<0.25	<1.5	---	<0.25	<0.25	10
SB-8 14.5	14.5	12/29/14	<1.0	---	<1.0	0.026	0.060	0.011	0.065	<0.0050	<0.0050	---	<0.0050	<0.0050	<0.0050

Notes:

ft bgs feet below ground surface
 mg/kg milligrams per kilogram
 TPHd total petroleum hydrocarbons as diesel by EPA Method 8015M or 8015B, w/SCGCU = analysis performed after silica-gel clean-up.
 TPHg total petroleum hydrocarbons as gasoline by EPA Method 8260B
 BTEX benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B
 MTBE, TBA, ETBE, methyl tert-butyl ether, tert-butanol, ethyl tert-butyl ether, di-isopropyl ether, tert-amyl methyl ether by EPA Method 8260B,
 DIPE, TAME
 1,2-DCA, EDB 1,2-dichloroethane, 1,2-dibromoethane by EPA Method 8260B.
 µg/L Micrograms per liter.
 <### Not detected at or above the indicated reporting limit.
 ^ Laboratory Flag: Hydrocarbons are lower-boiling than typical Diesel Fuel
 * Laboratory Flag: Hydrocarbons are higher-boiling than typical Diesel Fuel
 --- Data not available, not monitored, or not sampled

TABLE 3
Groundwater Analytical Data
TerraDev Jefferson, LLC Property
645 Fourth Street
Oakland, CA

Sample ID	Sample Date	TOC (ft MSL)	DTW (ft)	LNAPL (ft)	GWE (ft MSL)	TPHd (µg/L)	TPHd										
							w/SGCU (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	1,2-DCA (µg/L)	EDB (µg/L)	Napht. (µg/L)
Grab Groundwater Samples																	
B-1-GW*	7/10/09	--	-9.5	--	--	5,300	--	78,000	15,000	13,000	1,700	10,500	570	--	--	--	--
B-2-GW*	7/10/09	--	-9.5	--	--	2,300	--	60,000	13,000	13,000	890	4,800	120	--	--	--	--
B-3	1/10/14	--	~12	--	--	58#	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	--
B-4	1/10/14	--	~12	--	--	67#	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<5.0	<0.50	<0.50	--
B-5	1/10/14	--	~12	--	--	110#	<50	110	1.2	1.4	0.65	4.5	2.7	200	43	<0.50	--
B-6 (2)	1/11/14	--	~11	--	--	5,200^	360^	84,000	1,800	7,600	2,400	12,000	5,100	180J	110	<20	--
SB-7	12/29/14	--	~9	--	--	60,000^	--	250,000	15,000	34,000	4,000	20,000	<40	<200	130	240	1,000
SB-8	12/29/14	--	~9	--	--	16,000^	--	180,000	9,100	22,000	3,000	16,000	<40	<200	130	140	1,200
Monitoring Well Data																	
DPE-1	9/22/10	15.81	9.21	0.00	6.60	<4,000 (1)	--	120,000	25,000	18,000	3,300	17,000	320	320	620	<40	--
Screen	9/28-10/3/10	15.81	--	--	--	5-day HVDPE Remedial Event											
~8' - 15'	10/18/10	15.81	9.26	sheen	6.55	<4,000 (1)	--	97,000	15,000	20,000	1,600	11,000	490	270	390	<40	--
	1/20/11	15.81	8.56	sheen	7.25	<3,000 (1)	--	83,000	12,000	16,000	2,000	11,000	270	<200	220	<40	--
	7/6/12	15.81	8.85	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/9-7/24/12	15.81	--	--	--	15-day HVDPE Remedial Event											
	8/12/12	15.81	9.03	0.00	6.78	<2,000 (1)	--	71,000	7,500	9,800	1,000	6,500	280	89	190	<15	--
	2/11/13	15.81	8.74	0.00	7.07	<3,000 (1)	--	81,000	9,400	14,000	1,800	10,000	240	110	210	<15	--
	1/10/14	15.81	9.84	0.00	5.97	1,600^	56^	98,000	14,000	13,000	2,100	12,000	270	200	270	<25	--
DPE-2	9/22/10	16.01	9.44	0.00	6.57	<4,000 (1)	--	110,000	21,000	18,000	3,100	14,000	200	260	540	110	--
Screen	9/28-10/3/10	16.01	--	--	--	5-day HVDPE Remedial Event											
~8' - 15'	10/18/10	16.01	9.48	sheen	6.53	<5,000 (1)	--	84,000	11,000	16,000	1,600	9,200	77	<200	220	77	--
	1/20/11	16.01	8.77	sheen	7.24	<5,000 (1)	--	94,000	12,000	19,000	2,500	13,000	64	<200	220	88	--
	7/6/12	16.01	9.06	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/9-7/24/12	16.01	--	--	--	15-day HVDPE Remedial Event											
	8/12/12	16.01	9.27	0.00	6.74	<2,000 (1)	--	70,000	9,900	16,000	1,700	9,600	54	<200	160	56	--
	2/11/13	16.01	8.95	0.00	7.06	<4,000 (1)	--	60,000	7,300	9,500	1,400	7,000	34	<90	120	<20	--
	1/10/14	16.01	10.08	0.00	5.93	2,800^	<50	100,000	17,000	15,000	2,400	11,000	120	100	220	27	--
DPE-3	9/22/10	15.87	9.43	0.00	6.44	insufficient water column for sampling (i.e. <0.5-ft)											
Screen	9/28-10/3/10	15.87	--	--	--	5-day HVDPE Remedial Event											
~6' - 10'	10/18/10	15.87	9.35	0.00	6.52	insufficient water column for sampling (i.e. <0.5-ft)											
	1/20/11	15.87	8.51	0.13	7.36	no groundwater sample collected, LNAPL present.											
	7/6/12	15.87	8.65	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/9-7/24/12	15.87	--	--	--	15-day HVDPE Remedial Event											
	8/12/12	15.87	9.02	sheen	6.85	<200,000 (1)	--	190,000	1,400	7,800	3,700	29,000	27	120	40	130	--
	2/11/13	15.87	8.34	sheen	7.53	<40,000 (1)	--	130,000	4,700	9,000	1,900	25,000	<40	<200	54	80	--
	1/10/14	15.87	Dry	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

- Screen Well screen depth interval.
- TOC Top of casing relative to feet above mean sea level (ft MSL) (ref NAVD88).
- DTW Depth to water (for borings DTW shows "depth to water" and "depth to bottom of boring")
- LNAPL Light non-aqueous phase liquid petroleum, "sheen" is an immeasurable thickness (i.e. <0.01-ft)
- GWE Groundwater Elevation (TOC-DTW) in ft MSL. (This does not account for LNAPL thickness, if present).
- TPHd Total petroleum hydrocarbons as diesel by EPA Method 8015M, *8015B. SGCU = Silica-gel cleanup prior to analysis.
- TPHg Total petroleum hydrocarbons as gasoline by EPA Method 8260B, *8015B.
- BTEX Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B, *8021B.
Note: total xylenes equal the sum of separate isomers reported for the 7/09 samples.
- MTBE Methyl tert-butyl ether by EPA Method 8260B, * 8021B.
- TBA Tert-butanol by EPA Method 8260B.
- 1,2-DCA, EDB 1,2-dichloroethane, 1,2-dibromoethane by EPA Method 8260B.
- µg/L Micrograms per liter.
- <### Not detected at or above the indicated reporting limit.
- Data not available, not monitored, or not sampled
- ^ Laboratory Flag: Hydrocarbons are lower-boiling than typical Diesel Fuel
- # Laboratory Flag: Discrete peaks in Diesel range, atypical for Diesel Fuel
- J Laboratory Flag: TBA concentration may be biased slightly high due to conversion of a small fraction of MTBE to TBA during water sample analysis.
- (1) Method detection limit increased due to interference from gasoline range hydrocarbons
- (2) Repeat analysis by Method 8260B yielded inconsistent results. The concentrations appear to vary between bottles. The highest valid result is reported.

Table 4
SUB-SLAB VAPOR SAMPLE ANALYTICAL DATA
 Terradev Jefferson LLC Property
 645 Fourth St.
 Oakland, CA

Sample I.D.	Sample Date	sample container	Constituent Concentrations									Soil Gas Concentrations			Tracer Gas			Sample Can Vacuum	
			TPHg (ug/m ³)	B (ug/m ³)	T (ug/m ³)	E (ug/m ³)	X (ug/m ³)	MTBE (ug/m ³)	Naphthalene (ug/m ³)	1,2-DCA (ug/m ³)	EDB (ug/m ³)	O ₂ (%)	CO ₂ (%)	CH ₄ (%)	He - Avg (%)	He (%)	Leak Percent [^] (%)	End of Sampling ("Hg)	Arrival at Lab ("Hg)
VP-1	6/16/12	1-L	1,300	38	120	21	138	7.3	<0.09	<0.14	<0.050	15	0.096	<0.008	22.2	2.4	10.8%	~8	~6
VP-1	9/22/12	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	19	0.78	<0.008	20.0	0.19	1.0%	~5	~6
VP-1	1/25/14	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	14	4.7	<0.008	5.7	0.023	0.40%	~5	~5
VP-2	6/16/12	1-L	1,200	66	25	2.6	8.2	<6.3	<0.090	<0.14	<0.050	11	1.3	<0.009	13.8	<0.003	<0.02%	~8	~7
VP-2	9/22/12	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	14	4.0	<0.008	19.0	<0.003	<0.02%	~7	~6
VP-2	1/25/14	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	12	7.4	<0.008	6.6	<0.003	<0.05%	~5	~5
VP-3	6/16/12	1-L	960	16	19	2.9	20	<5.8	<0.08	<0.13	<0.050	16	0.029	<0.008	23.6	2.6	11%	~5	~5
VP-3	9/22/12	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	20	0.46	<0.008	15.7	0.036	0.23%	~5	~6
VP-3	1/25/14	1-L	<330	<8.0	<9.4	<11	<22	<9.0	<13	<10	<3.8	19	1.5	<0.008	6.6	0.012	0.18%	~5	~5

<i>ESLs Comm/Indus Soil Gas</i>	3,100,000	420	1,300,000	4,900	440,000	47,000	360	580	170
<i>CHHSLs Comm /Indus Soil Gas</i>	NA	122	378,000	NA	879,000	13,400	106	167	NA

Notes:

- TPHg Total Petroleum Hydrocarbons as gasoline by EPA Method TO-15
 - BTEX, MTBE Benzene, Toluene, Ethylbenzene, and Total Xylenes, Methyl tert-Butyl Ether by EPA Method TO-15(M) GC/MS (note: Xylene number shown in table is the sum of xylene isomers reported by lab)
 - Naphthalene Naphthalene by EPA Method TO-15
 - 1,2-DCA, EDB 1,2-dichloroethane, 1,2-dibromoethane by EPA Method TO-15
 - O₂, CO₂, CH₄, He Oxygen, Carbon Dioxide, Methane, and Helium by modified ASTM D-1946
 - ug/m³ Micrograms per cubic meter
 - <#.## Compound not detected at or above the reported laboratory detection limit
 - ESLs Environmental Screening Levels for Soil Vapor in Commercial/Industrial or Residential setting (SFBRWQCB 2013)
 - CHHSLs California Human Health Screening Levels for Soil Vapor in Commercial/Industrial or Residential setting (CalEPA/OEHHA2005)
 - Tracer Gas in Shroud Concentration range of tracer gas in shroud recorded during sample collection. Average = (Max - Min) / 2
 - Tracer Gas in Sample Concentration of tracer gas in sample as detected by lab analysis.
 - Tracer Gas Leak into Sample If helium was detected in the sample, the concentration measured in the sample was divided by the average concentration in the shroud (and multiplied by 100 to convert to percent).
 ^ a leak of less than 5% is considered acceptable for data evaluation.
- Shaded samples indicate a tracer gas leak of more than 5%.

TABLE 5
Passive Soil Gas Sample Analytical Data
 Terradev Jefferson, LLC Property
 645 Fourth Street
 Oakland, CA

Sample ID	Sample Depth (ft bgs)	Install Date	Retrieval Date	TPH (µg)	DRPH (µg)	GRPH (µg)	B (µg)	T (µg)	E (µg)	X (µg)	MTBE (µg)	1,2-DCA (µg)	Napht. (µg)
S-1	~2 - 3	2/7/15	2/14/15	13.33	2.90	10.86	0.04	0.03	0.02	0.17	0.25	0.13	0.20
S-2	~2 - 3	2/7/15	2/14/15	273.77	59.21	223.55	48.01	209.52	123.77	505.33	<0.02	3.97	35.44
S-3	~2 - 3	2/7/15	2/14/15	183.36	72.98	115.01	33.38	127.13	113.16	367.48	<0.02	2.35	37.35
S-4	~2 - 3	2/7/15	2/14/15	1.00	<0.50	0.66	0.02	0.02	<0.02	0.18	<0.02	2.35	<0.50
S-5	~2 - 3	2/7/15	2/14/15	220.53	107.91	117.33	20.23	90.58	24.79	369.71	<0.02	2.01	30.63
S-6	~2 - 3	2/7/15	2/14/15	169.75	54.69	119.88	15.94	29.38	31.45	337.65	<0.02	0.90	2.45
S-7	~2 - 3	2/7/15	2/14/15	1.03	0.74	<0.50	0.07	0.15	0.06	0.59	<0.02	<0.02	<0.50
S-8	~2 - 3	2/7/15	2/14/15	245.41	106.20	145.04	32.86	103.45	76.32	421.35	<0.02	2.53	36.09
S-9	~2 - 3	2/7/15	2/14/15	<0.50	<0.50	<0.50	0.36	0.36	0.03	0.16	<0.02	0.02	<0.50

Notes:

ft bgs feet below ground surface
 µg micrograms
 TPH Total petroleum hydrocarbons by SPG-WI-0292
 DRPH Diesel range petroleum hydrocarbons by SPG-WI-0292
 GRPH Gasoline range petroleum hydrocarbons by SPG-WI-0292
 BTEX benzene, toluene, ethylbenzene, and xylenes by SPG-WI-0292
 MTBE methyl tert-butyl ether by SPG-WI-0292
 1,2-DCA 1,2-dichloroethane by SPG-WI-0292
 Naphthalene Naphthalene by SPG-WI-0292
 <### Not detected at or above the indicated reporting limit.

Permits for which no major inspection has been approved within 180 days shall expire by limitation. No refund more than 180 days after expiration or final.



CITY OF OAKLAND

250 FRANK H. OGAWA PLAZA ▪ 2ND FLOOR ▪ OAKLAND, CA 94612

Planning and Building Department
www.oaklandnet.com

PH: 510-238-3891
FAX: 510-238-2263
TDD: 510-238-3254

Permit No: X1403076 ⁶ Excavation

Filed Date: 12/17/2014

Job Site: 645 4TH ST

Schedule inspection by calling 510-238-3444

Parcel No: 001 012300900

For SL; X; and CGS permits see SPECIAL NOTE below

District:

Project Description: RE: ENMI10220

Soil boring(s) SB-17 through SB-20 on 4th Street between Jefferson & MLK; see site plan.
No impact on traffic lane (vehicular or pedestrian) allowed without approved Traffic Control Plan.
Permit valid 90 days.
Separate Obstruction permit required to reserve/block parking lane.
Call PWA INSPECTION prior to start: 510-238-3651. 4th FLOOR.

Related Permits:

	<u>Name</u>	<u>Applicant</u>	<u>Address</u>	<u>Phone</u>	<u>License #</u>
Owner:	TERRADEV JEFFERSON LLC		PO BOX 530 ALAMEDA, CA		
Contractor:	BLUE ROCK ENVIRONMENTAL INC	X	1157 CHESS DRIVE SUITE 107 FOSTER CITY, CA	(650) 522-9292	888734

PERMIT DETAILS: Building/Public Infrastructure/Excavation/NA

General Information

Excavation Type: Private Party Special Paving Detail Required: Tree Removal Involved:
Date Street Last Resurfaced: Holiday Restriction (Nov 1 - Jan 1):
Worker's Compensation Company Name: Limited Operation Area (7AM-9AM) And (4PM-6PM):
Worker's Compensation Policy #:

Key Dates

Approximate Start Date:
Approximate End Date:

TOTAL FEES TO BE PAID AT FILING: \$436.05

Application Fee	\$71.00	Excavation - Private Party Type	\$309.00	Records Management Fee	\$36.10
Technology Enhancement Fee	\$19.95				

Plans Checked By _____ Date _____ Permit Issued By Date 12.17

Finalized By _____ Date _____

SPECIAL NOTE
• For SL; X; and CGS permits Call PWA INSPECTION prior to start: 510-238-3651 or visit 4th FLOOR.
• SL and X permits valid 90 days; CGS permits valid 30 days

Permits for which no major inspection has been approved within 180 days shall expire by limitation. No refund more than 180 days after expiration or final

JOB SITE



CITY OF OAKLAND

250 FRANK H. OGAWA PLAZA ■ 2ND FLOOR ■ OAKLAND, CA 94612

Planning and Building Department
www.oaklandnet.com

PH: 510-238-3891
FAX: 510-238-2263
TDD: 510-238-3254

Permit No: **OB1401120** Obstruction

Filed Date: 12/17/2014

Job Site: 645 4TH ST

Schedule Inspection by calling: 510-238-3444

Parcel No: 001 012300900

District:

Project Description: RE: ENMI10220
Reserve 450' parking total [both sides of 4th St] and divert 350' traffic per TSD 14-0221.
Soil boring(s) SB-17 through SB-20 on 4th Street between Jefferson & MLK; see site plan.
No impact on pedestrian allowed.
Call PWA INSPECTION prior to start: 510-238-3651. 4th FLOOR.

Related Permits: X1403076

	<u>Name</u>	<u>Applicant</u>	<u>Address</u>	<u>Phone</u>	<u>License #</u>
Owner:	TERRADEV JEFFERSON LLC		PO BOX 530 ALAMEDA, CA		
Contractor:	BLUE ROCK ENVIRONMENTAL INC	X	1157 CHESS DRIVE SUITE 107 FOSTER CITY, CA	(650) 522-9292	888734

PERMIT DETAILS: Building/Public Use/Activity/Obstructions			
Work Information			
Start Date: 12/29/2014	Obstruction Permit Type:	Short Term (Max 14 Days)	
End Date: 12/30/2014	Number of Meters (Metered Area):		
	Length Of Obstruction (Unmetered Area):	800	

TOTAL FEES TO BE PAID AT FILING: \$1,348.32			
Application Fee	\$71.00	Records Management Fee	\$111.63
Technology Enhancement Fee	\$61.69	Short Term Permits	\$1,104.00

Plans Checked By _____ Date _____ Permit Issued By Date 12.17

Finalized By _____ Date _____

Alameda County Public Works Agency - Water Resources Well Permit



Public Works Agency
—Alameda County—

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

Application Approved on: 12/16/2014 By jamesy

Permit Numbers: W2014-1160
Permits Valid from 12/29/2014 to 12/31/2014

Application Id: 1418324541786
Site Location: 645 4th St, Oakland, CA
Project Start Date: 12/22/2014
Assigned Inspector: Contact Sam Brathwaite at (925) 570-7609 or sbrathwaite@groundzonees.com
Extension Start Date: 12/29/2014
Extension Count: 1

City of Project Site:Oakland

Completion Date:12/22/2014
Extension End Date: 12/31/2014
Extended By: priest

Applicant: Blue Rock - Loren Taylor
1157 Chess Dr #107, Foster City, CA 94404
Property Owner: Terradev Jefferson LLC
580 2nd St, Oakland, CA 94607
Client: ** same as Property Owner **

Phone: 510-432-8556

Phone: 510-839-4000 x221

Receipt Number: WR2014-0511 Total Due: \$265.00
Payer Name : Blue Rock Total Amount Paid: \$265.00
Paid By: CHECK PAID IN FULL

Works Requesting Permits:

Borehole(s) for Investigation-Environmental/Monitorinig Study - 2 Boreholes
Driller: Gregg - Lic #: 485165 - Method: DP

Work Total: \$265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2014-1160	12/16/2014	03/22/2015	2	2.50 in.	15.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
5. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.

6. NOTE:

Alameda County Public Works Agency - Water Resources Well Permit

Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

7. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

8. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

SOIL BORING AND WELL CONSTRUCTION LOG: SB-7

BLUE ROCK ENVIRONMENTAL, INC.

FIELD LOCATION OF BORING:		DRILLING CONTRACTOR:	BORING DIAMETER:	CLIENT/LOCATION:	
		Gregg Drilling &	2.5 inches	Terradev Jefferson, 645 4th St., Oakland	
		DRILL RIG OPERATOR:	BORING DEPTH:	SCREEN SLOT SIZE:	DRILLING DATE:
		Daniel Gallosa	13 feet	NA	12/29/14
		DRILL RIG TYPE:	WELL DEPTH:	WELL MATERIAL:	FILTER PACK:
		Geoprobe	NA	NA	NA
		WELL SEAL:	PLANNED USE:	LOGGED BY:	
		Neat cement	Sampling	Loren Taylor	

WELL CONSTRUCTION DETAIL	WATER LEVEL	DEPTH (FEET)	SAMPLING		OVM READING (PPM)	GRAPHIC LOG OR USCS CODE	SAMPLING METHOD:	MONITORING INST:	APPROVED BY:
			INTERVAL	RECOVERY			Continuous	NA	Brian Gwinn, PG
							FIRST ENCOUNTERED WATER DEPTH:	STATIC WATER DEPTH - DATE:	
							Approx. 9 feet	8.92 feet - 12/29/14	

		1					Asphalt & Baserock.
		2					<p>Hand cleared to 5 feet.</p> <p>Clayey SAND (SC); brown; moderately graded; fine sand; dry.</p> <p>Clayey SAND (SC); brown; moderately graded; fine sand; moist. Petroleum odor.</p> <p>Clayey SAND (SC); brown; moderately graded; fine sand; wet. Strong petroleum odor.</p>
		3					
		4					
		5					
		6					
		7					
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		9	▼	▼			
		10					
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		13	▼	▼			

		14					<p>A temporary well screen consisting of new SCH40 PVC was placed in the boring to facilitate collection of a grab groundwater sample. Following sample collection, the casing was removed and the boring was backfilled with cement.</p>
		15					
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SOIL BORING AND WELL CONSTRUCTION LOG: SB-8

BLUE ROCK ENVIRONMENTAL, INC.

Page: 1 of 1
Project: ASE-1

FIELD LOCATION OF BORING:							DRILLING CONTRACTOR:	BORING DIAMETER:	CLIENT/LOCATION:		
<p>NOT TO SCALE</p>							Gregg Drilling &	2.5 inches	Terradev Jefferson, 645 4th St., Oakland		
							DRILL RIG OPERATOR:	BORING DEPTH:	SCREEN SLOT SIZE:	DRILLING DATE:	
							Daniel Gallosa	15 feet	NA	12/29/14	
							DRILL RIG TYPE:	WELL DEPTH:	WELL MATERIAL:	FILTER PACK:	
							Geoprobe	NA	NA	NA	
							WELL SEAL:		PLANNED USE:	LOGGED BY:	
							Neat cement		Sampling	Loren Taylor	
WELL CONSTRUCTION DETAIL	WATER LEVEL	DEPTH (FEET)	SAMPLING		OVM READING (PPM)	GRAPHIC LOG OR USCS CODE	SAMPLING METHOD:		MONITORING INST:	APPROVED BY:	
			INTERVAL	RECOVERY			Continuous		NA	Brian Gwinn, PG	
							FIRST ENCOUNTERED WATER DEPTH:	STATIC WATER DEPTH - DATE:			
							Approx. 9 feet	8.35 feet - 12/29/14			
		1					Asphalt & Baserock.				
		2					<p>Hand cleared to 5 feet.</p> <p>Clayey SAND (SC); light brown; moderately graded; very fine sand; dry.</p> <p>Clayey SAND (SC); brown; moderately graded; very fine sand; moist. Petroleum odor.</p> <p>Clayey SAND (SC); brown with some bluish mottling; moderately graded; very fine sand; wet. Petroleum odor.</p>				
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Report Number : 90023

Date : 01/08/2015

Laboratory Results

Brian Gwinn
Blue Rock Environmental, Inc.
1157 Chess Drive, Ste. 107
Foster City, CA 94404

Subject : 6 Soil Samples
Project Name : Terrader Jefferson LLC
Project Number : ASE-1

Dear Mr. Gwinn,

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. Testing procedures comply with the TNI 2009 standards.

Laboratory results relate only to the samples tested. This report may be freely reproduced in full, but may only be reproduced in part with the express permission of Pace Analytical Services, Inc.

Pace Analytical Services, Inc. is certified by the State of California under the Environmental Laboratory Accreditation Program (ELAP), lab number 08263CA.

If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Troy G. Turpen".

Troy Turpen



Report Number : 90023

Date : 01/08/2015

Subject : 6 Soil Samples
Project Name : Terrader Jefferson LLC
Project Number : ASE-1

Case Narrative

All soil samples were reported on a total weight (wet weight) basis.

Recoveries for some Matrix Spike/Matrix Spike Duplicate analytes were outside of control limits. This may indicate a bias for the samples that were spiked. Since the LCS recoveries were within control limits, no data are flagged.



Report Number : 90023

Date : 01/08/2015

Project Name : **Terrader Jefferson LLC**

Project Number : **ASE-1**

Sample : **SB7-8.5/9**

Matrix : Soil

Lab Number : 90023-01

Sample Date :12/29/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	0.16	0.0050	mg/Kg	EPA 8260B	01/05/15 23:55
Toluene	0.50	0.0050	mg/Kg	EPA 8260B	01/05/15 23:55
Ethylbenzene	0.081	0.0050	mg/Kg	EPA 8260B	01/05/15 23:55
Total Xylenes	0.50	0.0050	mg/Kg	EPA 8260B	01/05/15 23:55
Methyl-t-butyl ether (MTBE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/15 23:55
Tert-Butanol	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/08/15 14:26
TPH as Gasoline	4.0	1.0	mg/Kg	EPA 8260B	01/05/15 23:55
1,2-Dichloroethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/15 23:55
1,2-Dibromoethane	0.0070	0.0050	mg/Kg	EPA 8260B	01/08/15 14:26
Naphthalene	0.043	0.0050	mg/Kg	EPA 8260B	01/05/15 23:55
1,2-Dichloroethane-d4 (Surr)	106		% Recovery	EPA 8260B	01/05/15 23:55
4-Bromofluorobenzene (Surr)	95.9		% Recovery	EPA 8260B	01/05/15 23:55
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	01/05/15 23:55
TPH as Diesel	1.2	1.0	mg/Kg	M EPA 8015	01/06/15 18:52
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
Octacosane (Diesel Surrogate)	74.3		% Recovery	M EPA 8015	01/06/15 18:52



Report Number : 90023

Date : 01/08/2015

Project Name : **Terrader Jefferson LLC**

Project Number : **ASE-1**

Sample : **SB7-10.5/11**

Matrix : Soil

Lab Number : 90023-02

Sample Date :12/29/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	150	0.25	mg/Kg	EPA 8260B	01/06/15 01:11
Toluene	1100	2.5	mg/Kg	EPA 8260B	01/07/15 02:07
Ethylbenzene	330	2.5	mg/Kg	EPA 8260B	01/07/15 02:07
Total Xylenes	1800	2.5	mg/Kg	EPA 8260B	01/07/15 02:07
Methyl-t-butyl ether (MTBE)	< 0.25	0.25	mg/Kg	EPA 8260B	01/06/15 01:11
Tert-Butanol	< 1.5	1.5	mg/Kg	EPA 8260B	01/06/15 01:11
TPH as Gasoline	19000	250	mg/Kg	EPA 8260B	01/07/15 02:07
1,2-Dichloroethane	< 0.25	0.25	mg/Kg	EPA 8260B	01/06/15 01:11
1,2-Dibromoethane	2.5	0.25	mg/Kg	EPA 8260B	01/06/15 01:11
Naphthalene	99	2.5	mg/Kg	EPA 8260B	01/07/15 02:07
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	01/07/15 02:07
4-Bromofluorobenzene (Surr)	108		% Recovery	EPA 8260B	01/07/15 02:07
Toluene - d8 (Surr)	103		% Recovery	EPA 8260B	01/07/15 02:07
2-Bromochlorobenzene (Surr)	87.6		% Recovery	EPA 8260B	01/07/15 02:07
TPH as Diesel	1400	10	mg/Kg	M EPA 8015	01/07/15 12:10
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
Octacosane (Diesel Surrogate)	71.6		% Recovery	M EPA 8015	01/07/15 12:10



Report Number : 90023

Date : 01/08/2015

Project Name : **Terrader Jefferson LLC**

Project Number : **ASE-1**

Sample : **SB7-12.5/13**

Matrix : Soil

Lab Number : 90023-03

Sample Date :12/29/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	29	0.090	mg/Kg	EPA 8260B	01/07/15 16:32
Toluene	200	0.25	mg/Kg	EPA 8260B	01/06/15 01:48
Ethylbenzene	59	0.090	mg/Kg	EPA 8260B	01/07/15 16:32
Total Xylenes	330	0.50	mg/Kg	EPA 8260B	01/07/15 01:28
Methyl-t-butyl ether (MTBE)	< 0.090	0.090	mg/Kg	EPA 8260B	01/07/15 16:32
Tert-Butanol	< 1.5	1.5	mg/Kg	EPA 8260B	01/06/15 01:48
TPH as Gasoline	3600	50	mg/Kg	EPA 8260B	01/07/15 01:28
1,2-Dichloroethane	< 0.090	0.090	mg/Kg	EPA 8260B	01/07/15 16:32
1,2-Dibromoethane	0.46	0.090	mg/Kg	EPA 8260B	01/07/15 16:32
Naphthalene	23	0.090	mg/Kg	EPA 8260B	01/07/15 16:32
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	01/07/15 16:32
4-Bromofluorobenzene (Surr)	116		% Recovery	EPA 8260B	01/07/15 16:32
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	01/07/15 16:32
2-Bromochlorobenzene (Surr)	96.2		% Recovery	EPA 8260B	01/07/15 16:32
TPH as Diesel	310	1.0	mg/Kg	M EPA 8015	01/06/15 16:51
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
Octacosane (Diesel Surrogate)	78.5		% Recovery	M EPA 8015	01/06/15 16:51



Report Number : 90023

Date : 01/08/2015

Project Name : **Terrader Jefferson LLC**

Project Number : **ASE-1**

Sample : **SB-8-8.5/9**

Matrix : Soil

Lab Number : 90023-04

Sample Date :12/29/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	30	0.25	mg/Kg	EPA 8260B	01/06/15 02:22
Toluene	290	2.5	mg/Kg	EPA 8260B	01/07/15 02:46
Ethylbenzene	120	0.25	mg/Kg	EPA 8260B	01/06/15 02:22
Total Xylenes	580	2.5	mg/Kg	EPA 8260B	01/07/15 02:46
Methyl-t-butyl ether (MTBE)	< 0.25	0.25	mg/Kg	EPA 8260B	01/06/15 02:22
Tert-Butanol	< 1.5	1.5	mg/Kg	EPA 8260B	01/06/15 02:22
TPH as Gasoline	6600	250	mg/Kg	EPA 8260B	01/07/15 02:46
1,2-Dichloroethane	< 0.25	0.25	mg/Kg	EPA 8260B	01/06/15 02:22
1,2-Dibromoethane	0.38	0.25	mg/Kg	EPA 8260B	01/06/15 02:22
Naphthalene	38	0.25	mg/Kg	EPA 8260B	01/06/15 02:22
1,2-Dichloroethane-d4 (Surr)	99.7		% Recovery	EPA 8260B	01/06/15 02:22
4-Bromofluorobenzene (Surr)	108		% Recovery	EPA 8260B	01/06/15 02:22
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	01/06/15 02:22
2-Bromochlorobenzene (Surr)	89.0		% Recovery	EPA 8260B	01/06/15 02:22
TPH as Diesel	750	1.0	mg/Kg	M EPA 8015	01/06/15 17:26
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
Octacosane (Diesel Surrogate)	87.1		% Recovery	M EPA 8015	01/06/15 17:26



Report Number : 90023

Date : 01/08/2015

Project Name : **Terrader Jefferson LLC**

Project Number : **ASE-1**

Sample : **SB-8 11.5/12**

Matrix : Soil

Lab Number : 90023-05

Sample Date :12/29/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	6.4	0.25	mg/Kg	EPA 8260B	01/06/15 03:02
Toluene	54	0.25	mg/Kg	EPA 8260B	01/06/15 03:02
Ethylbenzene	22	0.25	mg/Kg	EPA 8260B	01/06/15 03:02
Total Xylenes	130	0.25	mg/Kg	EPA 8260B	01/06/15 03:02
Methyl-t-butyl ether (MTBE)	< 0.25	0.25	mg/Kg	EPA 8260B	01/06/15 03:02
Tert-Butanol	< 1.5	1.5	mg/Kg	EPA 8260B	01/07/15 01:32
TPH as Gasoline	1400	25	mg/Kg	EPA 8260B	01/06/15 03:02
1,2-Dichloroethane	< 0.25	0.25	mg/Kg	EPA 8260B	01/06/15 03:02
1,2-Dibromoethane	< 0.25	0.25	mg/Kg	EPA 8260B	01/06/15 03:02
Naphthalene	10	0.25	mg/Kg	EPA 8260B	01/06/15 03:02
1,2-Dichloroethane-d4 (Surr)	104		% Recovery	EPA 8260B	01/06/15 03:02
4-Bromofluorobenzene (Surr)	110		% Recovery	EPA 8260B	01/06/15 03:02
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	01/06/15 03:02
2-Bromochlorobenzene (Surr)	97.7		% Recovery	EPA 8260B	01/06/15 03:02
TPH as Diesel	170	1.0	mg/Kg	M EPA 8015	01/06/15 18:00
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
Octacosane (Diesel Surrogate)	83.9		% Recovery	M EPA 8015	01/06/15 18:00



Report Number : 90023

Date : 01/08/2015

Project Name : **Terrader Jefferson LLC**

Project Number : **ASE-1**

Sample : **SB-8 14.5**

Matrix : Soil

Lab Number : 90023-06

Sample Date :12/29/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	0.026	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
Toluene	0.060	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
Ethylbenzene	0.011	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
Total Xylenes	0.065	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
Methyl-t-butyl ether (MTBE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
Tert-Butanol	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	01/05/15 20:55
1,2-Dichloroethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
1,2-Dibromoethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
Naphthalene	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/15 20:55
1,2-Dichloroethane-d4 (Surr)	113		% Recovery	EPA 8260B	01/05/15 20:55
4-Bromofluorobenzene (Surr)	105		% Recovery	EPA 8260B	01/05/15 20:55
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	01/05/15 20:55
TPH as Diesel	< 1.0	1.0	mg/Kg	M EPA 8015	01/06/15 18:35
Octacosane (Diesel Surrogate)	83.8		% Recovery	M EPA 8015	01/06/15 18:35

QC Report : Method Blank DataProject Name : **Terrader Jefferson LLC**Project Number : **ASE-1**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	< 1.0	1.0	mg/Kg	M EPA 8015	01/07/2015
Octacosane (Diesel Surrogate)	79.6		%	M EPA 8015	01/07/2015
Tert-Butanol	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/06/2015
Benzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
Ethylbenzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
Toluene	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
Total Xylenes	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
Methyl-t-butyl ether (MTBE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
Tert-Butanol	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	01/05/2015
1,2-Dibromoethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
1,2-Dichloroethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
Naphthalene	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/05/2015
1,2-Dichloroethane-d4 (Surr)	107		%	EPA 8260B	01/05/2015
4-Bromofluorobenzene (Surr)	92.0		%	EPA 8260B	01/05/2015
Toluene - d8 (Surr)	99.9		%	EPA 8260B	01/05/2015
Tert-Butanol	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/08/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
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QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Terrader Jefferson LLC**Project Number : **ASE-1**

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
TPH as Diesel														
	90023-01	1.2	18.3	19.4	22.4	56.6	mg/Kg	M EPA 8015	1/6/15	115	284	84.6	60-140	25
Tert-Butanol														
	90051-01	<0.0050	0.193	0.199	0.127	0.0979	mg/Kg	EPA 8260B	1/6/15	66.0	49.3	29.0	70.0-130	25
1,2-Dibromoethane														
	90023-06	<0.0050	0.0399	0.0389	0.0441	0.0403	mg/Kg	EPA 8260B	1/5/15	110	104	6.45	70.0-130	25
1,2-Dichloroethane														
	90023-06	<0.0050	0.0399	0.0389	0.0408	0.0378	mg/Kg	EPA 8260B	1/5/15	102	97.2	5.13	70.0-130	25
Benzene														
	90023-06	0.026	0.0399	0.0389	0.0647	0.0660	mg/Kg	EPA 8260B	1/5/15	96.0	102	5.83	70.0-130	25
Ethylbenzene														
	90023-06	0.011	0.0399	0.0389	0.0507	0.0511	mg/Kg	EPA 8260B	1/5/15	98.2	102	3.64	70.0-130	25
Methyl-t-butyl ether														
	90023-06	<0.0050	0.0399	0.0389	0.0379	0.0349	mg/Kg	EPA 8260B	1/5/15	94.9	89.8	5.58	60.0-130	25
Naphthalene														
	90023-06	<0.0050	0.0399	0.0389	0.0459	0.0425	mg/Kg	EPA 8260B	1/5/15	115	109	5.06	70.0-130	25
P + M Xylene														
	90023-06	0.045	0.0399	0.0389	0.0812	0.0871	mg/Kg	EPA 8260B	1/5/15	90.4	108	17.5	70.0-130	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Terrader Jefferson LLC**

Project Number : **ASE-1**

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
Tert-Butanol	90023-06	<0.0050	0.200	0.194	0.207	0.198	mg/Kg	EPA 8260B	1/5/15	104	102	2.06	70.0-130	25
Toluene	90023-06	0.060	0.0399	0.0389	0.0975	0.104	mg/Kg	EPA 8260B	1/5/15	94.4	113	18.2	70.0-130	25
Tert-Butanol	90051-10	<0.0050	0.193	0.190	0.152	0.123	mg/Kg	EPA 8260B	1/8/15	78.5	64.6	19.5	70.0-130	25

QC Report : Laboratory Control Sample (LCS)Project Name : **Terrader Jefferson LLC**Project Number : **ASE-1**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
TPH as Diesel	20.0	mg/Kg	M EPA 8015	1/6/15	87.8	70-130
Tert-Butanol	0.199	mg/Kg	EPA 8260B	1/6/15	101	70.0-130
1,2-Dibromoethane	0.0378	mg/Kg	EPA 8260B	1/5/15	107	70.0-130
1,2-Dichloroethane	0.0378	mg/Kg	EPA 8260B	1/5/15	97.3	70.0-130
Benzene	0.0378	mg/Kg	EPA 8260B	1/5/15	92.1	70.0-130
Ethylbenzene	0.0378	mg/Kg	EPA 8260B	1/5/15	94.5	70.0-130
Methyl-t-butyl ether	0.0378	mg/Kg	EPA 8260B	1/5/15	91.6	60.0-130
Naphthalene	0.0378	mg/Kg	EPA 8260B	1/5/15	104	70.0-130
P + M Xylene	0.0378	mg/Kg	EPA 8260B	1/5/15	96.0	70.0-130
Tert-Butanol	0.189	mg/Kg	EPA 8260B	1/5/15	95.9	70.0-130
Toluene	0.0378	mg/Kg	EPA 8260B	1/5/15	95.8	70.0-130
Tert-Butanol	0.198	mg/Kg	EPA 8260B	1/8/15	97.5	70.0-130



Report Number : 90024

Date : 01/08/2015

Laboratory Results

Brian Gwinn
Blue Rock Environmental, Inc.
1157 Chess Drive, Ste. 107
Foster City, CA 94404

Subject : 2 Water Samples
Project Name : Terradev Jefferson LLC
Project Number : ASE-1

Dear Mr. Gwinn,

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. Testing procedures comply with the TNI 2009 standards.

Laboratory results relate only to the samples tested. This report may be freely reproduced in full, but may only be reproduced in part with the express permission of Pace Analytical Services, Inc.

Pace Analytical Services, Inc. is certified by the State of California under the Environmental Laboratory Accreditation Program (ELAP), lab number 08263CA.

If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink that reads "Troy G. Turpen".

Troy Turpen



Report Number : 90024

Date : 01/08/2015

Subject : 2 Water Samples
Project Name : Terradev Jefferson LLC
Project Number : ASE-1

Case Narrative

Recoveries for some Matrix Spike/Matrix Spike Duplicate analytes were outside of control limits. This may indicate a bias for the samples that were spiked. Since the LCS recoveries were within control limits, no data are flagged.



Report Number : 90024

Date : 01/08/2015

Project Name : **Terradev Jefferson LLC**

Project Number : **ASE-1**

Sample : **SB-7**

Matrix : Water

Lab Number : 90024-01

Sample Date :12/29/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	15000	40	ug/L	EPA 8260B	01/06/15 00:24
Toluene	34000	70	ug/L	EPA 8260B	01/07/15 14:31
Ethylbenzene	4000	40	ug/L	EPA 8260B	01/06/15 00:24
Total Xylenes	20000	40	ug/L	EPA 8260B	01/06/15 00:24
Methyl-t-butyl ether (MTBE)	< 40	40	ug/L	EPA 8260B	01/06/15 00:24
Tert-Butanol	< 200	200	ug/L	EPA 8260B	01/06/15 00:24
TPH as Gasoline	250000	4000	ug/L	EPA 8260B	01/06/15 00:24
1,2-Dichloroethane	130	40	ug/L	EPA 8260B	01/06/15 00:24
1,2-Dibromoethane	240	40	ug/L	EPA 8260B	01/06/15 00:24
Naphthalene	1000	40	ug/L	EPA 8260B	01/06/15 00:24
1,2-Dichloroethane-d4 (Surr)	98.8		% Recovery	EPA 8260B	01/06/15 00:24
4-Bromofluorobenzene (Surr)	108		% Recovery	EPA 8260B	01/06/15 00:24
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	01/06/15 00:24
TPH as Diesel	60000	10000	ug/L	M EPA 8015	01/07/15 19:40
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
Octacosane (Diesel Surrogate)	Diluted Out		% Recovery	M EPA 8015	01/07/15 19:40



Report Number : 90024

Date : 01/08/2015

Project Name : **Terradev Jefferson LLC**

Project Number : **ASE-1**

Sample : **SB-8**

Matrix : Water

Lab Number : 90024-02

Sample Date :12/29/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	9100	40	ug/L	EPA 8260B	01/06/15 00:56
Toluene	22000	40	ug/L	EPA 8260B	01/06/15 00:56
Ethylbenzene	3000	40	ug/L	EPA 8260B	01/06/15 00:56
Total Xylenes	16000	40	ug/L	EPA 8260B	01/06/15 00:56
Methyl-t-butyl ether (MTBE)	< 40	40	ug/L	EPA 8260B	01/06/15 00:56
Tert-Butanol	< 200	200	ug/L	EPA 8260B	01/06/15 00:56
TPH as Gasoline	180000	4000	ug/L	EPA 8260B	01/06/15 00:56
1,2-Dichloroethane	130	40	ug/L	EPA 8260B	01/06/15 00:56
1,2-Dibromoethane	140	40	ug/L	EPA 8260B	01/06/15 00:56
Naphthalene	1200	40	ug/L	EPA 8260B	01/06/15 00:56
1,2-Dichloroethane-d4 (Surr)	98.6		% Recovery	EPA 8260B	01/06/15 00:56
4-Bromofluorobenzene (Surr)	105		% Recovery	EPA 8260B	01/06/15 00:56
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	01/06/15 00:56
TPH as Diesel	16000	500	ug/L	M EPA 8015	01/07/15 19:10
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
Octacosane (Diesel Surrogate)	Diluted Out		% Recovery	M EPA 8015	01/07/15 19:10

QC Report : Method Blank DataProject Name : **Terradev Jefferson LLC**Project Number : **ASE-1**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	< 50	50	ug/L	M EPA 8015	01/07/2015
Octacosane (Diesel Surrogate)	94.5		%	M EPA 8015	01/07/2015
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/07/2015
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/05/2015
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/05/2015
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/05/2015
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/05/2015
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/05/2015
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/05/2015
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/05/2015
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/05/2015
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/05/2015
Naphthalene	< 0.50	0.50	ug/L	EPA 8260B	01/05/2015
1,2-Dichloroethane-d4 (Surr)	98.2		%	EPA 8260B	01/05/2015
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	01/05/2015
Toluene - d8 (Surr)	104		%	EPA 8260B	01/05/2015

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
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QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Terradev Jefferson LLC**Project Number : **ASE-1**

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
TPH as Diesel	90054-03	240	1000	1000	1250	1260	ug/L	M EPA 8015	1/7/15	101	102	1.42	70-130	25
Toluene	90038-01	<0.50	40.0	40.0	37.8	38.2	ug/L	EPA 8260B	1/7/15	94.6	95.4	0.883	70.0-130	25
1,2-Dibromoethane	90037-01	<0.50	40.0	40.0	39.6	39.3	ug/L	EPA 8260B	1/5/15	98.9	98.1	0.777	70.0-130	25
1,2-Dichloroethane	90037-01	<0.50	40.0	40.0	35.2	34.7	ug/L	EPA 8260B	1/5/15	88.0	86.8	1.36	70.0-130	25
Benzene	90037-01	17	40.0	40.0	55.4	57.2	ug/L	EPA 8260B	1/5/15	95.0	99.5	4.63	70.0-130	25
Ethylbenzene	90037-01	29	40.0	40.0	68.2	70.3	ug/L	EPA 8260B	1/5/15	98.3	103	5.11	70.0-130	25
Methyl-t-butyl ether	90037-01	<0.50	40.0	40.0	41.7	42.5	ug/L	EPA 8260B	1/5/15	104	106	1.82	70.0-130	25
Naphthalene	90037-01	89	40.0	40.0	120	130	ug/L	EPA 8260B	1/5/15	78.9	103	26.2	70.0-130	25
P + M Xylene	90037-01	170	40.0	40.0	187	205	ug/L	EPA 8260B	1/5/15	42.1	88.3	70.8	70.0-130	25

QC Report : Matrix Spike/ Matrix Spike Duplicate

Project Name : **Terradev Jefferson LLC**

Project Number : **ASE-1**

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
Tert-Butanol	90037-01	6.1	200	200	214	217	ug/L	EPA 8260B	1/5/15	104	105	1.32	70.0-130	25
Toluene	90037-01	33	40.0	40.0	69.2	71.4	ug/L	EPA 8260B	1/5/15	91.2	96.9	6.02	70.0-130	25

QC Report : Laboratory Control Sample (LCS)Project Name : **Terradev Jefferson LLC**Project Number : **ASE-1**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
TPH as Diesel	1000	ug/L	M EPA 8015	1/7/15	109	70-130
Toluene	40.0	ug/L	EPA 8260B	1/7/15	101	70.0-130
1,2-Dibromoethane	39.8	ug/L	EPA 8260B	1/5/15	92.1	70.0-130
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	1/5/15	81.4	70.0-130
Benzene	39.8	ug/L	EPA 8260B	1/5/15	91.9	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	1/5/15	101	70.0-130
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	1/5/15	92.4	70.0-130
Naphthalene	39.8	ug/L	EPA 8260B	1/5/15	98.1	70.0-130
P + M Xylene	39.8	ug/L	EPA 8260B	1/5/15	98.0	70.0-130
TPH as Gasoline	500	ug/L	EPA 8260B	1/5/15	101	70.0-130
Tert-Butanol	199	ug/L	EPA 8260B	1/5/15	98.0	70.0-130
Toluene	39.8	ug/L	EPA 8260B	1/5/15	98.3	70.0-130



2795 2nd Street, Suite 300
 Davis, CA 95618
 Lab: 530.297.4800
 Fax: 530.297.4802

SRG # / Lab No.

90024

Page 1 of 1

Send Report To: Brian Gwin
 Email Address: brian@bluerockenv.com
 Company: Blue Rock Environmental
 Address: 1157 Chess Drive Ste 107 Foster City Ca.
 Phone Number: 650-522-9292 Fax Number: 650-522-9259
 Project #: ASE-1 P.O. #:
 Project Name: Terradev Jefferson LLC
 Project Address: 645 Fourth Street Oakland Ca.
 Electronic Data Deliverable (EDD):
 CA EDF CA WriteOn WA EIM
 Excel EQUIS Other
 Global ID (for CA EDF use): T1000001072
 EDD Deliverable To (Email Address): brian@bluerockenv.com
 Sampling Company: Blue Rock Env Sampler Signature: [Signature]
 Invoice To: Blue Rock

Chain-of-Custody Record and Analysis Request

Sample Identification	Sampling		# of Containers				# Preserved			Matrix				
	Date	Time	40 ml VOA	Sleeve	Poly	Glass	Tedlar	HCl	HNO ₃	None	Water	Soil	Air	Other (specify)
SB-7	12/29/14	1031	X					6			X			
SB-8	12/29/14	1055	X					6			X			

TPH	8260B	524	Metals	SPECIAL	Other
<input checked="" type="checkbox"/> Gas (8260) <input type="checkbox"/> Gas (8015) <input type="checkbox"/> Diesel <input type="checkbox"/> Motor Oil	<input checked="" type="checkbox"/> Benzene <input checked="" type="checkbox"/> Toluene <input checked="" type="checkbox"/> Ethylbenzene <input checked="" type="checkbox"/> Total Xylenes <input checked="" type="checkbox"/> MTBE <input checked="" type="checkbox"/> 5 Oxygenates: MTBE, DIPE, ETBE, TAME, TBA <input checked="" type="checkbox"/> 7 Oxygenates (5 Oxygenates plus): Ethanol, Methanol <input checked="" type="checkbox"/> Lead Scavengers: 1,2-DCA, 1,2-EDB <input checked="" type="checkbox"/> Halogenated Volatile Organic Compounds (former 8010 list) <input checked="" type="checkbox"/> Volatile Organic Compounds Full List	<input type="checkbox"/> Volatile Organics by EPA Method 524.2 <input type="checkbox"/> Metals Group (Method:): <input type="checkbox"/> CAM 17 <input type="checkbox"/> LUFT 5 <input type="checkbox"/> Individual Metals (list and enter method):	<input type="checkbox"/> Nitrate as N <input type="checkbox"/> Nitrite as N <input type="checkbox"/> Ferrous Iron <input type="checkbox"/> Nitrate as NO ₃ <input type="checkbox"/> Nitrite as NO ₂ <input type="checkbox"/> Chromium VI by EPA 7199	<input checked="" type="checkbox"/> Naphthalene (80260B)	

Relinquished by (signature/affiliation): [Signature] Date & Time: 12/30/14 11:24
 Relinquished by (signature/affiliation): _____ Date & Time: _____
 Relinquished by (signature/affiliation): _____ Date & Time: 12/30/14
 Received by (signature/affiliation): _____ Date & Time: _____
 Received by Kiff Analytical (signature): Rachel Date & Time: 1135
 Received by Kiff Analytical (signature): Harold Brewer Date & Time: 12/30/14

Remarks and Special Instructions (composite, filter, MS/MSD, return samples, Silica Gel, etc.):
 Turnaround Time (TAT - Circle One): Standard 4-Day 3-Day 2-Day 1-Day Other: _____
 TAT in business days. Surcharge may apply. TAT for subcontracted work may vary.

NRB

For Lab Use Only

01
02



AMPLIFIED
GEOCHEMICAL
IMAGING, LLC

Laboratory Report

Site: Terredev
645 4th Street, Oakland, CA

Prepared for:

Blue Rock Environmental, Inc.
1157 Chess Drive
Suite 107
Foster City, CA
UNITED STATES

Prepared on:
March 04, 2015

Project Summary and Objective

Amplified Geochemical Imaging, LLC. (AGI) provided the AGI Environmental Survey used at:

Terredev

645 4th Street, Oakland, CA

The service provided by AGI included delivery of the required quantity of AGI Universal Samplers, analysis by the method described below for the requested organic compounds, reporting of the data, and contour mapping (as needed).

This report includes results for only the samples noted under the Laboratory Sample Report section. If contour maps are part of the project deliverable, the maps will be prepared and issued under a separate report cover, upon receipt of a usable sitemap (electronic) and compound choices for contouring.

Written/submitted by:

Jim E Whetzel

Project Manager

Reviewed/approved by:

Don D'Apolito

Project Manager

Analytical data approved by:

Fatima Niazi

Chemist

Quality Assurance Statement

The AGI Laboratory, at Amplified Geochemical Imaging's facility in Elkton, MD USA, operates under the guidelines of its ISO Standard 17025 DoD ELAP accreditation, and its Quality Assurance Manual, Operating Procedures, and Methods (SPG-SOP-0462).

For this project, the analytical method, results, and observations reported do [] do not [√] fall within the scope of AGI's ISO 17025 accreditation.

Screening/Concentration Method

The AGI Universal Samplers are analyzed at AGI's fixed laboratory using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation following U.S. EPA Method 8260 (SPG-WI-0292) which includes the following:

- **BFB Tuning Frequency:** A BFB tune is analyzed at the start of each analytical run and after every 30 samples.
- **Initial Calibration:** A minimum of a five point calibration curve is analyzed prior to the analysis of samples .
- **Linearity of Target Compounds:** If the RSD of any target analyte is less than or equal to 25% then average response factor can be used for quantitation. If the RSD exceeds 25% for a target compound a regression equation can be used for quantitation.
- **Continuing Calibration Verification:** After every 10 samples, and at the end of each analytical batch, and a second-source Reference Standard is analyzed near the mid point of the calibration curve. The acceptance criteria for all target analytes in the reference standards are +/- 50% of the true value.
- **Method Blank:** Analyzed prior to the analysis of field samples and every 30 samples.

Note: Analyte levels reported for the field-deployed AGI Universal Samplers that exceed trip and method blank levels, and/or the reporting limit, are more likely to have originated from on-site sources.

Media Sampled:	SOIL GAS
Chemist - sample analysis:	Kelly J Stringham
Chemist - data processor:	Kelly J Stringham
Chemist - data review:	Fatima Niazi

Method deviations: None.

Please note that data file names ending with R are rerun samples using the second pair of sorbers, in which the original results were not reported. Data file names ending in D are duplicate analysis results for the second set of sorbers from the same sampler, and are reported.

Additional Report Information

- Comments
- Laboratory Sample Report
- Chain of Custody
- Installation and Retrieval Log
- Analytical Results and Key
- Total Ion Chromatograms

Project Specific Comments

None.

Survey period ¹	Samplers were installed on February 7, 2015 and retrieved on February 14, 2015 for an exposure period of seven days.	
Tamper seal intact:	Not noted at sample receipt.	
Date received:	2/18/2015 12:30 PM	By: L. Bozette
COC returned:	Yes	
Comments:	None	

1 - Installation start to end of retrieval, as reported. See installation and retrieval log for individual deployment and retrieval dates and times (i.e., sampler exposure time).

General Comments

Analytical QA/QC

Laboratory instrumentation consists of gas chromatographs equipped with mass selective detectors, coupled with automated thermal desorption units. Sample preparation involves cutting the tip off the bottom of the AGI Universal Sampler, and transferring one or more "sorbents" to a thermal desorption tube for analysis. The insertion/retrieval cord prevents soil, water and other interferences from coming in contact with the adsorbent. No further sample preparation is required. Any replicate sorbents not consumed in the initial analysis will be discarded fifteen (15) days from the date of the laboratory report.

Data are archived and stored in a secure manner as per AGI's Quality Assurance program (SPG-SOP-0462).

Total petroleum hydrocarbons (TPH), gasoline-range petroleum hydrocarbons (GRPH), and/or diesel range petroleum hydrocarbons (DRPH), when reported, are calculated using the area under the peaks observed in m/z 55 and 57 selected ion chromatograms. Quantitation of the mass values was performed using the response factor for a specific alkane (present in the calibration standards). TPH values include the entire chromatogram and provide estimates for aliphatic hydrocarbon ranges of C4 to C20. GRPH and DRPH include only the relevant regions of the chromatograms and provide estimates for C4 to C10 and C10 to C20 aliphatic hydrocarbons, respectively.

Trip blanks were provided to document potential exposures that were not part of the signal of interest (e.g., impact during sampler shipment, installation and/or retrieval, and storage). The trip blanks are identically manufactured and packaged AGI Universal Samplers to those samplers deployed in the field. The trip blanks remain unopened during all phases of the project. Levels reported on the trip blanks may indicate potential impact to the samplers other than the contaminant source of interest.

Unresolved peak envelopes (UPEs) are represented as a series of compound peaks clustered together around a central gas chromatograph elution time in the total ion chromatogram. UPEs may be indicative of complex fluid mixtures. UPEs observed early in the chromatograms are considered to indicate presence of more volatile fluids, while UPEs observed later in the chromatogram may indicate the presence of less volatile fluids. Multiple UPEs may indicate the presence of multiple complex fluids.

Total ion chromatograms (TICs) are included in the Attachments. The eight-digit serial number of each sampler is incorporated in the TIC identification (e.g., 12345678.D represents AGI Universal Sampler 12345678).

General Comments

Soil Gas Sampling

For soil gas sampling, the AGI Environmental Survey reports mass levels migrating through the open pore spaces of the soil and diffusing through the sampler membrane for sorption by the engineered, hydrophobic adsorbents, housed within the membrane tube. During the migration of the soil gas away from the source to the AGI Universal Sampler, the vapors are subject to a variety of attenuation factors. The soil gas masses reported on the samplers compare favorably with the concentrations reported in the soil or groundwater (e.g., where soil gas levels are reported at greater levels to other sampled locations on the site, the matrix data should reveal the same pattern, and vice versa). However, due to a variety of factors, a perfect comparison between matrix data and soil gas levels can rarely be achieved.

Soil gas concentrations ($\mu\text{g}/\text{m}^3$) are calculated following the method described in the Additional Report Information section.

Soil gas signals reported by this method cannot be correlated specifically to soil adsorbed, groundwater, and /or free-phase contamination. The soil gas signal reported from each AGI Universal Sampler can evolve from all of these sources. Differentiation between soil and groundwater contamination can only be achieved with prior knowledge of the site history (i.e., the site is known to have groundwater contamination only).

Air Sampling

For indoor, outdoor, and crawlspace air sampling, the AGI Environmental Survey reports mass levels present in the air and diffusing through the sampler membrane for sorption by the engineered adsorbents housed within the membrane tube.

Air concentrations ($\mu\text{g}/\text{m}^3$) are calculated following the method described in the Additional Report Information section.

Groundwater and Sediment Porewater Sampling

For groundwater and sediment porewater sampling, the AGI Environmental Survey reports the mass levels of compounds present in the water which, when coming in contact with the sampler membrane, partitions out of solution, and diffuses through the sampler membrane for sorption by the engineered adsorbents.

Water concentrations ($\mu\text{g}/\text{L}$) are calculated using the quantified mass, exposure period and the compound specific uptake rate. The rates were measured under controlled experimental conditions. The uptake rates are corrected for water pressure (depth of the AGI Universal Sampler below the water table), water temperature and the aquifer flow rate. For sediment porewater, the uptake rate is corrected for the reduced volume of water in the sediment, by multiplying the uptake rate by the pore water fraction.

LABORATORY SAMPLE REPORT

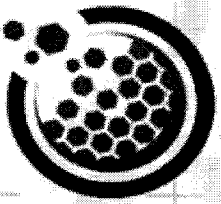
Project: ENV 01318

Site Name: Terredev

Module Type: SPG0001

Module ID	Sample Type	Field ID	
00747505	FIELD_SAMPLE	S-1	
00747506	FIELD_SAMPLE	S-2	
00747507	FIELD_SAMPLE	S-3	
00747508	FIELD_SAMPLE	S-4	
00747509	FIELD_SAMPLE	S-5	
00747510	FIELD_SAMPLE	S-6	
00747511	FIELD_SAMPLE	S-7	
00747512	FIELD_SAMPLE	S-8	
00747513	FIELD_SAMPLE	S-9	
00747514	TRIP_BLANK	Trip Blank	
00747515	TRIP_BLANK	Trip Blank	
00747522	UNUSED	NOT USED	
00747523	UNUSED	NOT USED	
00747524	UNUSED	NOT USED	
Total # "FIELD SAMPLES"	Total # "TRIP BLANKS"	Total # "UNUSED"	Total # "LOST"
9	2	3	0

Duplicate samples: **0**



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ph: +1-302-266-2428
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**AGI Universal Passive Sampler Chain of Custody
Soil gas and/or Air Sampling**

Production Order #: **01318**

Customer Name: Blue Rock Environmental, Inc.
Address: 1157 Chess Drive
Suite 107
650-522-9292
Foster City, CA 94404
USA

Site Name: Terredev
Site Address: 645 4th St., Oakland, CA

Project Manager: Brian Guinn
bguinn@briano@bluerockenv.com

Serial # of Samplers Shipped	# of Samplers for Installation	12.00	# of Trip Blanks	2
00747505 - 00747515	Total Samplers Shipped	14.00	Pieces	
00747522 - 00747524	Total Samplers Received	<u>14</u>	Pieces	
	Total Samplers Installed	<u>9</u>	Pieces	

Serial # of Trip Blanks (Client Decides)

0074714 (BG)	
00747514	
00747515	

Prepared By: <u>Lisa Boyette</u>	Installation Method: (Circle those that apply) Slide Hammer <input type="checkbox"/> <u>Hammer Drill</u> Auger
Verified By: <u>[Signature]</u>	Other: _____
Installation Performed By: Name: <u>Loren Taylor</u> Company: <u>Blue Rock Environmental, Inc</u>	Retrieval Performed By: Name: <u>same as installation</u> Company: _____
Installation Start Date / Time: <u>2/7/15 0958</u>	Retrieval Start Date / Time: <u>2/14/15 9:58 AM</u> BG
Installation Complete Date / Time: <u>2/7/15 1511</u>	Retrieval Complete Date / Time: <u>2/14/15 0759</u>

Total Samplers Retrieved: 9
Total Samplers Lost In Field: 0
Total Unused Samplers Returned: 3

Relinquished By: <u>Lisa Boyette</u> Date/Time: <u>10:00</u> Company: <u>AgI</u> <u>01/30/15</u>	Received By: <u>Brian Guinn</u> Date/Time: <u>10:00</u> Company: <u>Blue Rock Env.</u> <u>02/03/15</u>
Relinquished By: <u>[Signature]</u> Date/Time: <u>2/16/15</u> Company: <u>Blue Rock Environmental</u> <u>1500</u>	Received By: <u>Lisa Boyette</u> Date/Time: <u>2-18-15</u> Company: <u>AgI</u> <u>1:23pm</u>



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Executive Drive, Suite 1
 Newark, DE USA 19702-3335
 302-266-2428

AGI Project No.: ENV 01318
Site Name: Terredev
Site Location: 645 4th St., Oakland, CA

Company Name: Blue Rock Environmental, Inc.
Location: Foster City, CA
Samples collected by: Loren Taylor

**AGI Soil Gas Sampling
 Installation & Retrieval Log**

* Optional or as needed

SAMPLER SERIAL NO.	FIELD ID* (e.g., arbitrary, US EPA)	SAMPLE TYPE (Field Sample, Trip Blank, Field Blank, etc.)	INSTALLATION DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/27/2000 13:00	RETRIEVAL DATE & TIME MM/DD/YYYY HH:MM (24 Hour) ex. 12/30/2000 13:00	OBSERVATIONS/COMMENTS* (e.g., sample depth, location description, missing, pulled from hole, etc. - as needed)	SAMPLE ENVIRONMENT* (e.g., grass, bare soil, through slab)
00747505	S-1	FIELD_SAMPLE	2/7/15 9:58	2/14/15 7:18	3 feet	Through slab
00747506	S-2	FIELD_SAMPLE	2/7/15 10:47	2/14/15 7:24	3 feet	Through slab
00747507	S-3	FIELD_SAMPLE	2/7/15 11:24	2/14/15 7:30	3 feet	Through slab
00747508	S-4	FIELD_SAMPLE	2/7/15 11:52	2/14/15 7:34	3 feet	Through slab
00747509	S-5	FIELD_SAMPLE	2/7/15 12:23	2/14/15 7:36	3 feet	Through slab
00747510	S-6	FIELD_SAMPLE	2/7/15 13:14	2/14/15 7:41	3 feet	Through slab
00747511	S-7	FIELD_SAMPLE	2/7/15 13:58	2/14/15 7:50	3 feet	Through slab
00747512	S-8	FIELD_SAMPLE	2/7/15 14:49	2/14/15 7:56	3 feet	Through slab
00747513	S-9	FIELD_SAMPLE	2/7/15 15:11	2/14/15 7:59	3 feet	Through slab
00747514	Trip Blank	TRIP_BLANK			Trip blank	
00747515	Trip Blank	TRIP_BLANK			Trip blank	
00747522	NOT USED	UNUSED			sample module not used	
00747523	NOT USED	UNUSED			sample module not used	
00747524	NOT USED	UNUSED			sample module not used	
*** Please analyze for: Methyl tert-butyl ether, Benzene, Toluene, Ethylbenzene, Xylenes, Naphthalene, 1,2-Dichloroethane, TPH, GRPH, and DRPH ***						



**AGI Soil Gas Sampling
Installation & Retrieval**

* Optional or as needed

SAMPLER SERIAL NO.	YES / NO			AT MINIMUM PROVIDE SOIL TYPE			PROJECTED COORDINATES X (EASTING)	PROJECTED COORDINATES Y (NORTHING)	COORDINATE SYSTEM* (e.g., UTM Zone, Stateplane, etc.)	COORDINATE DATUM* (e.g., WGS 84)
	EVIDENCE OF LIQUID PETROLEUM HYDROCARBONS?	ODOR ?	WATER IN INSTALLATION HOLE?	SOIL TYPE AT MODULE DEPTH (clay, loamy sand etc.)	TOTAL SOIL POROSITY AT MODULE DEPTH* (total volume of pores/total volume)	WATER FILLED SOIL POROSITY AT MODULE DEPTH* (volume of water/volume of pores)				
00747505	No	No	No	SAND						
00747506	No	Yes	No	SAND						
00747507	No	Yes	No	SAND						
00747508	No	No	No	SAND						
00747509	No	Yes	No	SAND						
00747510	No	Yes	No	SAND						
00747511	No	No	No	SAND						
00747512	No	Yes	No	SAND						
00747513	No	No	No	SAND						
00747514										
00747515										
00747522										
00747523										
00747524										



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747505 FIELD_SAMPLE

Dilution Factor: 1

Field ID: S-1

Installation Date: 2/7/2015 9:58:00AM

Retrieval Date: 2/14/2015 7:18:00AM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Reviewer: Fatima Niazi

Matrix: SOIL GAS

Porosity: 0.38

Product: SPG0001

Water Filled Voids: 0.14

Date Analyzed: 2/26/2015 6:42:00AM

Batch: ENV-150225-1

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	0.25	0.02
1,2-Dichloroethane	107-06-2	0.13	0.02
Benzene	71-43-2	0.04	0.02
Toluene	108-88-3	0.03	0.02
Ethylbenzene	100-41-4	0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.12	0.02
o-Xylene	95-47-6	0.05	0.02
Naphthalene	91-20-3	0.20	0.05
TPH		13.33	0.50
BTEX		0.25	0.02
GRPH		10.86	0.50
DRPH		2.90	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747506 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: S-2

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 2/7/2015 10:47:00AM

Retrieval Date: 2/14/2015 7:24:00AM

Date Analyzed: 2/26/2015 4:47:00PM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

<u>Compound</u>	<u>CAS #</u>	<u>Result (ug)</u>	<u>RL (ug)</u>
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	3.97	0.02
Benzene	71-43-2	48.01	0.02
Toluene	108-88-3	209.52	0.02
Ethylbenzene	100-41-4	123.77	0.02
m,p-Xylene	108-38-3/106-42-3	335.75	0.02
o-Xylene	95-47-6	169.58	0.02
Naphthalene	91-20-3	35.44	0.05
TPH		273.77	0.50
BTEX		886.62	0.02
GRPH		223.55	0.50
DRPH		59.21	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747507 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: S-3

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 2/7/2015 11:24:00AM

Retrieval Date: 2/14/2015 7:30:00AM

Date Analyzed: 2/26/2015 1:42:00PM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

<u>Compound</u>	<u>CAS #</u>	<u>Result (ug)</u>	<u>RL (ug)</u>
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	2.35	0.02
Benzene	71-43-2	33.38	0.02
Toluene	108-88-3	127.13	0.02
Ethylbenzene	100-41-4	113.16	0.02
m,p-Xylene	108-38-3/106-42-3	234.86	0.02
o-Xylene	95-47-6	132.62	0.02
Naphthalene	91-20-3	37.35	0.05
TPH		183.36	0.50
BTEX		641.16	0.02
GRPH		115.01	0.50
DRPH		72.98	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747508 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: S-4

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 2/7/2015 11:52:00AM

Retrieval Date: 2/14/2015 7:34:00AM

Date Analyzed: 2/26/2015 4:38:00AM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	0.02	0.02
Toluene	108-88-3	0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	0.12	0.02
o-Xylene	95-47-6	0.06	0.02
Naphthalene	91-20-3	<0.05	0.05
TPH		1.00	0.50
BTEX		0.22	0.02
GRPH		0.66	0.50
DRPH		<0.50	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747509 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: S-5

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 2/7/2015 12:23:00PM

Retrieval Date: 2/14/2015 7:36:00AM

Date Analyzed: 2/26/2015 10:31:00AM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

<u>Compound</u>	<u>CAS #</u>	<u>Result (ug)</u>	<u>RL (ug)</u>
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	2.01	0.02
Benzene	71-43-2	20.23	0.02
Toluene	108-88-3	90.58	0.02
Ethylbenzene	100-41-4	24.79	0.02
m,p-Xylene	108-38-3/106-42-3	229.92	0.02
o-Xylene	95-47-6	139.79	0.02
Naphthalene	91-20-3	30.63	0.05
TPH		220.53	0.50
BTEX		505.32	0.02
GRPH		117.33	0.50
DRPH		107.91	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747510 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: S-6

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 2/7/2015 1:14:00PM

Retrieval Date: 2/14/2015 7:41:00AM

Date Analyzed: 2/26/2015 12:09:00PM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

<u>Compound</u>	<u>CAS #</u>	<u>Result (ug)</u>	<u>RL (ug)</u>
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	0.90	0.02
Benzene	71-43-2	15.94	0.02
Toluene	108-88-3	29.38	0.02
Ethylbenzene	100-41-4	31.45	0.02
m,p-Xylene	108-38-3/106-42-3	226.67	0.02
o-Xylene	95-47-6	110.98	0.02
Naphthalene	91-20-3	2.45	0.05
TPH		169.75	0.50
BTEX		414.41	0.02
GRPH		119.88	0.50
DRPH		54.69	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747511 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: S-7

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 2/7/2015 1:58:00PM

Retrieval Date: 2/14/2015 7:50:00AM

Date Analyzed: 2/26/2015 5:40:00AM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	0.07	0.02
Toluene	108-88-3	0.15	0.02
Ethylbenzene	100-41-4	0.06	0.02
m,p-Xylene	108-38-3/106-42-3	0.38	0.02
o-Xylene	95-47-6	0.21	0.02
Naphthalene	91-20-3	<0.05	0.05
TPH		1.03	0.50
BTEX		0.87	0.02
GRPH		<0.50	0.50
DRPH		0.74	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747512 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: S-8

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 2/7/2015 2:49:00PM

Retrieval Date: 2/14/2015 7:56:00AM

Date Analyzed: 2/26/2015 3:14:00PM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

<u>Compound</u>	<u>CAS #</u>	<u>Result (ug)</u>	<u>RL (ug)</u>
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	2.53	0.02
Benzene	71-43-2	32.86	0.02
Toluene	108-88-3	103.45	0.02
Ethylbenzene	100-41-4	76.32	0.02
m,p-Xylene	108-38-3/106-42-3	273.53	0.02
o-Xylene	95-47-6	147.82	0.02
Naphthalene	91-20-3	36.09	0.05
TPH		245.41	0.50
BTEX		633.97	0.02
GRPH		145.04	0.50
DRPH		106.20	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747513 FIELD_SAMPLE

Matrix: SOIL GAS

Product: SPG0001

Dilution Factor: 1

Field ID: S-9

Porosity: 0.38

Water Filled Voids: 0.14

Installation Date: 2/7/2015 3:11:00PM

Retrieval Date: 2/14/2015 7:59:00AM

Date Analyzed: 2/26/2015 3:37:00AM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	0.02	0.02
Benzene	71-43-2	0.36	0.02
Toluene	108-88-3	0.36	0.02
Ethylbenzene	100-41-4	0.03	0.02
m,p-Xylene	108-38-3/106-42-3	0.11	0.02
o-Xylene	95-47-6	0.05	0.02
Naphthalene	91-20-3	<0.05	0.05
TPH		<0.50	0.50
BTEX		0.92	0.02
GRPH		<0.50	0.50
DRPH		<0.50	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747514 TRIP_BLANK

Dilution Factor: 1

Field ID: Trip Blank

Matrix: SOIL GAS

Porosity:

Product: SPG0001

Water Filled Voids:

Date Analyzed: 2/26/2015 2:35:00AM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

<u>Compound</u>	<u>CAS #</u>	<u>Result (ug)</u>	<u>RL (ug)</u>
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Toluene	108-88-3	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
Naphthalene	91-20-3	<0.05	0.05
TPH		<0.50	0.50
BTEX		<0.02	0.02
GRPH		<0.50	0.50
DRPH		<0.50	0.50



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PROJECT NUMBER: ENV 01318

FOR: Blue Rock Environmental, Inc.

SITE NAME: Terredev

SITE ADDRESS: 645 4th Street, Oakland, CA

Foster City, CA 94404

USA

SAMPLER ID: 00747515 TRIP_BLANK

Dilution Factor: 1

Field ID: Trip Blank

Matrix: SOIL GAS

Porosity:

Product: SPG0001

Water Filled Voids:

Date Analyzed: 2/26/2015 3:06:00AM

Analyst: Kelly J Stringham

Method: SPG-WI-0292

Batch: ENV-150225-1

Reviewer: Fatima Niazi

Compound	CAS #	Result (ug)	RL (ug)
Methyl tert-butyl ether	1634-04-4	<0.02	0.02
1,2-Dichloroethane	107-06-2	<0.02	0.02
Benzene	71-43-2	<0.02	0.02
Toluene	108-88-3	<0.02	0.02
Ethylbenzene	100-41-4	<0.02	0.02
m,p-Xylene	108-38-3/106-42-3	<0.02	0.02
o-Xylene	95-47-6	<0.02	0.02
Naphthalene	91-20-3	<0.05	0.05
TPH		<0.50	0.50
BTEX		<0.02	0.02
GRPH		<0.50	0.50
DRPH		<0.50	0.50

KEY TO DATA TABLE

UNITS

µg micrograms, relative mass value
 µg/m³ micrograms per cubic meter; estimated soil gas concentration
 µg/L micrograms per Liter; calculated water concentration

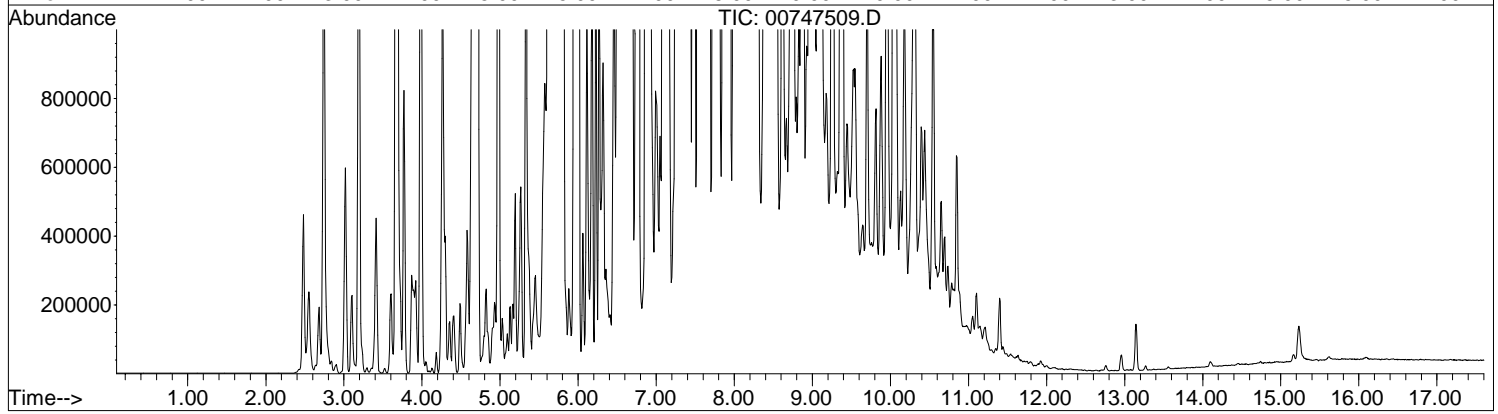
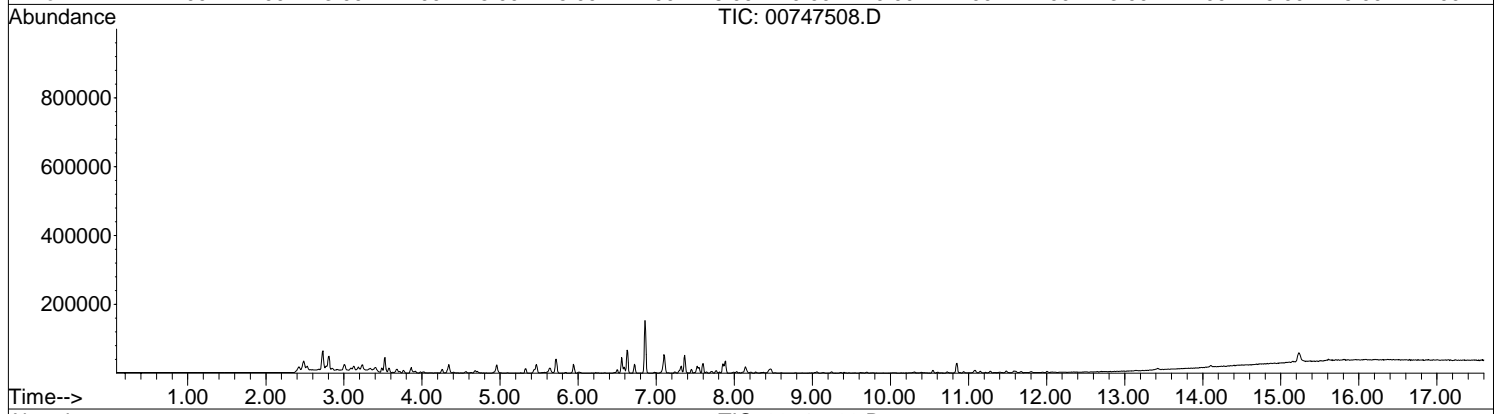
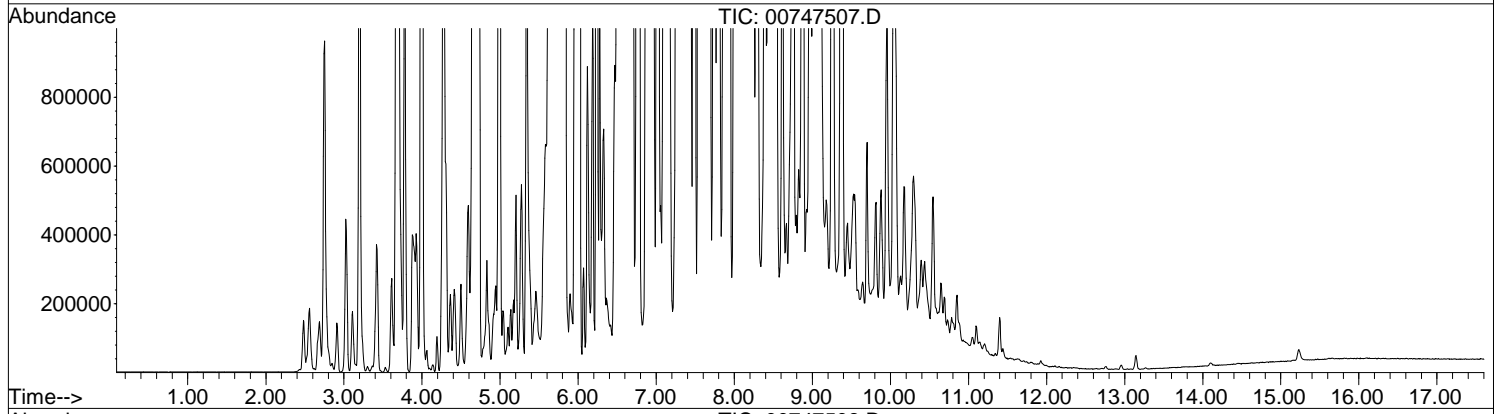
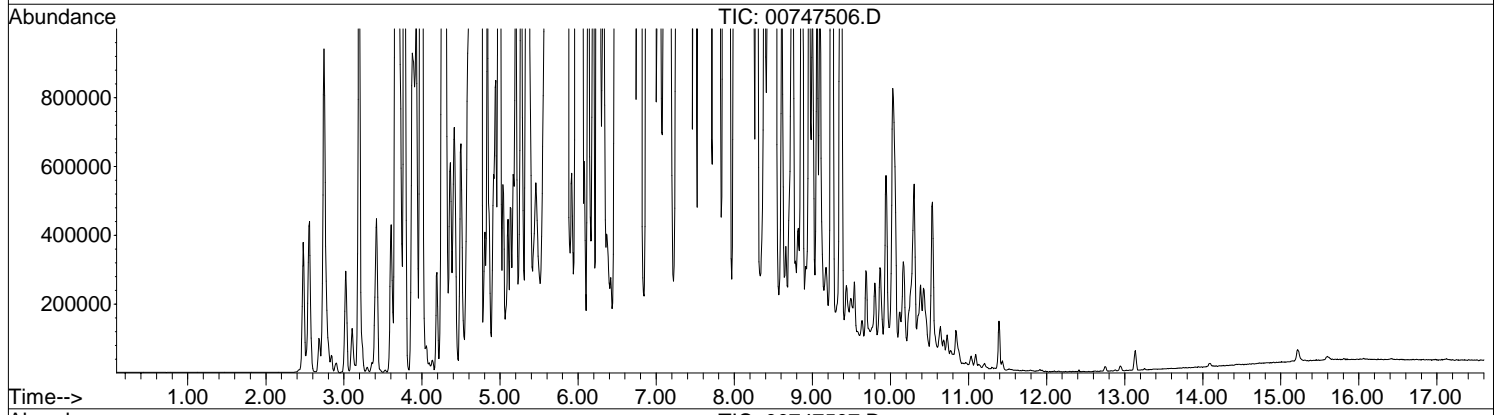
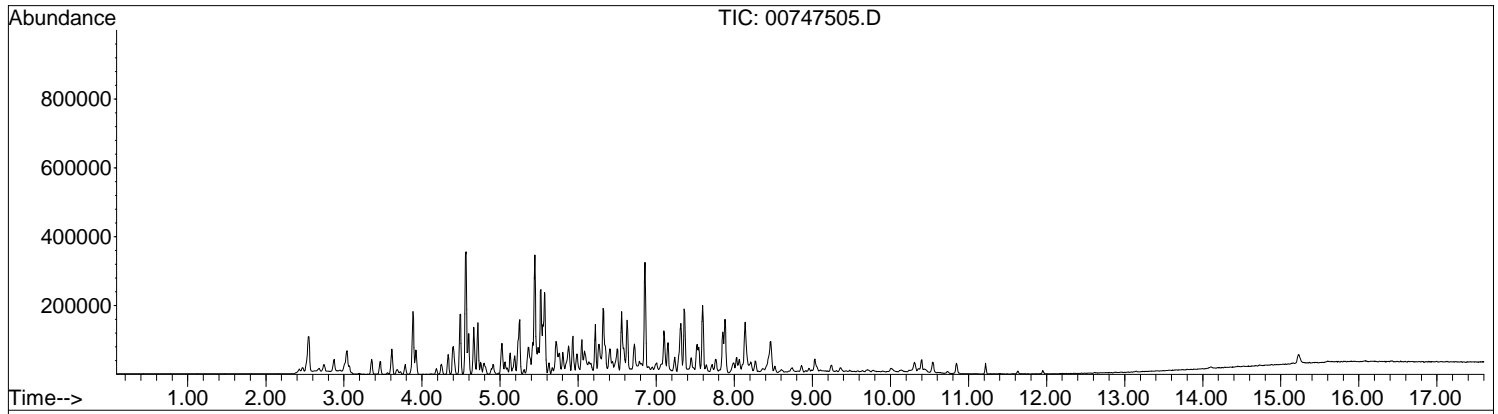
DATA QUALIFIERS

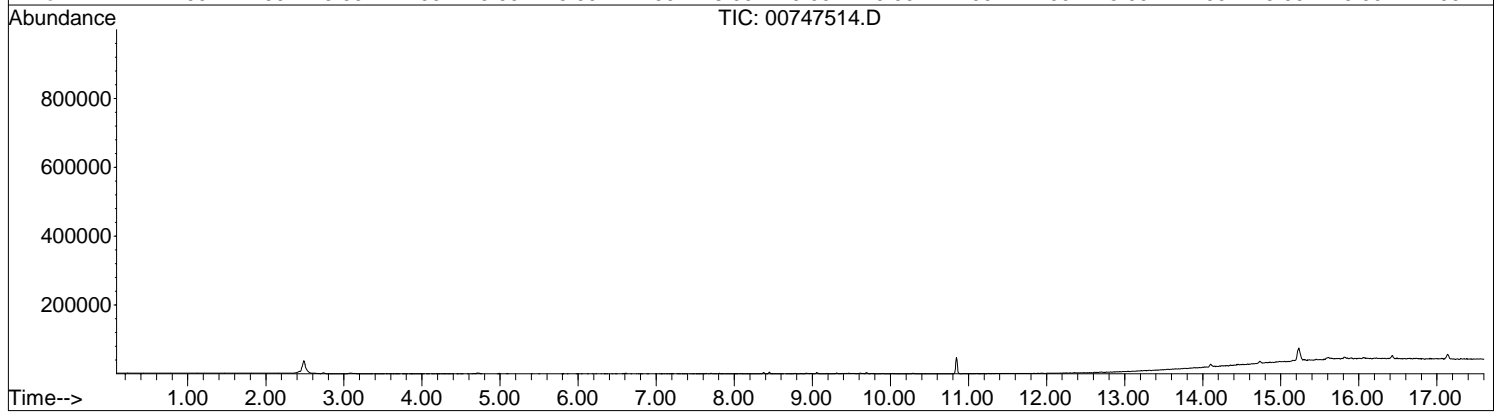
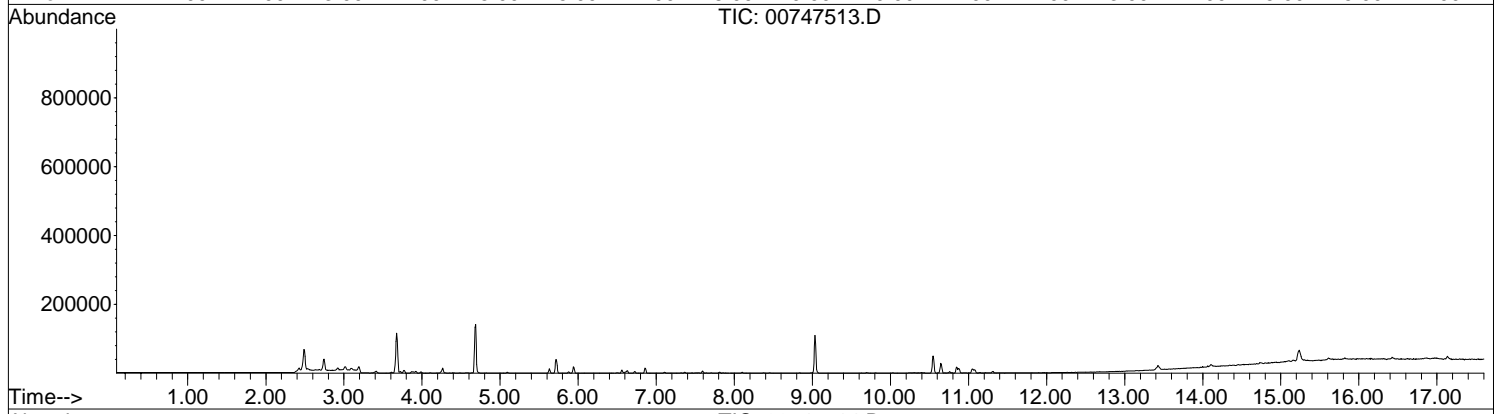
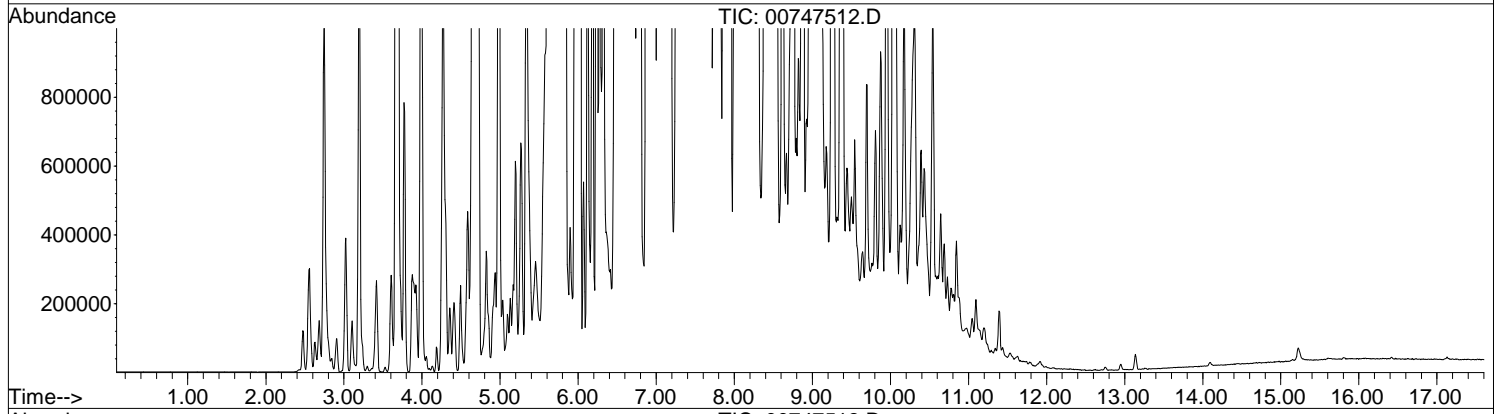
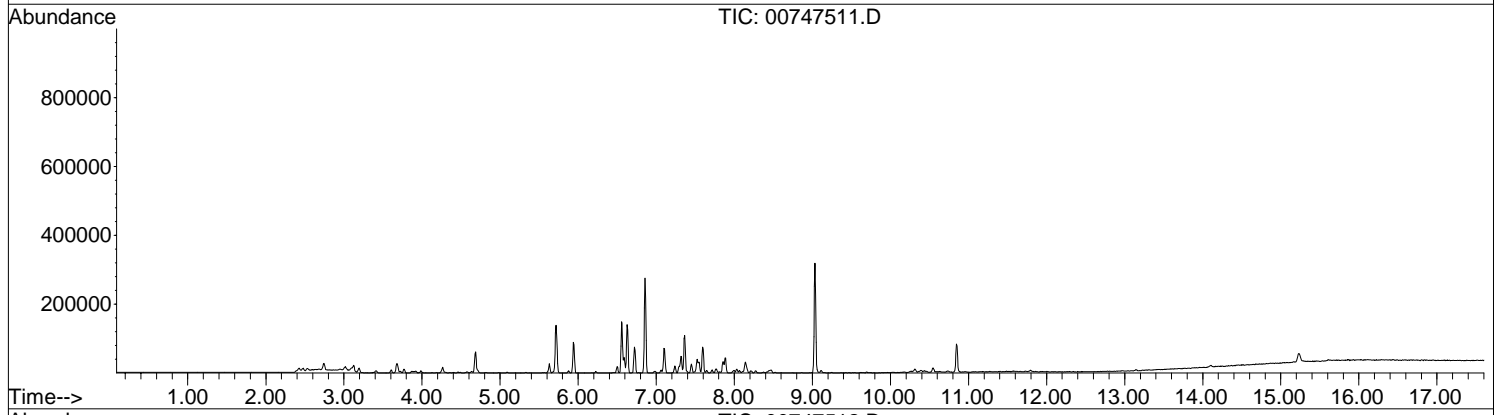
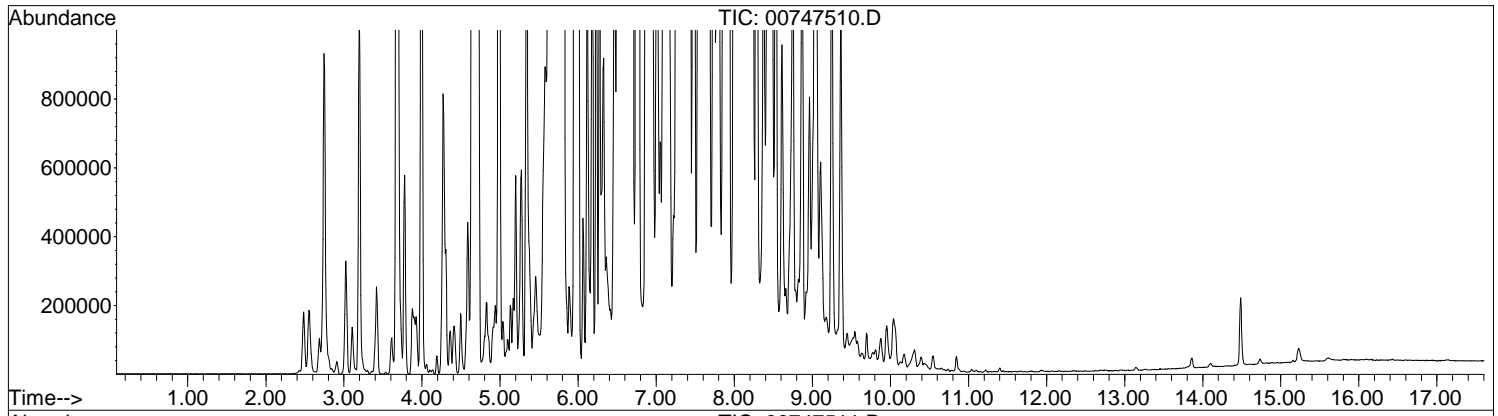
> greater than; value exceeds calibration range, estimated value
 < less than; compound value is below the LOD and RL
 J mass value below LOQ or RL, but above LOD, estimated mass value
 E mass value exceeds upper calibration level, estimated mass value
 Q one or more quality control parameters failed for the compound

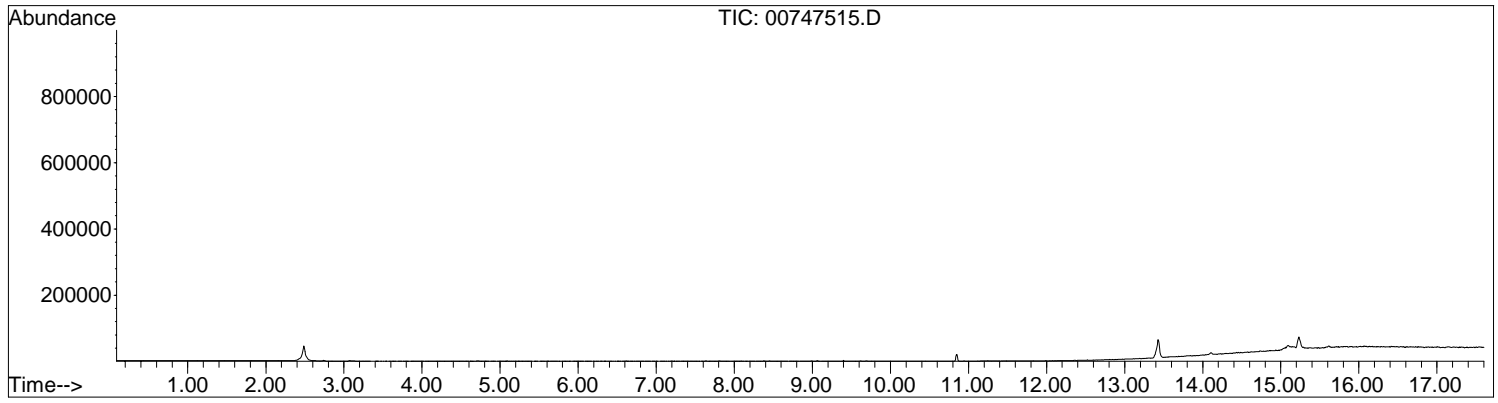
ABBREVIATIONS

AVG RL average reporting limit; calculated based on individual field sample RLs
 LOD limit of detection
 LOQ limit of quantification
 MDL method detection limit
 RL reporting limit

1112TetCA	1,1,1,2-tetrachloroethane	CIBENZ	chlorobenzene
111TCA	1,1,1-trichloroethane	ct12DCE	cis- & trans-1,2-dichloroethene
1122TetCA	1,1,2,2-tetrachloroethane	EtBENZ	ethylbenzene
112TCA	1,1,2-trichloroethane	mpXYL	m-, p-xylene
11DCA	1,1-dichloroethane	MTBE	methyl t-butyl ether
11DCE	1,1-dichloroethene	NAPH	naphthalene
124TMB	1,2,4-trimethylbenzene	OCT	octane
12DCA	1,2-dichloroethane	oXYL	o-xylene
12DCB	1,2-dichlorobenzene	PCE	tetrachloroethene
135TMB	1,3,5-trimethylbenzene	PENTADEC	pentadecane
13DCB	1,3-dichlorobenzene	PHEN	phenanthrene
14DCB	1,4-dichlorobenzene	t12DCE	trans-1,2-dichloroethene
2MeNAPH	2-methyl naphthalene	TCE	trichloroethene
BENZ	benzene	TMBs	combined masses of 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene
BTEX	combined masses of benzene, toluene, ethylbenzene, and total xylenes (Gasoline Range Aromatics)	TOL	toluene
C11,C13&C15	combined masses of undecane, tridecane, and pentadecane (C11+C13+C15) (Diesel Range Alkanes)	TPH	total petroleum hydrocarbons
c12DCE	cis-1,2-dichloroethene	TRIDEC	tridecane
CCl4	carbon tetrachloride	UNDEC	undecane
CHC13	chloroform	VC	vinyl chloride









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AMPLIFIED
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Mapping Report

Site: Terredev

645 4th Street, Oakland, CA

Prepared for:

Blue Rock Environmental, Inc.

1157 Chess Drive

Suite 107

Foster City, CA

UNITED STATES

Prepared on:

March 05, 2015

Project Summary

Amplified Geochemical Imaging, LLC. (AGI) provided the AGI Environmental Survey used at:
Terredev

645 4th Street, Oakland, CA

The service provided by AGI included delivery of the required quantity of AGI Universal Samplers, analysis by the method described for the requested organic compounds, and reporting of the data. A Laboratory Report was issued previously which summarized the field sampling and analytical procedures, and contained the

Normally, when printed at scale, the maps are 11 x 17 inch in size. Other sizes are available upon request. General and project specific comments on the contouring and mapping can be found on the next page.

Maps prepared by:

Jim E Whetzel

Project Manager

Maps reviewed/approved by:

Don D'Apolito

Project Manager

General Comments

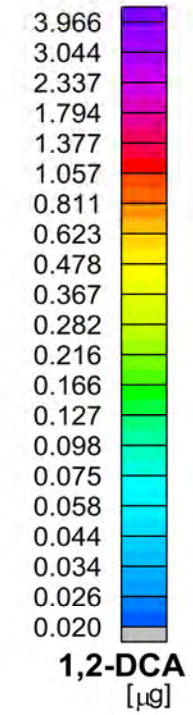
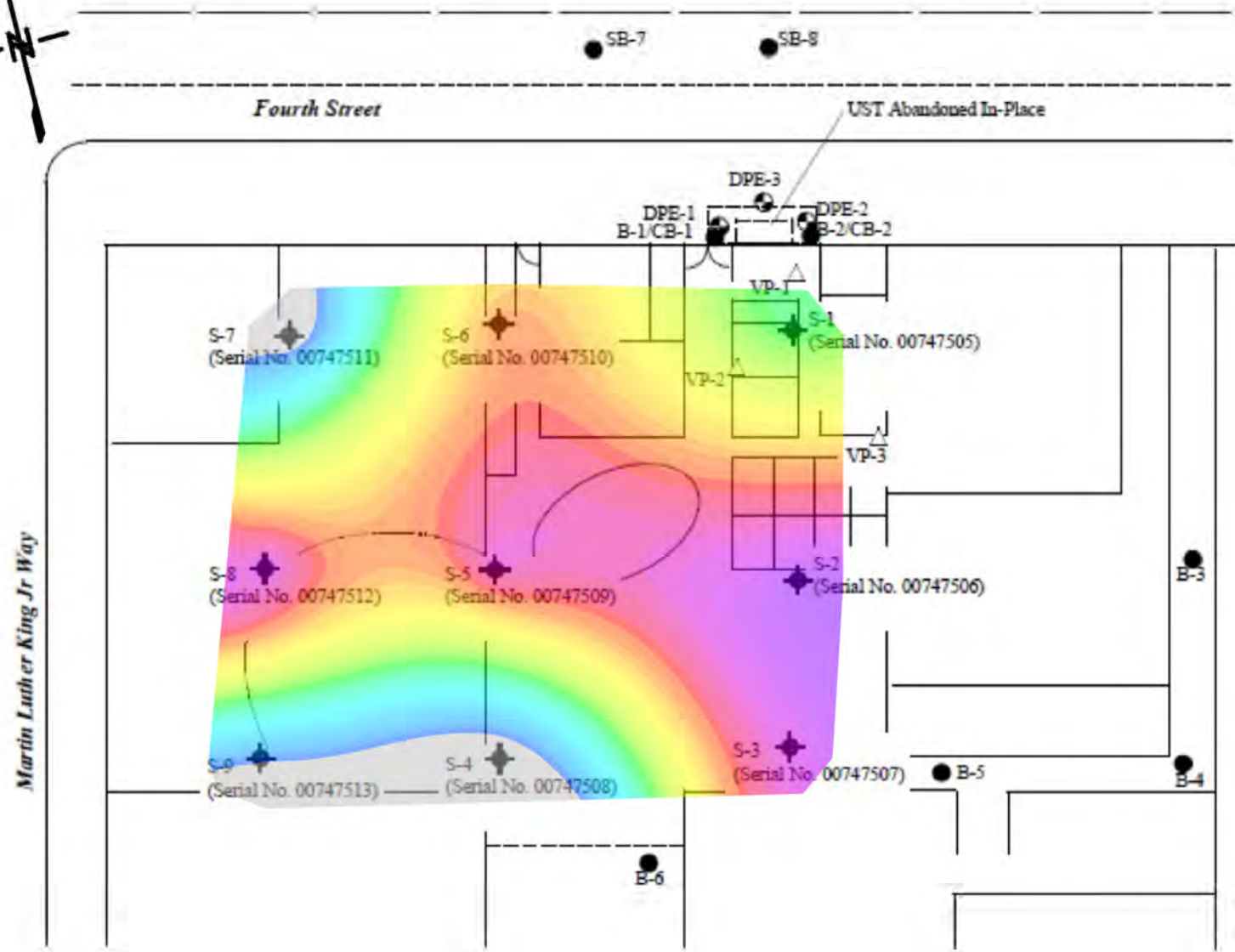
A minimum curvature algorithm was used to interpolate the data from the sample locations to a regularly-spaced grid. The resulting surface is considered to be the smoothest possible surface that will fit the observed values at each sample location (i.e., data honoring). The interpolation is performed in log space, with grid cell sizes approximately one-tenth the average distance between sample locations. For example, when AGI Universal Samplers are placed about 50 feet apart, the grid cell size is set to five feet.

Where observations trend from lower to higher values, and moving towards the edge of the area sampled, the contour surface will continue to rise (showing warmer colors) as no additional data exist to constrain the interpolation. Where observations trend from high to low, towards the edge of the area sampled, the opposite is true.

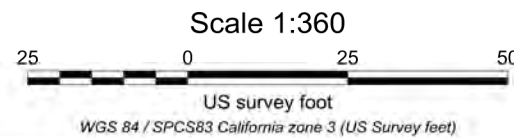
Contour minimums and maximums used in the color interval assignment are established based on the QA blank levels (trip and method blanks), method detection limits, and maximum values observed. The minimum contour level (gray color) is established using the maximum QA blank level or method detection limit, whichever is greater, per compound or groups of compounds. The maximum contour level is set at the maximum value observed, per compound or groups of compounds. Contour interval assignments can be modified at the client's request.

Project Specific Comments

A background image provided by Blue Rock Environmental was added to the background of the contour maps.



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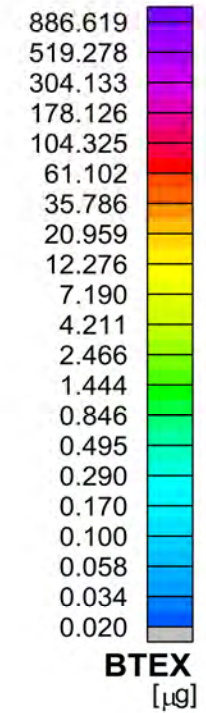


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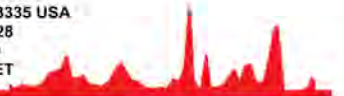
**Blue Rock Environmental, Foster City, CA
Terredev, Oakland, CA
1,2-Dichloroethane**

DATE DRAWN: 05 Mar 2015	DRAWN BY: JW	ORIG. CAD:	SITE CODE:
REV. DATE:	REV. #:	PROJECT NUMBER: 01318	

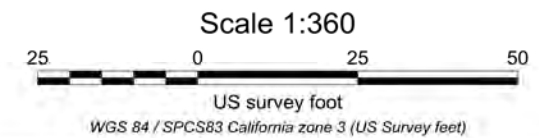


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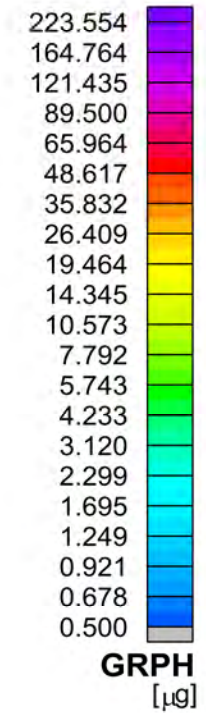


**Blue Rock Environmental, Foster City, CA
Terredev, Oakland, CA
BTEX**

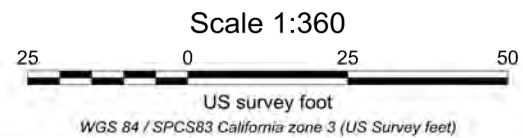


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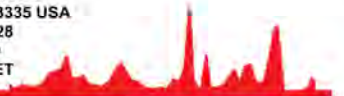


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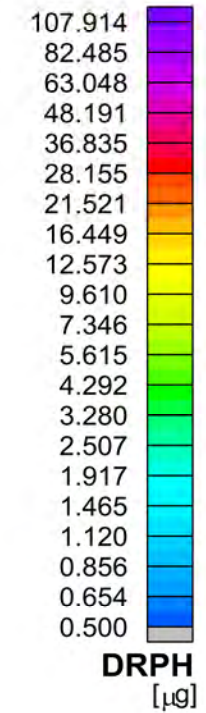
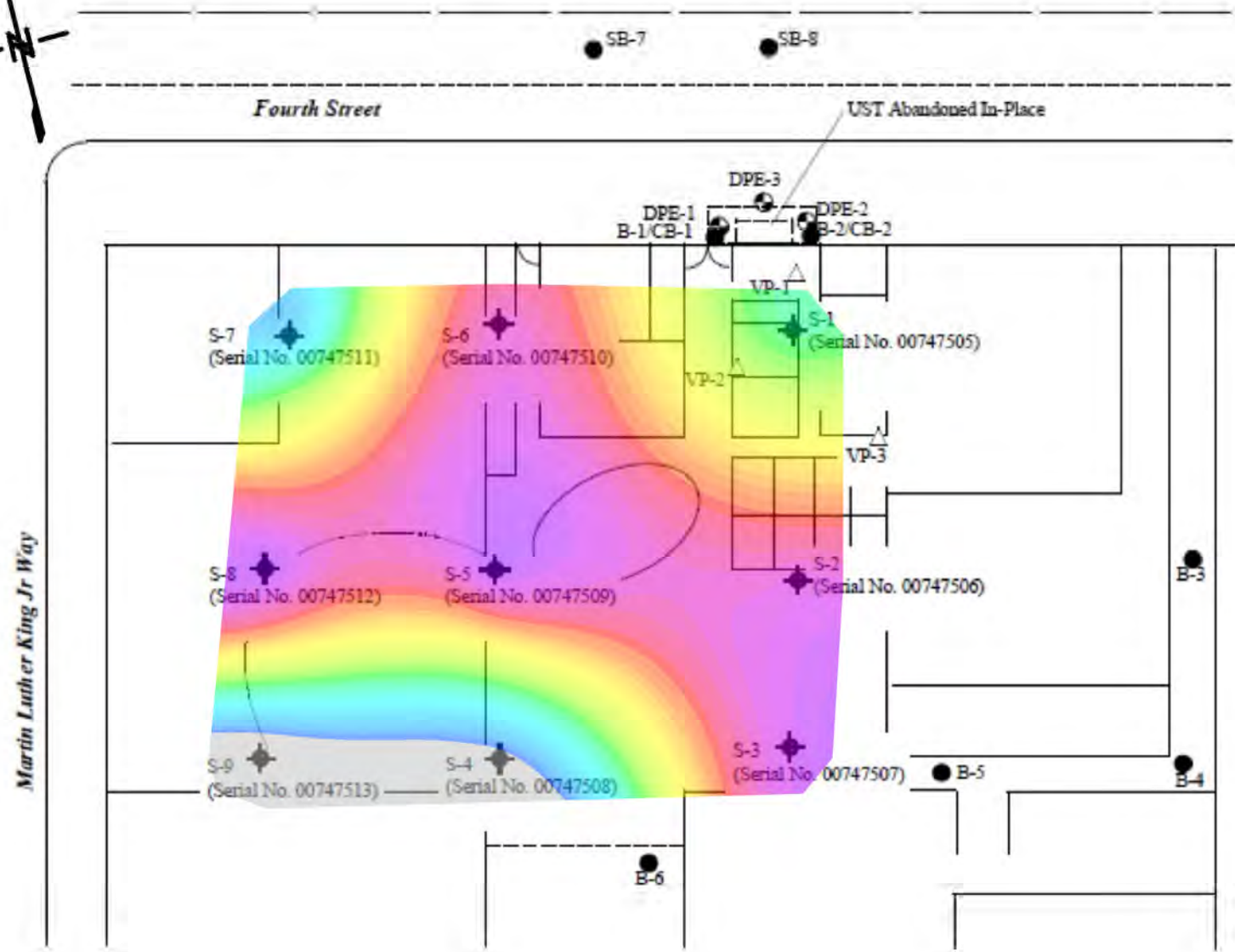
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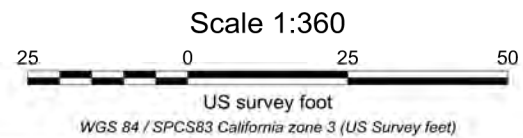


**Blue Rock Environmental, Foster City, CA
Terredev, Oakland, CA
Gasoline Range Petroleum Hydrocarbons**

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REV. DATE:	REV. #:	PROJECT NUMBER: 01318	

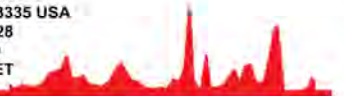


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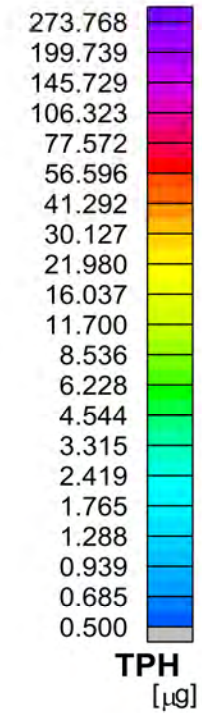
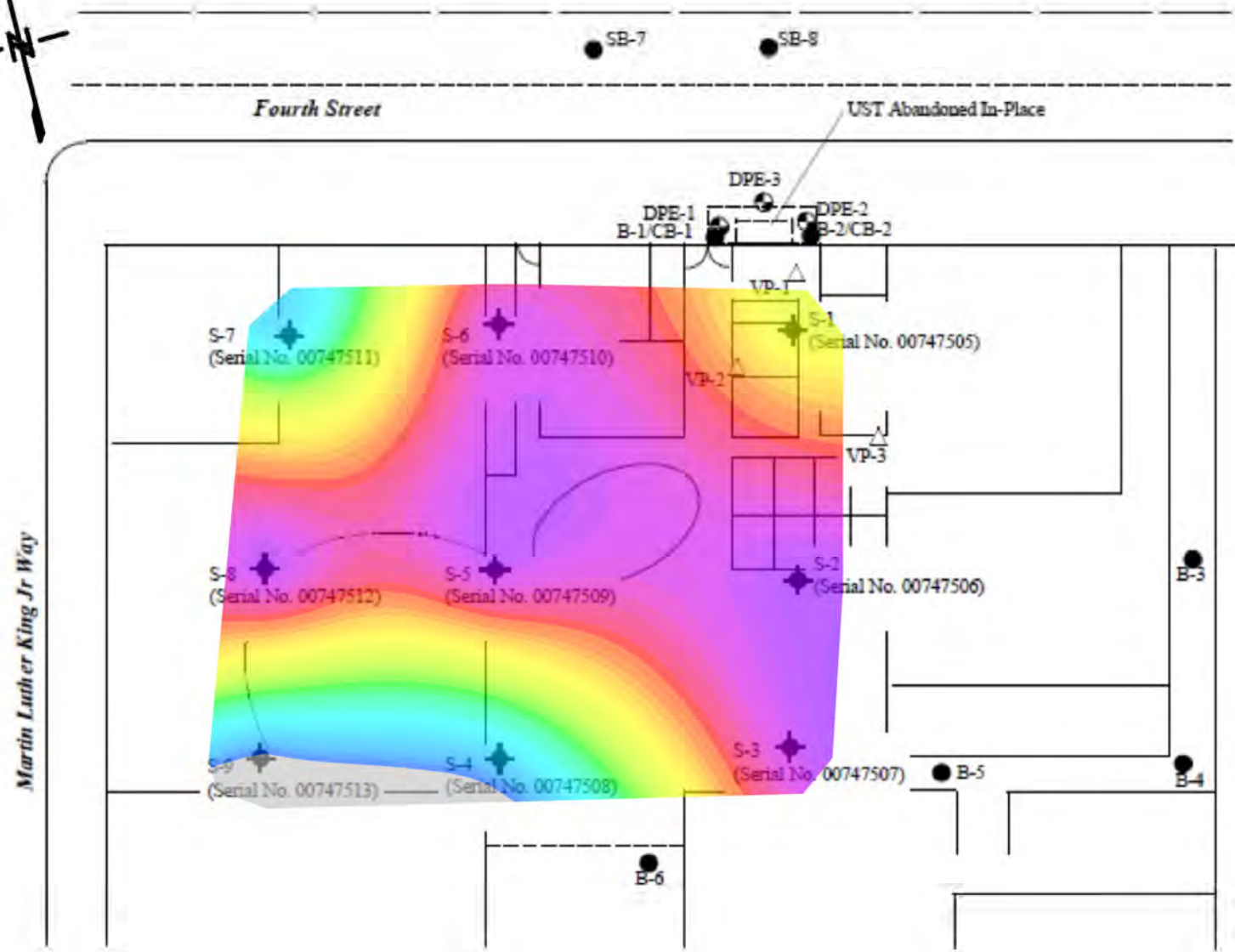
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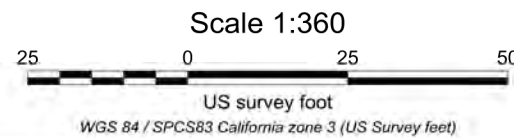


**Blue Rock Environmental, Foster City, CA
Terredev, Oakland, CA
Diesel Range Petroleum Hydrocarbons**

DATE DRAWN: 05 Mar 2015	DRAWN BY: JW	ORIG. CAD:	SITE CODE:
REV. DATE:	REV. #:	PROJECT NUMBER: 01318	



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**Blue Rock Environmental, Foster City, CA
Terredev, Oakland, CA
Total Petroleum Hydrocarbons**

DATE DRAWN: 05 Mar 2015	DRAWN BY: JW	ORIG. CAD:	SITE CODE:
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