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May 29, 2014

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 May 29, 2014.

OAKLAND IRONWORKS BUILDING
580 SECOND STREET, SUITE 260, OAKLAND CA 94607 TELEPHONE (510) 839-4000 FAX (510) 839-4025

BLUE ROCK ENVIRONMENTAL, INC.

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

May 29, 2014

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 investigation activities, which were proposed in the *Workplan for Additional Site Characterization* dated June 26, 2013 and approved by the Alameda County Health Care Services Agency – Environmental Health Services (ACHCSA) in their letter dated July 22, 2013.

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 (Figure 1). 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). The UST is located on the upgradient edge of a developed city block.

Phase I Environmental Site Assessments completed in support of the purchase (1999) and for refinancing in 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 (Figure 2).

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 a 10,000 mg/kg and benzene at 130 mg/kg.

Summary of Investigation Activities

Subsurface investigation began in 2009. A total of four soil borings have been drilled (B-1, B-2, CB-1, 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.

Site Conceptual Model

The site conceptual model for the project was initially developed by Amicus in their September 13, 2009 correspondence. The following section presents a summary of the current site conceptual model, which is subject to modification as new data are acquired.

The subject site is located in a commercial/industrial neighborhood along the San Francisco Bay-Margin. The site is underlain by sands and clays. 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 flows generally to the south and southwest, towards the Oakland Inner Harbor, based on information from nearby sites.

Gasoline range hydrocarbons are present in soil and groundwater proximal to the abandoned UST. Interestingly, the contaminant signature also includes the gasoline additive methyl tert-butyl ether (MTBE). 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 consumption 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, City Directories, and records review from Environmental Data Resources, Inc. (EDR) to better understand potential nearby sources. Blue Rock understands that an upgradient property at the corner of 5th Street and Martin Luther King Jr. Way was formerly used as a gas station "Grove Auto Repair" (Global ID T06000101350), the tanks for which were removed many years ago under Alameda County oversight. The limited information available Alameda County website for that station indicates tanks were removed in 1983 (it was a station from at least the early 1950s based on Sanborn maps) and 1,000 cubic yards were excavated and disposed off-site in 1989. No additional is available online for that site; however, the volume of soil excavated suggests a significant fuel release occurred. The EDR map also shows an "Oil/Gas" pipeline running down the west side of Martin Luther King Jr. Way (MLK Jr. Way); however, the specific product conveyed in the pipeline is unknown. The relationship, if any, between the historic service station and oil/gas pipeline and residual hydrocarbons found at the subject site is currently unknown.

The abandoned UST is located beneath the sidewalk along 4th Street, at the upgradient edge of a city block. The location of densely packed, low ceiling (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. Yet, the results of corrective action at nearby sites might be used to predict aspects of the subject case.

The Allen property, located across Martin Luther King Jr. Way (formerly Grove Street), provides a useful example. Contamination originating from a 10,000-gallon UST at that property extended approximately 75 feet downgradient. According to Allen property reports, a 10,000-gallon UST was used at that property to fuel fleet vehicles prior to its in-place abandonment. Available reports do not describe the installation date, throughput, or contents of the tank; however, the analytes detected in proximal groundwater suggest the tank may have held gasoline. As an approximation, the migratory extent of the Terradev plume may be similar to that related to the Allen release (i.e. approximately 75 feet downgradient of the UST). This approximation is distant from the 3rd Street edge of the developed block, which is approximately 235 feet downgradient of the UST.

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.

<u>Secondary Source Removal</u>

Amicus 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 ACHCSA 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 extraction 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 LNAPL 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 recovery 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

The 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 would likely 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 has 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.

West Side of UST			
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'

East Side of UST			
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 Vapor Intrusion Evaluation

In June and August 2012, 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. 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 *Sub-Slab Soil Vapor Sampling Report* dated July 7, 2012 and *Second Sub-Slab Soil Vapor Sampling Report* dated October 18, 2012. Sub-slab soil vapor data is summarized in Table 4.

Additional Site Characterization Activities

Purpose

In the *Workplan for Additional Site Characterization* dated June 26, 2013, Blue Rock outlined the following scope work:

1. Perform a geophysical survey in an effort to locate or rule-out any remaining USTs near the source area. (This task is currently being scheduled and the results of the effort will be presented in a separate report).

2. Collect grab groundwater samples from four borings, designated B-3 through B-6, located approximately 100 feet downgradient of the subject UST and collect groundwater samples from source area wells DPE-1 through DPE-3 to further characterize magnitude and extent of the remaining groundwater plume.

3. Resample sub-slab vapor points VP-1 through VP-3 to further evaluate potential VI risk.

Additional Groundwater Plume Characterization

Blue Rock further evaluated the downgradient extent of the dissolved-phase plume by collection of grab groundwater samples from four temporary borings (B-3 through B-6) located within service hallways or patios in the building (Figure 2).

Pre-Field Activities

Blue Rock obtained drilling permit from the Alameda County Public Works Agency (attached). The site was marked by Underground Service Alert to identify utilities proximal to proposed drilling location. Blue Rock prepared a site specific Health and Safety Plan, which was reviewed and signed by project workers.

Drilling and Sampling Activities

Drilling and sampling activities occurred on January 10-11, 2014. A Blue Rock geologist supervised all drilling and sampling activities. Gregg Drilling & Testing, Inc. (Gregg), a C-57 licensed company, used a hand-auger to complete the drilling and sampling work due to the limited access inside the hallway and interior patio locations.

At each drilling location, a hand-auger with an approximate 2.5-inch diameter bucket was used to advance a boring at least one foot into the water table. At the time of drilling, the water table was encountered at a depth of approximately 11-12 ft bgs in borings B-3 through B-6. During drilling, soil types were logged in accordance with the USCS. No field indications of petroleum impact, such as odors or soil discoloration, were noted for any of the borings, except B-6. Petroleum odors were noted in soil cuttings from boring B-6 beginning at a depth of approximately 6 ft bgs. Therefore, soil samples were retained from boring B-6 at depths of 6 ft bgs and 10.5 ft bgs. An impact sampler lined with a clean brass tube was used to collect the samples. The sample tubes were 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 each boring to a total depth of approximately 12 to 13 ft bgs, 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 samples 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.

Upon completion of sampling, all boreholes were backfilled to the surface with cement and finished at the surface with concrete.

Groundwater Monitoring Activities

On January 10, 2014, the wells DPE-1 through DPE-3 were monitored. Prior to sampling, depth to water was measured with an electronic water level indicator, accurate to within ±0.01-ft. Well DPE-3 was dry. All wells were checked for measureable thicknesses of free-product, defined here as equal to, or greater than, 0.01-ft, however, none was observed.

The wells were purged until pH, temperature, and conductivity parameters had stabilized, which occurred after approximately three wetted casing volumes. Following recovery of water levels to approximately 80% of their static levels, groundwater samples were collected using disposable polyethylene bailers and transferred to laboratory-supplied containers. Sample containers were labeled, documented on a chain-of-custody form, and placed on ice in a cooler for transport to the project laboratory.

Kiff Analytical LLC, a California DHS-certified laboratory, analyzed the soil and groundwater samples for concentrations of:

- TPHd by EPA Method 8015M
- TPHd by EPA Method 8015M with silica-gel clean-up prior to analysis
- 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

Equipment Decontamination and Investigation Derived Waste Management

Drill-rod, hand-augers, bailers, and sampling devices were decontaminated in an Alconox® wash followed by double rinse in clean tap water to prevent cross-contamination. Soil cuttings and purge water were containerized in labeled DOT 55-gallon drum pending characterization and disposal.

Hydrogeologic Conditions Observed

The soil types logged in borings B-3 through B-6 were similar to those observed in previous borings. Fill is present in the upper several feet in each boring location, which of sand and construction rubble. The fill is underlain by a red-brown clayey sand to the total depth explored of approximately 13 ft bgs. The depth to first encountered water in the borings ranged from approximately 11 to 12 ft bgs, which is consistent with the coeval equilibrated water levels measured in wells DPE-1 and DPE-2. Due to their proximity and configuration, data from the existing wells are not suitable to determinations of flow direction / gradient. Groundwater flow at a nearby LUST site has been southerly, towards the Oakland Inner Harbor.

Soil Sample Analytical Results and Discussion

The following section summarizes soil analytical results for this event from B-6:

- TPHd w/out SCGU concentration: 280^ mg/kg (B-6-10.5') to 340^ mg/kg (B-6-6')
- TPHd with SCGU concentration: 280^ mg/kg (B-6-10.5') to 350^ mg/kg (B-6-6')
- TPHg concentration: 1,500 mg/kg (B-6-10.5') to 1,700 mg/kg (B-6-6')
- Benzene concentration: 0.13 mg/kg (B-6-6') to 4.1 mg/kg (B-6-10.5')
- MTBE concentration: <0.050 mg/kg (B-6-6') to <0.25 mg/kg (B-6-10.5')
- 1,2-DCA concentration: <0.050 mg/kg (B-6-6') to <0.25 mg/kg (B-6-10.5')

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 this event:

- TPHd w/out SGCU concentration: 58# µg/L (B-3) to 5,200^ µg/L (B-6)
- TPHd w/ SGCU concentration: <50 µg/L (B-3,4,5,DPE-2) to 360^ µg/L (B-6)
- TPHg concentration: <50 µg/L (B-3,4) to 100,000 µg/L (DPE-2)
- Benzene concentration: <0.50 µg/L (B-3,4) to 17,000 µg/L (DPE-2)
- MTBE Concentration: <0.50 µg/L (B-3,4) to 5,100 µg/L (B-6)
- 1,2-DCA Concentration: <0.50 µg/L (B-3,4) to 270 µg/L (DPE-1)

Notes:
^ indicates that laboratory notes that hydrocarbons are lower-boiling than typical diesel.
# indicates that laboratory notes discreet peaks in diesel range, atypical for diesel fuel.

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

Discussion of Detected Soil and Groundwater Impairment

Four borings were drilled in locations forming an arc downgradient of the closed UST (i.e. ranging from southwest to southeast) to further evaluate the potential extent of the plume in those directions. Fuel petroleum concentrations were detected in soil and groundwater in the area of B-6, the southwestern-most boring. The remaining boring locations, B-3 through B-5, did not exhibit significant fuel concentrations in the samples collected from those borings.

Blue Rock re-reviewed the ERAS Environmental, Inc. *Phase I Environmental Site Assessment* completed in 1999 and separately acquired Sanborn Fire Insurance maps, City Directories, and environmental records report from Environmental Data Resources, Inc. (EDR) to further evaluate other potential sources on the property, and nearby properties, in the vicinity of B-6.

Sanborn Fire Insurance Map Review

The recently acquired Sanborn maps include the years 1889, 1902, 1912, 1951, 1952, 1957, 1958, 1961, 1967, and 1970.

The 1889 map shows a "Wood & Coal" yard near the corner of 4th Street and MLK Jr. Way, and the remainder of block as detached residential dwellings.

The 1902 map no longer shows the "Wood & Coal" yard. The map shows a "Junk Yard" at the corner of 3rd Street and Jefferson Street, and the remainder of block as detached dwellings.

The 1912 map shows "Standard Brass Casting Company" in the south corner of the block previously occupied by the "Junk Yard", which was provided by fuel oil and electricity. The parcel fronting 4th Street in the area of the closed UST is shown as a "Storage Yard", and the remainder of the block was developed with residential structures, flats, and scattered sheds.

The 1951 and 1952 maps show the former Standard Brass Casting building being used for building materials storage. A "Furniture Warehouse" was present on the northeast corner of the block. A "Building Material Warehouse", "Boiler Shop", and "Roofing Material Warehouse" were present on the southwest side of the block facing 3rd Street. Residences are no longer present.

The 1957, 1958, 1961, 1967, and 1970 maps show the block to be fully developed with several structures identified as "Building Material Warehouses". The "Boiler Shop" is still shown on the southwest side of the block, facing 3rd Street. The parcel ostensibly associated with the closed UST is shown as vacant in 1957, and then as a "Building Materials Storage Yard" in 1958, 1961, 1967, and 1970.

The location of Grove Auto Repair, at the corner of 5th Street and MLK Jr. Way, was used as a school from as early as 1889 until at least 1952. By 1952, the school was demolished and the station was built. As discussed above, the limited records available indicate that the USTs were removed in 1983 and 1,000 cubic yards were excavated and disposed off-site in 1989.

In summary, the historical fire insurance maps do not show USTs in the area of B-6.

City Directory Review

The City Directories list former freight lines, trucking companies, and motor lines for the address 651 4th Street. This use would be consistent with the known UST closed in place associated the site (which is listed as being associated with 645 4th Street).

The area of boring B-6 is near the rear of the property, where it abuts a parcel fronting the even-numbered 600 block of 3rd Street. The address of 636 3rd Street is listed as boiler works from 1938 through 1962, which is consistent with the fire insurance maps.

Unfortunately, City Directories do not provide information beyond business type/name and associated address. Thus, they can only serve to help focus the search for potential sources based on based property use.

Environmental Records Review

Review of the environmental database records did not reveal any previously unknown potential sources of contamination, except for an "Oil/Gas" pipeline running down the west side of MLK Jr. Way. The product conveyed in the pipeline, and if there have been any recorded losses, remains unknown at this time.

The Allen Property plume has been defined and does not appear to extend to the location of B-6.

Summary of Records Review

In summary, historical fire insurance maps do not show USTs in the area of B-6, and the Allen plume does not appear to extend to the location of B-6.

A boiler shop formerly operated on the parcel approximately 30 feet south of boring B-6, at the address of 636 3rd Street. Although no USTs were shown on the historical fire insurance maps in that area, tanks were undoubtedly used to store fuel to fire the boilers. Still, boring B-6 is located upgradient of that property.

An "Oil/Gas" pipeline runs down the west side of MLK Jr. Way, located over 100 feet upgradient of boring B-6. The product conveyed in the pipeline, and if there have been any recorded losses, is unknown.

At this time, no other documented sources proximal to the location of B-6 have been confirmed, and the working interpretation is that the petroleum impairment detected in B-6 is related to the subject UST.

Additional Vapor Intrusion Evaluation

In previous correspondence, ACHCSA requested additional sub-slab soil gas sampling at the site, noting that the tracer gas was present at concentrations greater than 10% in two previous sub-slab soil gas samples, and that samples containing greater than 5% may not be considered valid. Blue Rock reviewed the data and also found that two of the previous six samples contained tracer gas concentrations in excess of 10%; however, none of the other four samples contained tracer gas concentrations above 1%. Therefore, those samples which did not contain tracer gas in excess of 5% are considered valid for the purpose of evaluating potential VI risk. In order to confirm earlier sub-slab soil gas sample results, Blue Rock performed an additional round of sampling from existing soil gas points VP-1 through VP-3 using similar methods employed for the previous events. The points were sampled on January 25, 2014.

Soil Vapor Point Sampling Equipment

The sample train for soil vapor sampling consists of tubing, connectors, valves, and vacuum source (Figure 3). All gauges and canisters were connected by laboratory-supplied stainless steel tubing and dedicated flexible Teflon or nylon tubing. The sample train was assembled using dedicated ¼-inch (outer diameter) tubing for all vapor sampling at this site. Swagelok® connectors were used for all connections between tubing and other sampling components. A flow regulator of 100 – 200 mL/min was placed in-line between the manifold and the downhole side Swagelok® valve. Sampling equipment was inspected to ensure tight fittings between all components. A shroud was placed over the wellhead and the entire sampling train.

Leak Testing and Tracer Gas

The sampling manifold was leak tested by inducing a vacuum on the manifold. In preparation for manifold leak testing, the downhole side Swagelok® valve remained closed, as did the valves going to the purge and sample ends of the sample train. To commence leak testing, an electric air pump was connected to the purge valve end of the sample train. The purge valve was opened and the air pump turned on to induce a vacuum of approximately 30" Hg on the assembly, and the purge valve was closed again. The vacuum on the manifold assembly was monitored for at least 15 minutes. The manifold was considered to have passed the leak test if vacuum was maintained for at least 15 minutes with <0.2" Hg vacuum loss. After ensuring that all connections between the purge and sample valves, flow controller, and sample manifold were tight, soil vapor purging and sampling activities were performed.

During sample collection, helium (He) was used as a tracer gas to test for air leakage into the sampling system. The inner-shroud environment was enriched with helium supplied by a cylinder. The helium concentration inside the shroud was maintained at a minimum of 5% to 10%, so as to have detectable levels of tracer gas should leakage into the sampling train occur.

Vapor Point Purging, Sampling Activities and Analysis

The laboratory supplied the flow controller and sample canisters. The initial and final vacuum, start and finish times, and helium tracer gas percentages inside the shroud were documented (see attached field sheets).

Prior to collecting a vapor sample, the vapor points were purged to ensure that the vapor samples were representative of actual shallow soil vapor concentrations. Approximately 1-liter was purged from each point prior to sampling using an electric air pump and known flow limits of the manifold regulators. After purging was completed, the sample train purge valve was closed in preparation for sample collection.

All samples were collected in clean, laboratory-supplied 1-liter Summa® canisters immediately after purging. Each sample canister had a starting vacuum of approximately 30 "Hg. To collect a sample, the valve on the sample Summa® canister was opened and the time and initial vacuum documented. As the canister was being filled, the vacuum gauge on the flow controller was observed to ensure that the vacuum in the canister was decreasing over time. When the vacuum on the sample canister decreased to approximately 5 "Hg, the valve was closed and sampling ended. Helium tracer gas concentrations were monitored inside the shroud during sample collection using a field meter. Helium concentrations in the shroud for this entire sampling event ranged from 5.7% to 6.7%.

The samples were labeled, documented on a chain-of-custody form, and transported to Analytical Sciences for analysis.

The soil vapor samples were analyzed by Analytical Sciences for concentrations of:

- TPHg, BTEX, and MTBE by modified EPA Method TO-15
- Naphthalene, 1,2-DCA, EDB by modified EPA Method TO-15
- Helium, Oxygen, Carbon Dioxide, and Methane by Modified ASTM D-1946

Vapor Point Air Sample Analytical Results

Neither TPHg, BTEX, MTBE, naphthalene, 1,2-DCA, nor detected in any of the samples from the three vapor points (Table 4).

Very low levels of helium were detected in two of the three samples: VP-1 and VP-3 at concentrations of 0.023% and 0.012%, respectively. The concentration of helium in the sample divided by the concentration of helium in the shroud provides a measure of the proportion of the sample attributable to leakage (multiplied by 100 to convert to percent). In this case that equates to 0.40% for VP-1 and 0.18% for VP-3. No leak was detected in the sample from VP-2. These leaks are well below 5%, and are therefore considered reliable for the purpose of evaluating potential VI risk. Sub-slab vapor sampling data are shown in Table 4, and copies of the laboratory report and chain-of-custody form are attached.

Vapor Intrusion Risk Evaluation

Data from cumulative sub-slab vapor samples, in which the tracer gas did not exceed 5% (seven of the nine total samples), were compared to Shallow Soil Gas ESLs from Table E of *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, Update February 2013* 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. None of the constituents or detection limits (if the analyte was not detected) in the samples evaluated exceeded the screening levels.

In accordance with the DTSC guidance, two consecutive sub-slab soil vapor sampling events should be performed before a final risk determination is made. As discussed above, none of the applicable screening levels were exceeded in any samples from any of the three vapor points over the last two sampling event. Further, the HVDPE event performed in July 2012 appears to have significantly benefitted sub-slab soil vapor quality based on the observed decrease in TPHg, BTEX, and MTBE levels following the event. Based on these data, Blue Rock concludes there is no vapor intrusion risk related to the area of the subject UST.

Project Status and Recommendations

- Blue Rock is currently coordinating the approved geophysical survey to rule out any potential remaining below the sidewalk along 4th Street, the results of which will be submitted under separate cover.

- In order to evaluate other potential sources in the area of documented soil and groundwater impairment, Blue Rock is currently attempting to gain access to perform a full file review of (1) Grove Auto Repair and (2) potential pipelines in the vicinity of the site. Additionally, Blue Rock will review high quality aerial photographs available at through Pacific Aerial Surveys to better understand past use and operations of the subject site and nearby properties.

- The results of the aforementioned activities will be incorporated into the working Conceptual Site Model. The updated CSM will guide development of recommendations for corrective action related to the release associated with the subject UST, as needed.

- No further evaluation of potential vapor intrusion risk in the area of closed UST is recommended at this time.

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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

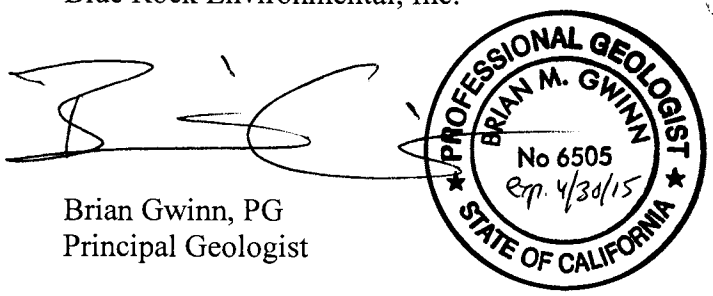
This report was prepared under the supervision of a California Professional Geologist at Blue Rock. All statements, conclusions, and recommendations are based upon published results from past consultants, field observations by Blue Rock, and analyses performed by a state-certified laboratory as they 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

Table 1: Well Construction Data
Table 2: Soil Sample Analytical Data
Table 3: Groundwater Analytical Data
Table 4: Sub-Slab Vapor Sample Analytical Data

Alameda County PWA – Water Resources Well Permit

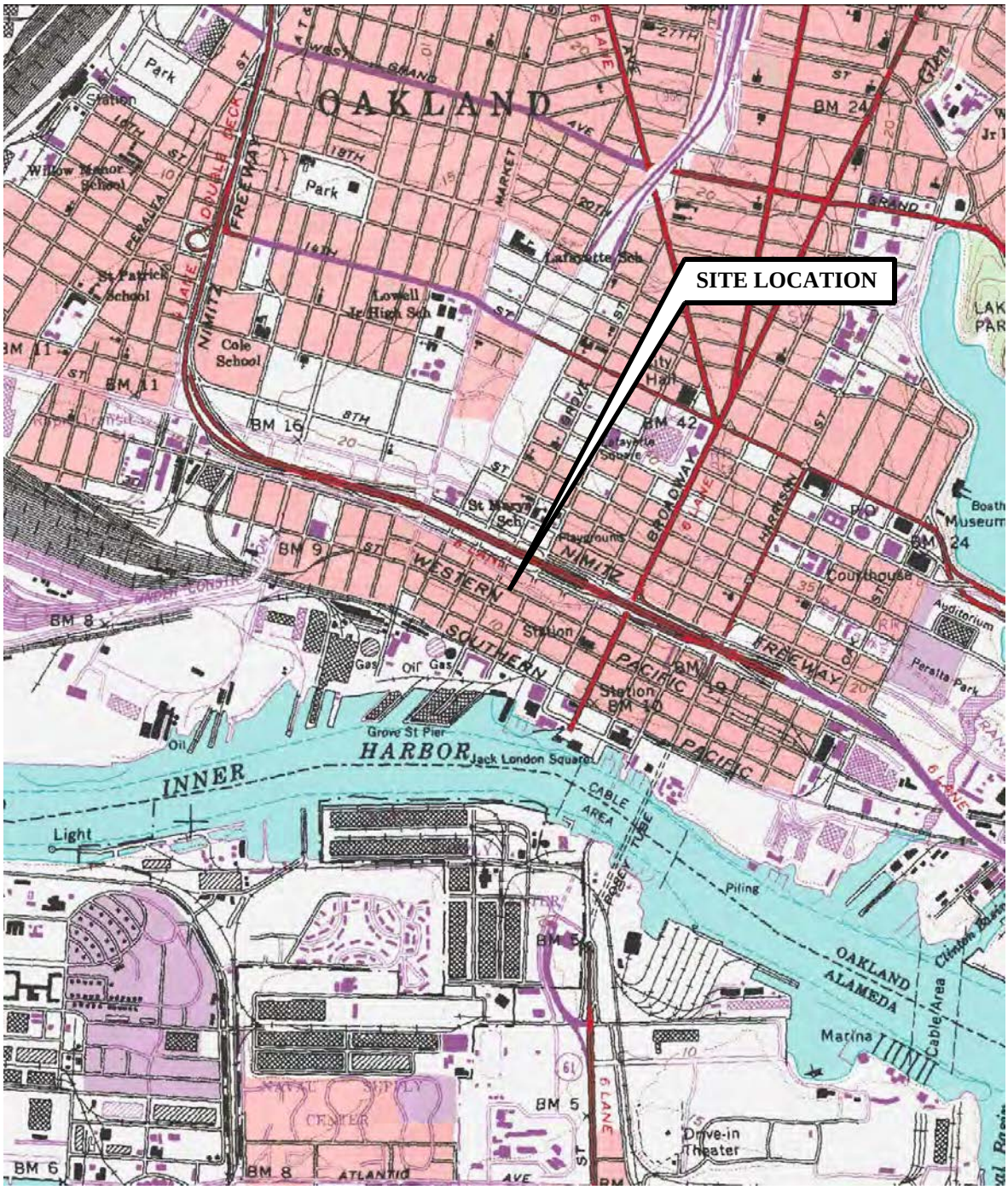
Boring Logs B-1 through B-6

Groundwater Monitoring Field Data Forms

Laboratory Reports with Chain-of-Custody Forms

Distribution:

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

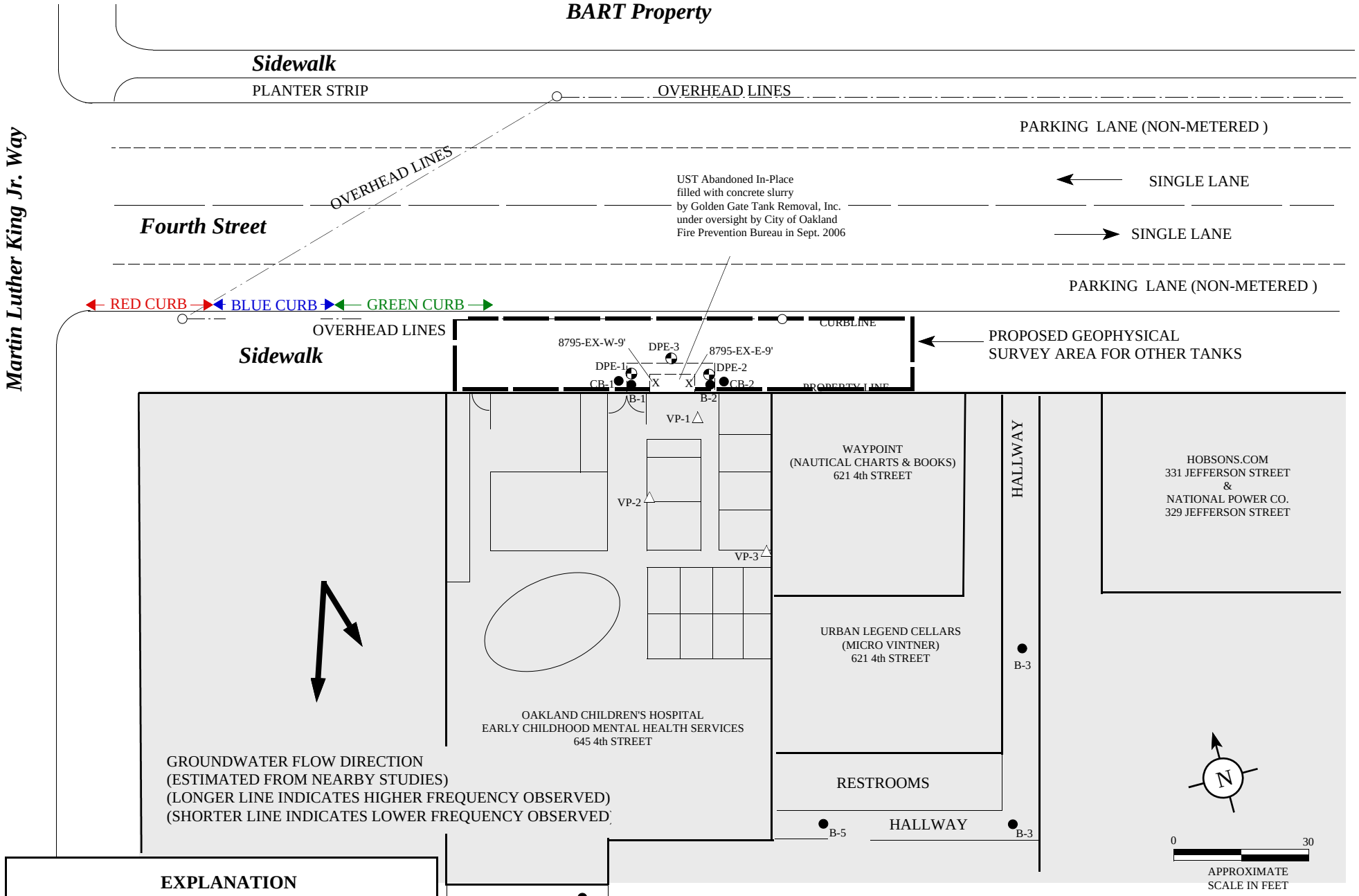


SOURCE: MyTopo.com

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

BLUE ROCK
ENVIRONMENTAL, INC.

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



SITE PLAN

Terredev Jefferson LLC Property
645 Fourth St.
Oakland, CA

BLUE ROCK ENVIRONMENTAL, INC.

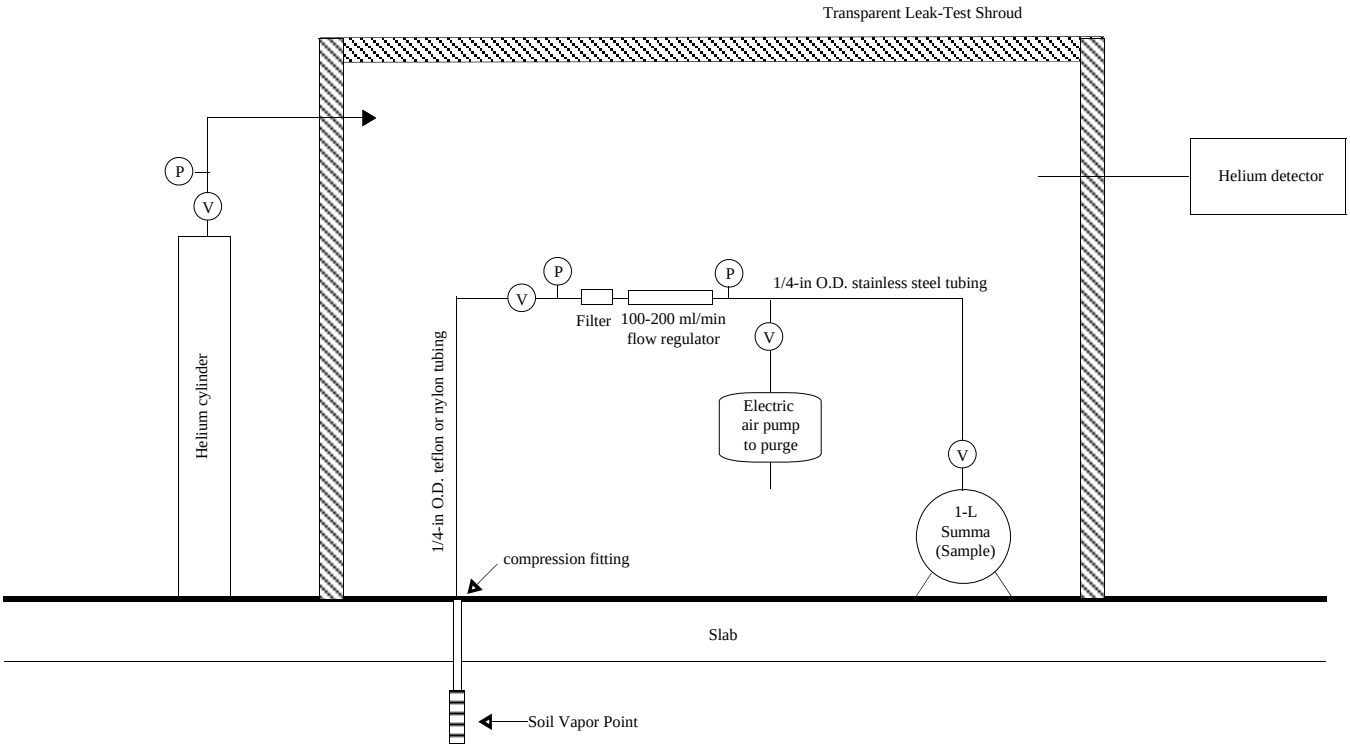
Project No.	Figure Date	Figure
ASE-1	2/14	2

EXPLANATION

(P) PRESSURE/VACUUM GAUGE

(V) VALVE

NOTE: ALL SAMPLE TRAIN TUBE CONNECTIONS AND VALVES ARE SWAGELOK



NOT TO SCALE

SOIL GAS SAMPLING APPARATUS
Terradev Jefferson LLC
645 4th St.
Oakland, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Figure Date	Figure
ASE-1	2/14	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 (mg/kg)	TPHd w/SGCU (mg/kg)	TPHg (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE, ETBE, TAME (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)
UST Removal Samples														
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	---	---
Investigation Samples														
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

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, DIPE, TAME	methyl tert-butyl ether, tert-butanol, ethyl tert-butyl ether, di-isopropyl ether, tert-amyl methyl ether 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.
^	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)
Grab Groundwater Samples																
B-1-GW*	7/10/09	--	~10 - 20	--	--	**5,300**	--	**78,000**	**15,000**	**13,000**	**1,700**	**10,500**	**570**	--	--	--
B-2-GW*	7/10/09	--	~10 - 20	--	--	**2,300**	--	**60,000**	**13,000**	**13,000**	**890**	**4,800**	**120**	--	--	--
B-3	1/10/14	--	~12 - 13	--	--	**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 - 13	--	--	**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 - 13	--	--	**110#**	<50	**110**	**1.2**	**1.4**	**0.65**	**4.5**	**2.7**	**200**	**43**	<0.50
B-6 (2)	1/11/14	--	~11 - 12	--	--	**5,200^**	**360^**	**84,000**	**1,800**	**7,600**	**2,400**	**12,000**	**5,100**	**180J**	**110**	<20
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 sepearate 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 ineterference 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

			Consituent Concentrations									Soil Gas Concentrations			Tracer Gas			Sample Can Vacuum	
Sample I.D.	Sample Date	sample container	TPHg (µg/m^3)	B (µg/m^3)	T (µg/m^3)	E (µg/m^3)	X (µg/m^3)	MTBE (µg/m^3)	Naphthalene (µg/m^3)	1,2-DCA (µg/m^3)	EDB (µg/m^3)	O_2 (%)	CO_2 (%)	CH_4 (%)	In Shroud He - Avg (%)	In Sample He (%)	Leak Percent^ Leak (%)	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
ESLs Comm/Indus Soil Gas			*3,100,000*	*420*	*1,300,000*	*4,900*	*440,000*	*47,000*	*360*	*580*	*170*								
CHHSLs Comm /Indus Soil Gas			*NA*	*122*	*378,000*	*NA*	*879,000*	*13,400*	*106*	*167*	*NA*								

Notes:

TPHg	Total Petroluem 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
O_2, CO_2, CH_4, He	Oxygen, Carbon Dioxide, Methane, and Helium by modified ASTM D-1946
µg/m^3	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%.

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: 11/07/2013 By jamesy

Permit Numbers: W2013-0908
Permits Valid from 01/31/2014 to 01/31/2014

Application Id:	1383347188683	**City of Project Site:**	Oakland
Site Location:	645 4th Street Oakland, CA 94501 (inside building)		
Project Start Date:	11/15/2013	**Completion Date:**	12/31/2013
Assigned Inspector:	Contact Balance Hydrologics, Inc at (510) 473-5663 or acwells@balancehydro.com		
Extension Start Date:	01/31/2014	**Extension End Date:**	01/31/2014
Extension Count:	1	**Extended By:**	jamesy
Applicant:	Blue Rock Environmental, Inc. - Brian Gwinn 1169 Chess Drive, Suite C, Foster City, CA 94404	**Phone:**	650-522-9292
Property Owner:	Terradev Jefferson LLC 580 2nd Street, Oakland, CA 94501	**Phone:**	--
Client:	** same as Property Owner **		

	Total Due:	$265.00
Receipt Number: WR2013-0422	**Total Amount Paid:**	$265.00
Payer Name : Brian Gwinn	Paid By: VISA	**PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Investigation-Contamination Study - 4 Boreholes
Driller: Gregg Drilling & Testing, Inc. - Lic #: 485165 - Method: DP **Work Total: $265.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2013-0908	11/07/2013	02/13/2014	4	2.00 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. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an 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.

5. 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.

6. 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.

7. NOTE:
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.

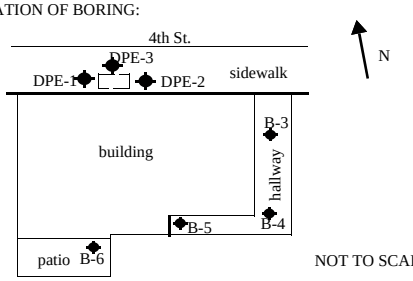
8. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

SOIL BORING AND WELL CONSTRUCTION LOG: B-3

BLUE ROCK ENVIRONMENTAL, INC.

Project: ASE-1

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:
NA	13.1 feet	NA	1/10/14
DRILL RIG TYPE:	WELL DEPTH:	WELL MATERIAL:	FILTER PACK:
Hand-auger	NA	NA	NA
WELL SEAL:		PLANNED USE:	LOGGED BY:
Neat cement with concrete surface		Sampling	Loren Taylor
SAMPLING METHOD:		MONITORING INST:	APPROVED BY:
NA		NA	Brian Gwinn, PG
FIRST ENCOUNTERED WATER DEPTH:		STATIC WATER DEPTH - DATE:	
Approx. 12 feet		NA	

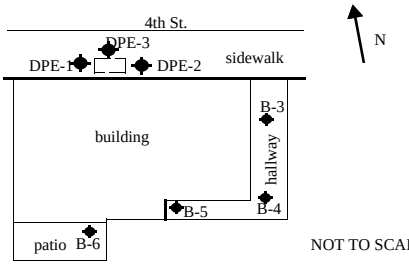
WELL CONSTRUCTION DETAIL	WATER LEVEL	DEPTH (FEET)	SAMPLING INTERVAL	SAMPLING RECOVERY	OVM READING (PPM)	GRAPHIC LOG OR USCS CODE	
		0					Concrete.
		1–3					SAND with Silt (SP-SM) and Rubble; brown; poor to moderately graded; fine-medium sand; rubble debris, damp. (Fill)
	▽	4–12					Clayey SAND (SC); mottled red-brown & gray; moderately graded; fine-medium sand; moist.
		13–30					A temporary well screen consisting of new SCH40 PVC was placed in the boring to faciliate collection of a grab groundwater sample. Following sample collection, the casing was removed and the boring was backfilled with cement.

SOIL BORING AND WELL CONSTRUCTION LOG: B-4

BLUE ROCK ENVIRONMENTAL, INC.

Project: ASE-1

FIELD LOCATION OF BORING:



DRILLING CONTRACTOR: Gregg Drilling &	BORING DIAMETER: 2.5 inches	CLIENT/LOCATION: Terradev Jefferson, 645 4th St., Oakland	
DRILL RIG OPERATOR: NA	BORING DEPTH: 13.2 feet	SCREEN SLOT SIZE: NA	DRILLING DATE: 1/10/14
DRILL RIG TYPE: Hand-auger	WELL DEPTH: NA	WELL MATERIAL: NA	FILTER PACK: NA
WELL SEAL: Neat cement with concrete surface		PLANNED USE: Sampling	LOGGED BY: Loren Taylor
SAMPLING METHOD: NA		MONITORING INST: NA	APPROVED BY: Brian Gwinn, PG
FIRST ENCOUNTERED WATER DEPTH: Approx. 12 feet		STATIC WATER DEPTH - DATE: NA	

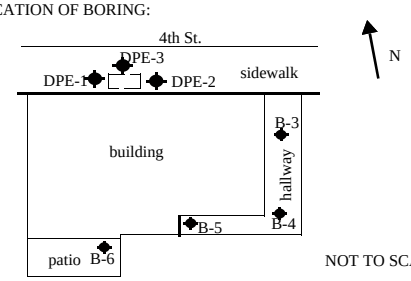
WELL CONSTRUCTION DETAIL	WATER LEVEL	DEPTH (FEET)	SAMPLING INTERVAL	SAMPLING RECOVERY	OVM READING (PPM)	GRAPHIC LOG OR USCS CODE	
							Concrete.
		1–3					SAND with Silt (SP-SM) and Rubble; brown; poor to moderately graded; fine-medium sand; rubble debris, damp. (Fill)
	▽	4–12					Clayey SAND (SC); mottled red-brown & gray; moderately graded; fine-medium sand; moist.
		13–30					A temporary well screen consisting of new SCH40 PVC was placed in the boring to faciliate collection of a grab groundwater sample. Following sample collection, the casing was removed and the boring was backfilled with cement.

SOIL BORING AND WELL CONSTRUCTION LOG: B-5

BLUE ROCK ENVIRONMENTAL, INC.

Project: ASE-1

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:
NA	13.3 feet	NA	1/10/14
DRILL RIG TYPE:	WELL DEPTH:	WELL MATERIAL:	FILTER PACK:
Hand-auger	NA	NA	NA
WELL SEAL:		PLANNED USE:	LOGGED BY:
Neat cement with concrete surface		Sampling	Loren Taylor
SAMPLING METHOD:		MONITORING INST:	APPROVED BY:
NA		NA	Brian Gwinn, PG
FIRST ENCOUNTERED WATER DEPTH:		STATIC WATER DEPTH - DATE:	
Approx. 12 feet		NA	

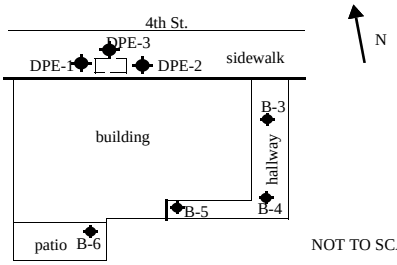
WELL CONSTRUCTION DETAIL	WATER LEVEL	DEPTH (FEET)	SAMPLING: INTERVAL	SAMPLING: RECOVERY	OVM READING (PPM)	GRAPHIC LOG OR USCS CODE	
		0					Concrete.
		1–3					SAND with Silt (SP-SM) and Rubble; brown; poor to moderately graded; fine-medium sand; rubble debris, damp. (Fill)
	▽	4–13					Clayey SAND (SC); mottled red-brown & gray; moderately graded; fine-medium sand; moist.
		14–30					A temporary well screen consisting of new SCH40 PVC was placed in the boring to faciliate collection of a grab groundwater sample. Following sample collection, the casing was removed and the boring was backfilled with cement.

SOIL BORING AND WELL CONSTRUCTION LOG: B-6

BLUE ROCK ENVIRONMENTAL, INC.

Project: ASE-1

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:
NA	11.8 feet	NA	1/11/14
DRILL RIG TYPE:	WELL DEPTH:	WELL MATERIAL:	FILTER PACK:
Hand-auger	NA	NA	NA
WELL SEAL:		PLANNED USE:	LOGGED BY:
Neat cement with concrete surface		Sampling	Loren Taylor
SAMPLING METHOD:		MONITORING INST:	
NA		NA	
FIRST ENCOUNTERED WATER DEPTH:		STATIC WATER DEPTH - DATE:	
Approx. 11 feet		NA	

WELL CONSTRUCTION DETAIL	WATER LEVEL	DEPTH (FEET)	SAMPLING INTERVAL	SAMPLING RECOVERY	OVM READING (PPM)	GRAPHIC LOG OR USCS CODE	
		0					Concrete.
		1–3					SAND with Silt (SP-SM) and Rubble; brown; poor to moderately graded; fine-medium sand; rubble debris, damp. (Fill)
	▽	4–12					Clayey SAND (SC); mottled red-brown & gray; moderately graded; fine-medium sand; moist.
		13–30					A temporary well screen consisting of new SCH40 PVC was placed in the boring to faciliate collection of a grab groundwater sample. Following sample collection, the casing was removed and the boring was backfilled with cement.

WELL GAUGING DATA/PURGE CALCULATIONS

Job No.: ASE-1 Location: Date: 1-10-14 Tech(s): LT

WELL NO.	DIAM (in)	DTB (ft)	DTW (ft)	ST (ft)	CV (gal)	PV (gal)	SPL (ft)	NOTES
DPE-1	2	14.80	9.84	4.96	0.79	2.37		
DPE-2	2	14.83	10.09	4.75	0.76	2.28		
DPE-3	2	9.81	DRY					

Explanation:
DIAM = Well Diameter
DTB = Depth to Bottom
DTW = Depth to Water
ST = Saturated Thickness (DTB-DTW)
CV = Casing Volume (ST x cf)
PV = Purge Volume (standard 3 x CV, well development 10 x CV)
SPL = Thickness of Separate Phase Liquid

Conversion Factors (cf)
1 inch diameter well cf = 0.04 gal/ft
2 inch diameter well cf = 0.16 gal/ft
4 inch diameter well cf = 0.65 gal/ft
6 inch diameter well cf = 1.44 gal/ft

BLUE ROCK ENVIRONMENTAL, INC.
1169 Chess Drive, Suite C, Foster City, CA 94404 Phone (650) 522-9292 Fax (650) 522-9259

WELL PURGING DATA

SHEET 1 OF 1

Job No.: ASE-1 Location: Date: 1/10/14 Tech: LT

WELL No.	TIME (24-hr)	VOLUME (gal)	TEMP. (deg. F.)	COND. (µS/cm)	pH
DPE-1	0805	0.75	62.8	968	7.14
Calc. purge	0807	1.25	63.9	981	7.18
volume	0809	1.75	64.1	976	7.06
2.37 gal	0811	~~2.30~~ ~2.37	64.4	974	7.01

Sample time:

Sample for: (circle)

TPHg TPHd TPHmo

BTEX MTBE 8010

Other:

Sampling Method:

Dedicated / Disposable bailer

Purging Method:

PVC bailer / Pump

COMMENTS: color, turbidity, recharge, etc.

Greenish Gray, Moderate Turb, good, HC odor

WELL No.	TIME (24-hr)	VOLUME (gal)	TEMP. (deg. F.)	COND. (µS/cm)	pH
DPE-2	0821	0.75	62.7	8.14	7.16
Calc. purge	0824	1.25	64.3	7.75	7.08
volume	0826	1.75	64.5	7.70	7.02
2.28 gal	0830	2.30	64.7	7.68	7.02

Sample time:

Sample for: (circle)

TPHg TPHd TPHmo

BTEX MTBE 8010

Other:

Sampling Method:

Dedicated / Disposable bailer

Purging Method:

PVC bailer / Pump

COMMENTS: color, turbidity, recharge, etc.

Greenish-gray, low → Mod Turb, good HC odor

WELL No.	TIME (24-hr)	VOLUME (gal)	TEMP. (deg. F.)	COND. (µS/cm)	pH
Calc. purge					
volume					

Sample time:

Sample for: (circle)

TPHg TPHd TPHmo

BTEX MTBE 8010

Other:

Sampling Method:

Dedicated / Disposable bailer

Purging Method:

PVC bailer / Pump

COMMENTS: color, turbidity, recharge, etc.

BLUE ROCK ENVIRONMENTAL, INC.

1169 Chess Drive, Foster City, CA 94404 Phone (650) 522-9292 Fax (650) 522-9259

Date: 1-25-14

Technician: LT

Job No.: ASE-1

WELL ID: VP-1		Manifold ID#:	
~~Purge~~ Suma ID#: Pump	Volume:		Start Presure:
Sample Suma ID#: 4290 5	Volume: 1L		Start Presure: 30 "Hg
Shut-in Test Start Time/Pressure: 30"Hg@905		Shut-in Test End Time/Pressure: 940/30"	

	Time (24 Hr)	Pre-Regulator Presure (-"H_2O)Hg	Post-Regulator Presure (-"Hg)	He Tracer (%)
Start Purge	0950	25		NA
1L Purged	0957	25		NA
Start	1008	30		6.1%
SAMPLE	1010	21		5.7%
	1012	15		5.5%
	1014	9		5.3%
end	1015	5		5.3%

Notes:

Date: 1/25/14
Technician: LT
Job No.: ASE-1

WELL ID: VP-2		Manifold ID#:	
~~Purge Suma ID#~~: Pump	Volume:	Start Presure:	
Sample Suma ID#: 4292	Volume: 1L	Start Presure: 30 + "Hg	
Shut-in Test Start Time/Pressure: 30"@ 914		Shut-in Test End Time/Pressure: 944/30" Hg Pass	

	Time (24 Hr)	Pre-Regulator Presure (-"H_2O)	Post-Regulator Presure (-"Hg)	He Tracer (%)
start purge	1001	25"		
~1L Purged	1008	25"		
Start SAMPLE	1021	30"		7.1
	1024	19"		6.7
	1026	13"		6.1
End	1028	5"		

Notes:

Date: 1-25-14

Technician: LT

Job No.: ASE-1

WELL ID: VP-3		Manifold ID#:	
~~Purge Suma ID#: VP3B~~ Pump	Volume:		Start Presure:
Sample Suma ID#: 4156	Volume: 1L		Start Presure: 30
Shut-in Test Start Time/Pressure: 30"@ 919		Shut-in Test End Time/Pressure: 946/30" Pass	

	Time (24 Hr)	Pre-Regulator Presure (-"H_2O)	Post-Regulator Presure (-"Hg)	He Tracer (%)
Start Purge	1019	25	[illegible]	
~1L Purged	1026	25		
Start	1032	30		6.7
SAMPLE	1034	23		6.7
	1036	14		6.8
	1038	8		6.4
End	1039	5		6.4

Notes:

Report Number : 87112
Date : 01/17/2014

Laboratory Results

Brian Gwinn
Blue Rock Environmental, Inc.
1169 Chess Drive Suite C
Foster City, CA 94404

Subject : 2 Soil 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 2003 NELAC and 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 Kiff Analytical, LLC. Kiff Analytical, LLC is certified by the State of California under the Environmental Laboratory Accreditation Program (ELAP), lab # 08263CA.
If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 87112
Date : 01/17/2014

Subject : 2 Soil Samples
Project Name : Terradev 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 sample that was spiked. Since the LCS recoveries were within control limits, no data are flagged.

KIFF Analytical LLC

Report Number : 87112
Date : 01/17/2014

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

Sample : **B-6-6'** Matrix : Soil Lab Number : 87112-01
Sample Date :01/11/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**0.13**	0.050	mg/Kg	EPA 8260B	01/15/14 20:19
Toluene	**8.0**	0.050	mg/Kg	EPA 8260B	01/15/14 20:19
Ethylbenzene	**12**	0.050	mg/Kg	EPA 8260B	01/15/14 20:19
Total Xylenes	**91**	0.25	mg/Kg	EPA 8260B	01/16/14 14:49
Methyl-t-butyl ether (MTBE)	< 0.050	0.050	mg/Kg	EPA 8260B	01/15/14 20:19
Tert-Butanol	< 0.25	0.25	mg/Kg	EPA 8260B	01/15/14 20:19
TPH as Gasoline	**1700**	25	mg/Kg	EPA 8260B	01/16/14 14:49
1,2-Dichloroethane	< 0.050	0.050	mg/Kg	EPA 8260B	01/15/14 20:19
1,2-Dibromoethane	< 0.050	0.050	mg/Kg	EPA 8260B	01/15/14 20:19
1,2-Dichloroethane-d4 (Surr)	102		% Recovery	EPA 8260B	01/15/14 20:19
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	01/15/14 20:19
2-Bromochlorobenzene (Surr)	89.3		% Recovery	EPA 8260B	01/15/14 20:19
TPH as Diesel	**340**	1.0	mg/Kg	M EPA 8015	01/15/14 12:31
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
TPH as Diesel (Silica Gel)	**350**	1.0	mg/Kg	M EPA 8015	01/15/14 13:29
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
Octacosane (Diesel Surrogate)	97.1		% Recovery	M EPA 8015	01/15/14 12:31
Octacosane (Silica Gel Surr)	110		% Recovery	M EPA 8015	01/15/14 13:29

KIFF Analytical LLC

Report Number : 87112

Date : 01/17/2014

Project Name : **Terradev Jefferson LLC**

Project Number : **ASE-1**

Sample : **B-6-10.5'** Matrix : Soil Lab Number : 87112-02

Sample Date :01/11/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**4.1**	0.25	mg/Kg	EPA 8260B	01/15/14 20:57
Toluene	**48**	0.25	mg/Kg	EPA 8260B	01/15/14 20:57
Ethylbenzene	**26**	0.25	mg/Kg	EPA 8260B	01/15/14 20:57
Total Xylenes	**130**	0.25	mg/Kg	EPA 8260B	01/15/14 20:57
Methyl-t-butyl ether (MTBE)	< 0.25	0.25	mg/Kg	EPA 8260B	01/15/14 20:57
Tert-Butanol	< 1.5	1.5	mg/Kg	EPA 8260B	01/15/14 20:57
TPH as Gasoline	**1500**	25	mg/Kg	EPA 8260B	01/15/14 20:57
1,2-Dichloroethane	< 0.25	0.25	mg/Kg	EPA 8260B	01/15/14 20:57
1,2-Dibromoethane	< 0.25	0.25	mg/Kg	EPA 8260B	01/15/14 20:57
1,2-Dichloroethane-d4 (Surr)	106		% Recovery	EPA 8260B	01/15/14 20:57
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	01/15/14 20:57
2-Bromochlorobenzene (Surr)	91.3		% Recovery	EPA 8260B	01/15/14 20:57
TPH as Diesel	**280**	1.0	mg/Kg	M EPA 8015	01/15/14 13:00
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
TPH as Diesel (Silica Gel)	**280**	1.0	mg/Kg	M EPA 8015	01/15/14 18:23
(Note: Hydrocarbons are lower-boiling than typical Diesel Fuel.)					
Octacosane (Diesel Surrogate)	105		% Recovery	M EPA 8015	01/15/14 13:00
Octacosane (Silica Gel Surr)	113		% Recovery	M EPA 8015	01/15/14 18:23

Report Number : 87112

Date : 01/17/2014

QC Report : Method Blank Data

Project Name : **Terradev 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	01/15/2014
TPH as Diesel (Silica Gel)	< 1.0	1.0	mg/Kg	M EPA 8015	01/15/2014
Octacosane (Diesel Surrogate)	86.0		%	M EPA 8015	01/15/2014
Octacosane (Silica Gel Surr)	114		%	M EPA 8015	01/15/2014
Benzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/15/2014
Ethylbenzene	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/15/2014
Toluene	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/15/2014
Total Xylenes	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/15/2014
Methyl-t-butyl ether (MTBE)	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/15/2014
Tert-Butanol	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/15/2014
TPH as Gasoline	< 1.0	1.0	mg/Kg	EPA 8260B	01/15/2014
1,2-Dibromoethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/15/2014
1,2-Dichloroethane	< 0.0050	0.0050	mg/Kg	EPA 8260B	01/15/2014
1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	01/15/2014
Toluene - d8 (Surr)	100		%	EPA 8260B	01/15/2014

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 87112

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 01/17/2014

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														
	87116-01	500	19.8	19.7	656	239	mg/Kg	M EPA 8015	1/15/14	**781**	**0.00**	**200**	60-140	25
TPH-D (Si Gel)														
	87116-01	440	19.8	19.7	650	242	mg/Kg	M EPA 8015	1/15/14	**1080**	**0.00**	**200**	60-140	25
1,2-Dibromoethane														
	87107-18	<0.0050	0.0400	0.0398	0.0238	0.0235	mg/Kg	EPA 8260B	1/15/14	**59.5**	**59.1**	0.664	70.0-130	25
1,2-Dichloroethane														
	87107-18	<0.0050	0.0397	0.0394	0.0232	0.0260	mg/Kg	EPA 8260B	1/15/14	**58.6**	**65.8**	11.7	70.0-130	25
Benzene														
	87107-18	<0.0050	0.0397	0.0394	0.0202	0.0298	mg/Kg	EPA 8260B	1/15/14	**50.9**	75.6	**39.0**	70.0-130	25
Ethylbenzene														
	87107-18	<0.0050	0.0397	0.0394	0.0191	0.0287	mg/Kg	EPA 8260B	1/15/14	**48.2**	72.9	**40.7**	70.0-130	25
Methyl-t-butyl ether														
	87107-18	<0.0050	0.0396	0.0393	0.0214	0.0227	mg/Kg	EPA 8260B	1/15/14	**54.2**	**57.8**	6.45	60.0-130	25
P + M Xylene														
	87107-18	<0.0050	0.0397	0.0394	0.0191	0.0279	mg/Kg	EPA 8260B	1/15/14	**48.2**	70.7	**37.8**	70.0-130	25
Tert-Butanol														
	87107-18	<0.0050	0.198	0.197	0.0861	0.0686	mg/Kg	EPA 8260B	1/15/14	**43.4**	**34.8**	22.0	70.0-130	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 87112

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 01/17/2014

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
Toluene														
	87107-18	<0.0050	0.0397	0.0394	0.0204	0.0290	mg/Kg	EPA 8260B	1/15/14	**51.5**	73.7	**35.3**	70.0-130	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 87112

QC Report : Laboratory Control Sample (LCS)

Date : 01/17/2014

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	20.0	mg/Kg	M EPA 8015	1/15/14	87.7	70-130
TPH-D (Si Gel)	20.0	mg/Kg	M EPA 8015	1/15/14	98.4	70-130
1,2-Dibromoethane	0.0403	mg/Kg	EPA 8260B	1/15/14	106	70.0-130
1,2-Dichloroethane	0.0400	mg/Kg	EPA 8260B	1/15/14	107	70.0-130
Benzene	0.0400	mg/Kg	EPA 8260B	1/15/14	92.6	70.0-130
Ethylbenzene	0.0400	mg/Kg	EPA 8260B	1/15/14	90.6	70.0-130
Methyl-t-butyl ether	0.0399	mg/Kg	EPA 8260B	1/15/14	103	60.0-130
P + M Xylene	0.0400	mg/Kg	EPA 8260B	1/15/14	90.8	70.0-130
Tert-Butanol	0.200	mg/Kg	EPA 8260B	1/15/14	90.5	70.0-130
Toluene	0.0400	mg/Kg	EPA 8260B	1/15/14	93.6	70.0-130

KIFF ANALYTICAL, LLC

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KIFF Analytical LLC

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

SRG # / Lab No. 87112

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Brian Gwinn	California EDF Report? ☑ Yes ☐ No
Company / Address: Blue Rock Environmental 1169 Chess Dr. Ste. C, Foster City, CA	Sampling Company Log Code: BRSF
Phone Number: (650) 522-9292	Global ID: T10000001072
Fax Number:	EDF Deliverable To (Email Address): brian@bluerockenv.com
Project #: ASE-1 / P.O. #:	Bill to: Blue Rock Env.
Project Name: Terradev Jefferson LLC	Sampler Print Name: Loren Taylor
	Sampler Signature:
Project Address: 645 4th Street, Oakland, CA	

Sample Designation	Date	Sampling Time	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air	MTBE @ 0.5 ppb (EPA 8260B)	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (MTBE, DIPE, ETBE, TAME, TBA) (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	CAM 17 Metals (EPA 200.7 / 6010)	5 Waste Oil Metals (Cd,Cr,Ni,Pb,Zn) (EPA 200.7 / 6010)	Mercury (EPA 245.1 / 7470 / 7471)	Total Lead (EPA 200.7 / 6010)	W.E.T. Lead (STLC)	MTBE & TBA by 8260B				TAT	For Lab Use Only
															PLEASE CIRCLE METHOD																						
B-6-6'	1/11/2014	~~9:51~~ 9:07		1						X			X		X	X	X			X				X							X				1 wk	01
B-6-10.5'	1/11/2014	~~9:06~~ 9:15		1						X			X		X	X	X			X				X							X				1 wk	02
		BG													BG																					

Relinquished by:	Date	Time	Received by:	Remarks: Please Perform TPH as Diesel w/ silica-gell clean-up if detected w/out silica-gel clean-up. Report both values if applicable.
Relinquished by:	Date	Time	Received by:	
Relinquished by:	Date 011414	Time 1151	Received by Laboratory: Kiff Analytical	

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev. 05/2011

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

SRG #: 87112

Sample Receipt	Initials/Date: RLM 011414	Storage Time: 1522	Sample Login	Initials/Date: TJB011414

TAT: ☒ Standard ☐ Rush ☐ Split ☐ None **Method of Receipt:** ☒ Courier ☐ Over-the-counter ☐ Shipped

Temp °C 1.8 ☐ N/A Therm ID IR-1 Time 1520 Coolant present ☒ Yes ☐ No ☐ Water ☐ Temp Excursion

For Shipments Only: Cooler Receipt Initials/Date/Time: Custody Seals ☐ N/A ☐ Intact ☐ Broken

Chain-of-Custody:	Yes	No
Is COC present?	X	
Is COC signed by relinquisher?	X	
Is COC dated by relinquisher?		X
Is the sampler's name on the COC?	X	
Are there analyses or hold for all samples?	X	

Documented on	COC	Labels	Discrepancies:
Sample ID	X	X	
Project ID	X	X	
Sample Date	X	X	
Sample Time	X	X	
Does COC match project history?	☒ N/A	☐ Yes	☐ No

Samples:	N/A	Yes	No
Are sample custody seals intact?	X		
Are sample containers intact?		X	
Is preservation documented?	X		
In-house Analysis:	**N/A**	**Yes**	**No**
Are preservatives acceptable?	X		
Are samples within holding time?		X	
Are sample container types correct?		X	
Is there adequate sample volume?		X	

Comments:

Receipt Details:

Matrix	Container Type	# of Containers
So	Sleeve	2

CS Required: ☐

Proceed With Analysis: ☐ YES ☐ NO Init/Date:
Client Communication:

KIFF Analytical LLC

Report Number : 87114
Date : 01/20/2014

Laboratory Results

Brian Gwinn
Blue Rock Environmental, Inc.
1169 Chess Drive Suite C
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 2003 NELAC and 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 Kiff Analytical, LLC. Kiff Analytical, LLC is certified by the State of California under the Environmental Laboratory Accreditation Program (ELAP), lab # 08263CA.
If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 87114

Date : 01/20/2014

Project Name : **Terradev Jefferson LLC**

Project Number : **ASE-1**

Sample : **DPE-1** Matrix : Water Lab Number : 87114-01

Sample Date :01/10/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**14000**	25	ug/L	EPA 8260B	01/18/14 01:17
Toluene	**13000**	25	ug/L	EPA 8260B	01/18/14 01:17
Ethylbenzene	**2100**	25	ug/L	EPA 8260B	01/18/14 01:17
Total Xylenes	**12000**	25	ug/L	EPA 8260B	01/18/14 01:17
Methyl-t-butyl ether (MTBE)	**270**	25	ug/L	EPA 8260B	01/18/14 01:17
Tert-Butanol	**200**	150	ug/L	EPA 8260B	01/18/14 01:17
TPH as Gasoline	**98000**	2500	ug/L	EPA 8260B	01/18/14 01:17
1,2-Dichloroethane	**270**	25	ug/L	EPA 8260B	01/18/14 01:17
1,2-Dibromoethane	< 25	25	ug/L	EPA 8260B	01/18/14 01:17
1,2-Dichloroethane-d4 (Surr)	98.9		% Recovery	EPA 8260B	01/18/14 01:17
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	01/18/14 01:17
TPH as Diesel	**1600**	50	ug/L	M EPA 8015	01/15/14 16:57
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
TPH as Diesel (Silica Gel)	**56**	50	ug/L	M EPA 8015	01/16/14 08:13
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
Octacosane (Diesel Surrogate)	116		% Recovery	M EPA 8015	01/15/14 16:57
Octacosane (Silica Gel Surr)	120		% Recovery	M EPA 8015	01/16/14 08:13

KIFF Analytical LLC

Report Number : 87114

Date : 01/20/2014

Project Name : **Terradev Jefferson LLC**

Project Number : **ASE-1**

Sample : **DPE-2** Matrix : Water Lab Number : 87114-02

Sample Date :01/10/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**17000**	30	ug/L	EPA 8260B	01/18/14 01:51
Toluene	**15000**	30	ug/L	EPA 8260B	01/18/14 01:51
Ethylbenzene	**2400**	20	ug/L	EPA 8260B	01/17/14 03:39
Total Xylenes	**11000**	20	ug/L	EPA 8260B	01/17/14 03:39
Methyl-t-butyl ether (MTBE)	**120**	20	ug/L	EPA 8260B	01/17/14 03:39
Tert-Butanol	**100**	90	ug/L	EPA 8260B	01/17/14 03:39
TPH as Gasoline	**100000**	2000	ug/L	EPA 8260B	01/17/14 03:39
1,2-Dichloroethane	**220**	20	ug/L	EPA 8260B	01/17/14 03:39
1,2-Dibromoethane	**27**	20	ug/L	EPA 8260B	01/17/14 03:39
1,2-Dichloroethane-d4 (Surr)	99.8		% Recovery	EPA 8260B	01/17/14 03:39
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	01/17/14 03:39
TPH as Diesel	**2800**	50	ug/L	M EPA 8015	01/15/14 17:32
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	01/16/14 08:47
Octacosane (Diesel Surrogate)	113		% Recovery	M EPA 8015	01/15/14 17:32
Octacosane (Silica Gel Surr)	111		% Recovery	M EPA 8015	01/16/14 08:47

Report Number : 87114

Date : 01/20/2014

QC Report : Method Blank Data

Project 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	01/15/2014
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	01/15/2014
Octacosane (Diesel Surrogate)	108		%	M EPA 8015	01/15/2014
Octacosane (Silica Gel Surr)	114		%	M EPA 8015	01/15/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/16/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/16/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	01/16/2014
Toluene - d8 (Surr)	100		%	EPA 8260B	01/16/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/17/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/17/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
1,2-Dichloroethane-d4 (Surr)	94.9		%	EPA 8260B	01/17/2014
Toluene - d8 (Surr)	101		%	EPA 8260B	01/17/2014

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 87114

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 01/20/2014

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														
	BLANK	<50	1000	1000	972	974	ug/L	M EPA 8015	1/15/14	97.2	97.4	0.240	70-130	25
TPH-D (Si Gel)														
	BLANK	<50	1000	1000	819	797	ug/L	M EPA 8015	1/15/14	81.9	79.7	2.70	70-130	25
1,2-Dibromoethane														
	87099-17	<0.50	40.3	40.2	40.1	40.0	ug/L	EPA 8260B	1/16/14	99.4	99.3	0.130	70.0-130	25
1,2-Dichloroethane														
	87099-17	<0.50	40.0	39.9	42.6	41.6	ug/L	EPA 8260B	1/16/14	106	104	2.14	70.0-130	25
Ethylbenzene														
	87099-17	<0.50	40.0	39.9	41.0	40.8	ug/L	EPA 8260B	1/16/14	102	102	0.276	70.0-130	25
Methyl-t-butyl ether														
	87099-17	<0.50	39.9	39.8	40.4	39.1	ug/L	EPA 8260B	1/16/14	101	98.2	3.15	70.0-130	25
P + M Xylene														
	87099-17	<0.50	40.0	39.9	40.6	39.9	ug/L	EPA 8260B	1/16/14	101	99.9	1.54	70.0-130	25
Tert-Butanol														
	87099-17	<5.0	200	200	186	188	ug/L	EPA 8260B	1/16/14	93.1	94.1	1.10	70.0-130	25
1,2-Dibromoethane														
	87142-02	<0.50	40.2	40.1	39.0	42.2	ug/L	EPA 8260B	1/17/14	97.1	105	8.06	70.0-130	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 87114

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 01/20/2014

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
1,2-Dichloroethane														
	87142-02	<0.50	39.9	39.8	42.1	43.6	ug/L	EPA 8260B	1/17/14	106	110	3.93	70.0-130	25
Benzene														
	87142-02	<0.50	39.9	39.8	40.7	40.1	ug/L	EPA 8260B	1/17/14	102	101	1.22	70.0-130	25
Ethylbenzene														
	87142-02	<0.50	39.9	39.8	40.6	40.3	ug/L	EPA 8260B	1/17/14	102	101	0.189	70.0-130	25
Methyl-t-butyl ether														
	87142-02	<0.50	39.8	39.6	39.7	40.0	ug/L	EPA 8260B	1/17/14	99.8	101	1.24	70.0-130	25
P + M Xylene														
	87142-02	<0.50	39.9	39.8	39.3	39.4	ug/L	EPA 8260B	1/17/14	98.4	99.0	0.539	70.0-130	25
Tert-Butanol														
	87142-02	<5.0	200	199	190	185	ug/L	EPA 8260B	1/17/14	95.4	93.2	2.34	70.0-130	25
Toluene														
	87142-02	<0.50	39.9	39.8	40.5	40.0	ug/L	EPA 8260B	1/17/14	101	101	0.840	70.0-130	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

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
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	1/16/14	103	70.0-130
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	1/16/14	110	70.0-130
Ethylbenzene	40.0	ug/L	EPA 8260B	1/16/14	103	70.0-130
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	1/16/14	102	70.0-130
P + M Xylene	40.0	ug/L	EPA 8260B	1/16/14	103	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	1/16/14	96.0	70.0-130
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	1/17/14	99.7	70.0-130
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	1/17/14	104	70.0-130
Benzene	40.0	ug/L	EPA 8260B	1/17/14	98.1	70.0-130
Ethylbenzene	40.0	ug/L	EPA 8260B	1/17/14	98.1	70.0-130
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	1/17/14	106	70.0-130
P + M Xylene	40.0	ug/L	EPA 8260B	1/17/14	96.8	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	1/17/14	92.1	70.0-130
Toluene	40.0	ug/L	EPA 8260B	1/17/14	100	70.0-130

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

KIFF Analytical LLC

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

SRG # / Lab No. 87114

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Brian Gwinn	California EDF Report? ☑ Yes ☐ No
Company / Address: Blue Rock Environmental 1169 Chess Dr. Ste. C, Foster City, CA	Sampling Company Log Code: BRSF
Phone Number: (650) 522-9292	Global ID: T10000001072
Fax Number:	EDF Deliverable To (Email Address): brian@bluerockenv.com
Project #: ASE-1 / P.O. #:	Bill to: Blue Rock Env.
Project Name: Terradev Jefferson LLC	Sampler Print Name: Loren Taylor
	Sampler Signature:
Project Address: 645 4th Street, Oakland, CA	

Sample Designation	Date	Time	Sampling	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative:	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air	MTBE @ 0.5 ppb (EPA 8260B)	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (MTBE, DIPE, ETBE, TAME, TBA) (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	CAM 17 Metals (EPA 200.7 / 6010)	5 Waste Oil Metals (Cd,Cr,Ni,Pb,Zn) (EPA 200.7 / 6010)	Mercury (EPA 245.1 / 7470 / 7471)	Total Lead (EPA 200.7 / 6010)	W.E.T. Lead (STLC)	MTBE & TBA by 8260B				TAT	For Lab Use Only
																	PLEASE CIRCLE METHOD																						
DPE-1	1/10/2014	9:07		6					6					X			X	X	X			X				X							X				1 wk	01
DPE-2	1/10/2014	9:15		6					6					X			X	X	X			X				X							X				1 wk	02

Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date: 011414	Time: 1151	Received by Laboratory: Ron McLee Kiff Analytical

Remarks:
Please Perform TPH as Diesel w/ silica-gell clean-up if detected w/out silica-gel clean-up. Report both values if applicable.

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev. 05/2011

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

SRG #: 87114

Sample Receipt	Initials/Date: RLM 011414	Storage Time: 1518	Sample Login	Initials/Date: TJB 011414

TAT: ☒ Standard ☐ Rush ☐ Split ☐ None **Method of Receipt**: ☒ Courier ☐ Over-the-counter ☐ Shipped

Temp °C 2-6 ☐ N/A Therm ID IR-1 Time 1516 Coolant present ☒ Yes ☐ No ☐ Water ☐ Temp Excursion

For Shipments Only: Cooler Receipt Initials/Date/Time: Custody Seals ☐ N/A ☐ Intact ☐ Broken

Chain-of-Custody:	Yes	No
Is COC present?	X	
Is COC signed by relinquisher?	X	
Is COC dated by relinquisher?		X
Is the sampler's name on the COC?	X	
Are there analyses or hold for all samples?	X	

Documented on	COC	Labels	Discrepancies:
Sample ID	X	X	
Project ID	X	X	
Sample Date	X	X	
Sample Time	X	X	
Does COC match project history?	☒ N/A	☐ Yes	☐ No

Samples:	N/A	Yes	No
Are sample custody seals intact?	X		
Are sample containers intact?		X	
Is preservation documented?		X	
In-house Analysis:	**N/A**	**Yes**	**No**
Are preservatives acceptable?		X	
Are samples within holding time?		X	
Are sample container types correct?		X	
Is there adequate sample volume?		X	

Comments:

Receipt Details:

Matrix	Container Type	# of Containers
WA	VoA	12

CS Required: ☐

Proceed With Analysis: ☐ YES ☐ NO Init/Date:
Client Communication:

KIFF Analytical LLC

Report Number : 87115
Date : 01/21/2014

Laboratory Results

Brian Gwinn
Blue Rock Environmental, Inc.
1169 Chess Drive Suite C
Foster City, CA 94404

Subject : 4 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 2003 NELAC and 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 Kiff Analytical, LLC. Kiff Analytical, LLC is certified by the State of California under the Environmental Laboratory Accreditation Program (ELAP), lab # 08263CA.
If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Troy G. Turpen

Troy Turpen

KIFF Analytical LLC

Report Number : 87115
Date : 01/21/2014

Subject : 4 Water Samples
Project Name : Terradev Jefferson LLC
Project Number : ASE-1

Case Narrative

Repeat analysis of sample B-6 by method EPA 8260B yielded inconsistent results. The concentrations appear to vary between the bottles. The highest valid result is reported.

Tert-Butanol result for sample B-6 may be biased slightly high and is flagged with a 'J'. A fraction of MtBE (typically less than 1%) converts to Tert-Butanol during the analysis of water samples. We consider this conversion effect to be mathematically significant in samples that contain MtBE/Tert-Butanol in ratios of over 20:1.

KIFF Analytical LLC

Report Number : 87115
Date : 01/21/2014

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

Sample : **B-3** Matrix : Water Lab Number : 87115-01

Sample Date :01/10/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/17/14 22:16
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/17/14 22:16
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/17/14 22:16
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/17/14 22:16
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/17/14 22:16
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/17/14 22:16
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/17/14 22:16
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/17/14 22:16
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/17/14 22:16
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	01/17/14 22:16
Toluene - d8 (Surr)	101		% Recovery	EPA 8260B	01/17/14 22:16
TPH as Diesel	**58**	50	ug/L	M EPA 8015	01/15/14 18:07
(Note: Discrete peaks in Diesel range, atypical for Diesel Fuel.)					
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	01/16/14 10:31
Octacosane (Diesel Surrogate)	104		% Recovery	M EPA 8015	01/15/14 18:07
Octacosane (Silica Gel Surr)	111		% Recovery	M EPA 8015	01/16/14 10:31

KIFF Analytical LLC

Report Number : 87115
Date : 01/21/2014

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

Sample : **B-4** Matrix : Water Lab Number : 87115-02
Sample Date :01/10/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/16/14 13:02
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/16/14 13:02
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/16/14 13:02
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/16/14 13:02
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/16/14 13:02
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/16/14 13:02
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/16/14 13:02
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/16/14 13:02
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/16/14 13:02
1,2-Dichloroethane-d4 (Surr)	101		% Recovery	EPA 8260B	01/16/14 13:02
Toluene - d8 (Surr)	94.4		% Recovery	EPA 8260B	01/16/14 13:02
TPH as Diesel	**67**	50	ug/L	M EPA 8015	01/15/14 18:42
(Note: Discrete peaks in Diesel range, atypical for Diesel Fuel.)					
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	01/16/14 11:05
Octacosane (Diesel Surrogate)	107		% Recovery	M EPA 8015	01/15/14 18:42
Octacosane (Silica Gel Surr)	107		% Recovery	M EPA 8015	01/16/14 11:05

KIFF Analytical LLC

Report Number : 87115
Date : 01/21/2014

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

Sample : **B-5** Matrix : Water Lab Number : 87115-03
Sample Date :01/10/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**1.2**	0.50	ug/L	EPA 8260B	01/17/14 22:50
Toluene	**1.4**	0.50	ug/L	EPA 8260B	01/17/14 22:50
Ethylbenzene	**0.65**	0.50	ug/L	EPA 8260B	01/17/14 22:50
Total Xylenes	**4.5**	0.50	ug/L	EPA 8260B	01/17/14 22:50
Methyl-t-butyl ether (MTBE)	**2.7**	0.50	ug/L	EPA 8260B	01/17/14 22:50
Tert-Butanol	**200**	5.0	ug/L	EPA 8260B	01/17/14 22:50
TPH as Gasoline	**110**	50	ug/L	EPA 8260B	01/17/14 22:50
1,2-Dichloroethane	**43**	0.50	ug/L	EPA 8260B	01/17/14 22:50
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/17/14 22:50
1,2-Dichloroethane-d4 (Surr)	100		% Recovery	EPA 8260B	01/17/14 22:50
Toluene - d8 (Surr)	100		% Recovery	EPA 8260B	01/17/14 22:50
TPH as Diesel	**110**	50	ug/L	M EPA 8015	01/15/14 19:17
(Note: Discrete peaks in Diesel range, atypical for Diesel Fuel.)					
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	01/16/14 11:40
Octacosane (Diesel Surrogate)	107		% Recovery	M EPA 8015	01/15/14 19:17
Octacosane (Silica Gel Surr)	110		% Recovery	M EPA 8015	01/16/14 11:40

KIFF Analytical LLC

Report Number : 87115
Date : 01/21/2014

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

Sample : **B-6** Matrix : Water Lab Number : 87115-04
Sample Date :01/11/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date/Time Analyzed
Benzene	**1800**	20	ug/L	EPA 8260B	01/17/14 02:59
Toluene	**7600**	20	ug/L	EPA 8260B	01/17/14 02:59
Ethylbenzene	**2400**	20	ug/L	EPA 8260B	01/17/14 02:59
Total Xylenes	**12000**	20	ug/L	EPA 8260B	01/17/14 02:59
Methyl-t-butyl ether (MTBE)	**5100**	25	ug/L	EPA 8260B	01/20/14 15:59
Tert-Butanol	**180 J**	150	ug/L	EPA 8260B	01/20/14 15:59
TPH as Gasoline	**84000**	2000	ug/L	EPA 8260B	01/17/14 02:59
1,2-Dichloroethane	**110**	20	ug/L	EPA 8260B	01/17/14 02:59
1,2-Dibromoethane	< 20	20	ug/L	EPA 8260B	01/17/14 02:59
1,2-Dichloroethane-d4 (Surr)	96.9		% Recovery	EPA 8260B	01/17/14 02:59
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	01/17/14 02:59
TPH as Diesel	**5200**	50	ug/L	M EPA 8015	01/15/14 19:52
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
TPH as Diesel (Silica Gel)	**360**	50	ug/L	M EPA 8015	01/16/14 12:15
(Note: Lower boiling hydrocarbons present, atypical for Diesel Fuel.)					
Octacosane (Diesel Surrogate)	115		% Recovery	M EPA 8015	01/15/14 19:52
Octacosane (Silica Gel Surr)	116		% Recovery	M EPA 8015	01/16/14 12:15

Report Number : 87115

Date : 01/21/2014

QC Report : Method Blank Data

Project 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	01/15/2014
TPH as Diesel (Silica Gel)	< 50	50	ug/L	M EPA 8015	01/15/2014
Octacosane (Diesel Surrogate)	108		%	M EPA 8015	01/15/2014
Octacosane (Silica Gel Surr)	114		%	M EPA 8015	01/15/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/16/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
1,2-Dichloroethane-d4 (Surr)	102		%	EPA 8260B	01/16/2014
Toluene - d8 (Surr)	100		%	EPA 8260B	01/16/2014
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/17/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/17/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/17/2014
1,2-Dichloroethane-d4 (Surr)	94.9		%	EPA 8260B	01/17/2014
Toluene - d8 (Surr)	101		%	EPA 8260B	01/17/2014

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Toluene	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/16/2014
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	01/16/2014
1,2-Dibromoethane	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
1,2-Dichloroethane	< 0.50	0.50	ug/L	EPA 8260B	01/16/2014
1,2-Dichloroethane-d4 (Surr)	101		%	EPA 8260B	01/16/2014
Toluene - d8 (Surr)	98.2		%	EPA 8260B	01/16/2014
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	01/20/2014
Tert-Butanol	< 5.0	5.0	ug/L	EPA 8260B	01/20/2014

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 87115

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 01/21/2014

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														
	BLANK	<50	1000	1000	972	974	ug/L	M EPA 8015	1/15/14	97.2	97.4	0.240	70-130	25
TPH-D (Si Gel)														
	BLANK	<50	1000	1000	819	797	ug/L	M EPA 8015	1/15/14	81.9	79.7	2.70	70-130	25
1,2-Dibromoethane														
	87099-17	<0.50	40.3	40.2	40.1	40.0	ug/L	EPA 8260B	1/16/14	99.4	99.3	0.130	70.0-130	25
1,2-Dichloroethane														
	87099-17	<0.50	40.0	39.9	42.6	41.6	ug/L	EPA 8260B	1/16/14	106	104	2.14	70.0-130	25
Benzene														
	87099-17	<0.50	40.0	39.9	41.1	40.5	ug/L	EPA 8260B	1/16/14	103	101	1.34	70.0-130	25
Ethylbenzene														
	87099-17	<0.50	40.0	39.9	41.0	40.8	ug/L	EPA 8260B	1/16/14	102	102	0.276	70.0-130	25
P + M Xylene														
	87099-17	<0.50	40.0	39.9	40.6	39.9	ug/L	EPA 8260B	1/16/14	101	99.9	1.54	70.0-130	25
Toluene														
	87099-17	<0.50	40.0	39.9	40.9	41.1	ug/L	EPA 8260B	1/16/14	102	103	0.753	70.0-130	25
1,2-Dibromoethane														
	87142-02	<0.50	40.2	40.1	39.0	42.2	ug/L	EPA 8260B	1/17/14	97.1	105	8.06	70.0-130	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 87115

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 01/21/2014

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
1,2-Dichloroethane														
	87142-02	<0.50	39.9	39.8	42.1	43.6	ug/L	EPA 8260B	1/17/14	106	110	3.93	70.0-130	25
Benzene														
	87142-02	<0.50	39.9	39.8	40.7	40.1	ug/L	EPA 8260B	1/17/14	102	101	1.22	70.0-130	25
Ethylbenzene														
	87142-02	<0.50	39.9	39.8	40.6	40.3	ug/L	EPA 8260B	1/17/14	102	101	0.189	70.0-130	25
Methyl-t-butyl ether														
	87142-02	<0.50	39.8	39.6	39.7	40.0	ug/L	EPA 8260B	1/17/14	99.8	101	1.24	70.0-130	25
P + M Xylene														
	87142-02	<0.50	39.9	39.8	39.3	39.4	ug/L	EPA 8260B	1/17/14	98.4	99.0	0.539	70.0-130	25
Tert-Butanol														
	87142-02	<5.0	200	199	190	185	ug/L	EPA 8260B	1/17/14	95.4	93.2	2.34	70.0-130	25
Toluene														
	87142-02	<0.50	39.9	39.8	40.5	40.0	ug/L	EPA 8260B	1/17/14	101	101	0.840	70.0-130	25
1,2-Dibromoethane														
	87099-22	<0.50	40.3	40.3	39.1	38.7	ug/L	EPA 8260B	1/16/14	97.0	95.9	1.12	70.0-130	25
1,2-Dichloroethane														
	87099-22	<0.50	40.0	40.0	46.4	45.3	ug/L	EPA 8260B	1/16/14	116	113	2.35	70.0-130	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

Report Number : 87115

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 01/21/2014

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
Benzene														
	87099-22	<0.50	40.0	40.0	42.6	41.0	ug/L	EPA 8260B	1/16/14	106	102	3.77	70.0-130	25
Ethylbenzene														
	87099-22	<0.50	40.0	40.0	39.3	38.6	ug/L	EPA 8260B	1/16/14	98.4	96.4	2.03	70.0-130	25
Methyl-t-butyl ether														
	87099-22	<0.50	39.9	39.9	44.6	44.4	ug/L	EPA 8260B	1/16/14	112	111	0.411	70.0-130	25
P + M Xylene														
	87099-22	<0.50	40.0	40.0	36.1	35.4	ug/L	EPA 8260B	1/16/14	90.3	88.5	1.95	70.0-130	25
Tert-Butanol														
	87099-22	<5.0	200	200	200	202	ug/L	EPA 8260B	1/16/14	99.8	101	1.18	70.0-130	25
Toluene														
	87099-22	<0.50	40.0	40.0	40.8	39.2	ug/L	EPA 8260B	1/16/14	102	98.0	4.03	70.0-130	25
Methyl-t-butyl ether														
	87141-14	<0.50	39.9	39.9	42.9	41.6	ug/L	EPA 8260B	1/20/14	108	104	3.16	70.0-130	25
Tert-Butanol														
	87141-14	<5.0	200	200	200	194	ug/L	EPA 8260B	1/20/14	99.9	96.9	3.00	70.0-130	25

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

QC Report : Laboratory Control Sample (LCS)

Date : 01/21/2014

Project Name : **Terradev Jefferson LLC**

Project Number : **ASE-1**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	1/16/14	103	70.0-130
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	1/16/14	110	70.0-130
Benzene	40.0	ug/L	EPA 8260B	1/16/14	105	70.0-130
Ethylbenzene	40.0	ug/L	EPA 8260B	1/16/14	103	70.0-130
P + M Xylene	40.0	ug/L	EPA 8260B	1/16/14	103	70.0-130
Toluene	40.0	ug/L	EPA 8260B	1/16/14	105	70.0-130
1,2-Dibromoethane	40.3	ug/L	EPA 8260B	1/17/14	99.7	70.0-130
1,2-Dichloroethane	40.0	ug/L	EPA 8260B	1/17/14	104	70.0-130
Benzene	40.0	ug/L	EPA 8260B	1/17/14	98.1	70.0-130
Ethylbenzene	40.0	ug/L	EPA 8260B	1/17/14	98.1	70.0-130
Methyl-t-butyl ether	39.9	ug/L	EPA 8260B	1/17/14	106	70.0-130
P + M Xylene	40.0	ug/L	EPA 8260B	1/17/14	96.8	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	1/17/14	92.1	70.0-130
Toluene	40.0	ug/L	EPA 8260B	1/17/14	100	70.0-130
1,2-Dibromoethane	40.1	ug/L	EPA 8260B	1/16/14	92.3	70.0-130
1,2-Dichloroethane	39.8	ug/L	EPA 8260B	1/16/14	109	70.0-130
Benzene	39.8	ug/L	EPA 8260B	1/16/14	100	70.0-130
Ethylbenzene	39.8	ug/L	EPA 8260B	1/16/14	95.7	70.0-130
Methyl-t-butyl ether	39.7	ug/L	EPA 8260B	1/16/14	105	70.0-130
P + M Xylene	39.8	ug/L	EPA 8260B	1/16/14	90.2	70.0-130

Report Number : 87115

QC Report : Laboratory Control Sample (LCS)

Date : 01/21/2014

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 Gasoline	485	ug/L	EPA 8260B	1/16/14	110	70.0-130
Tert-Butanol	199	ug/L	EPA 8260B	1/16/14	96.8	70.0-130
Toluene	39.8	ug/L	EPA 8260B	1/16/14	97.4	70.0-130
Methyl-t-butyl ether	39.8	ug/L	EPA 8260B	1/20/14	104	70.0-130
Tert-Butanol	200	ug/L	EPA 8260B	1/20/14	98.6	70.0-130

KIFF ANALYTICAL, LLC

2795 2nd Street, Suite 300 Davis, CA 95618 530-297-4800

KIFF Analytical LLC

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

SRG # / Lab No. 87115

Page 1 of 1

Chain-of-Custody Record and Analysis Request

Project Contact (Hardcopy or PDF To): Brian Gwinn	California EDF Report? ☑ Yes ☐ No
Company / Address: Blue Rock Environmental 1169 Chess Dr. Ste. C, Foster City, CA	Sampling Company Log Code: BRSF
Phone Number: (650) 522-9292	Global ID: T10000001072
Fax Number:	EDF Deliverable To (Email Address): brian@bluerockenv.com
Project #: ASE-1 / P.O. #:	Bill to: Blue Rock Env.
Project Name: Terradev Jefferson LLC	Sampler Print Name: Loren Taylor
	Sampler Signature:
Project Address: 645 4th Street, Oakland, CA	

Sample Designation	Date	Time	Sampling	Container: 40 ml VOA	Container: Sleeve	Container: Poly	Container: Glass	Container: Tedlar	Container:	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative:	Matrix: Water	Matrix: Soil	Matrix: Air	Matrix:
B-3	1/10/2014	11:27		6						6				X			
B-4	1/10/2014	11:53		6						6				X			
B-5	1/10/2014	10:17		6						6				X			
B-6	1/11/2014	9:37		6						6				X			

Analysis Request

PLEASE CIRCLE METHOD

MTBE @ 0.5 ppb (EPA 8260B)	BTEX (EPA 8260B)	TPH Gas (EPA 8260B)	5 Oxygenates (MTBE, DIPE, ETBE, TAME, TBA) (EPA 8260B)	7 Oxygenates (5 oxy + EtOH, MeOH) (EPA 8260B)	Lead Scav. (1,2 DCA & 1,2 EDB) (EPA 8260B)	Volatile Halocarbons (EPA 8260B)	Volatile Organics Full List (EPA 8260B)	Volatile Organics (EPA 524.2 Drinking Water)	TPH as Diesel (EPA 8015M)	TPH as Motor Oil (EPA 8015M)	CAM 17 Metals (EPA 200.7 / 6010)	5 Waste Oil Metals (Cd,Cr,Ni,Pb,Zn) (EPA 200.7 / 6010)	Mercury (EPA 245.1 / 7470 / 7471)	Total Lead (EPA 200.7 / 6010)	W.E.T. Lead (STLC)					TAT	For Lab Use Only
X	X	X			X				X							X MTBE & TBA by 8260B.					☐ 12 hr ☐ 24 hr ☐ 48hr ☐ 72hr ☑ 1 wk	
X	X	X			X				X							X					1 wk	01
X	X	X			X				X							X					1 wk	02
X	X	X			X				X							X					1 wk	03
X	X	X			X				X							X					1 wk	04

Relinquished by:	Date	Time	Received by:
Relinquished by:	Date	Time	Received by:
Relinquished by:	Date: 011414	Time: 1151	Received by Laboratory: Ron McLee Kiff Analytical

Remarks:
Please Perform TPH as Diesel w/ silica-gell clean-up if detected with out silica-gel clean-up. Report both values if applicable.

For Lab Use Only: Sample Receipt

Temp °C	Initials	Date	Time	Therm. ID #	Coolant Present
					Yes / No

Distribution: White - Lab; Pink - Originator
Rev. 05/2011

KIFF Analytical LLC

SAMPLE RECEIPT CHECKLIST

SRG #: 87115

Sample Receipt	Initials/Date: RLM 011414	Storage Time: 1515	Sample Login	Initials/Date: TJB 011414

TAT: ☒ Standard ☐ Rush ☐ Split ☐ None **Method of Receipt:** ☒ Courier ☐ Over-the-counter ☐ Shipped

Temp °C 2.2 ☐ N/A Therm ID IR-1 Time 1510 Coolant present ☒ Yes ☐ No ☐ Water ☐ Temp Excursion

For Shipments Only: Cooler Receipt Initials/Date/Time: Custody Seals ☐ N/A ☐ Intact ☐ Broken

Chain-of-Custody:	Yes	No
Is COC present?	X	
Is COC signed by relinquisher?	X	
Is COC dated by relinquisher?		X
Is the sampler's name on the COC?	X	
Are there analyses or hold for all samples?	X	

Documented on	COC	Labels	Discrepancies:
Sample ID	X	X	
Project ID	X	X	
Sample Date	X	X	
Sample Time	X	X	
Does COC match project history?	☒ N/A	☐ Yes	☐ No

Samples:	N/A	Yes	No
Are sample custody seals intact?	X		
Are sample containers intact?		X	
Is preservation documented?		X	
In-house Analysis:	**N/A**	**Yes**	**No**
Are preservatives acceptable?		X	
Are samples within holding time?		X	
Are sample container types correct?		X	
Is there adequate sample volume?		X	

Comments: Sediment is present in all VOAs. TJB 011414 1804

Receipt Details:

Matrix	Container Type	# of Containers
WA	VOA	24

CS Required: ☐

Proceed With Analysis: ☐ YES ☐ NO Init/Date:
Client Communication:

Analytical Sciences

February 12, 2014

Loren Taylor
Blue Rock Environmental
1169 Chess Drive, Ste. C
Foster City, CA 94404

Dear Loren,

Enclosed you will find Analytical Sciences' final report 4012807 for your Terradev Jefferson LLC project. An invoice for this work is enclosed.

Should you or your client have any questions regarding this report please contact me at your convenience. We appreciate you selecting Analytical Sciences for this work and look forward to serving your analytical chemistry needs on projects in the future.

Sincerely,

Analytical Sciences

Mark A. Valentini, Ph.D.

Laboratory Director

P.O. Box 750336
Petaluma, CA 94975-0336
Telephone: (707) 769-3128

110 Liberty Street
Petaluma, CA 94952

Analytical Sciences

Report Date: February 12, 2014

Laboratory Report

Loren Taylor
Blue Rock Environmental
1169 Chess Drive, Ste. C
Foster City, CA 94404

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

Lab Project: **4012807**

This 7 page report of analytical data has been reviewed and approved for release.

Mark A. Valentini, Ph.D.

Laboratory Director

P.O. Box 750336
Petaluma, CA 94975-0336
Telephone: (707) 769-3128

110 Liberty Street
Petaluma, CA 94952

Volatile Hydrocarbons by GC/MS in Air (µg/m³)

Lab#	Sample ID	Compound Name	Result (µg/m³)		RDL (µg/m³)
4012807-01	**VP-1**	Gasoline	ND	VA	330
		1,2-Dichloroethane (EDC)	ND		10
		Benzene	ND		8.0
		Toluene	ND		9.4
		1,2-Dibromoethane (EDB)	ND		3.8
		Ethylbenzene	ND		11
		m,p-Xylene	ND		11
		o-Xylene	ND		11
		Naphthalene	ND		13
		Methyl tert-Butyl Ether (MTBE)	ND		9.0

Surrogates	Result (µg/m³)	% Recovery	Acceptance Range (%)
Dibromofluoromethane	37.5	96	70-130
4-Bromofluorobenzene	38.9	100	70-130

Date Sampled:	01/25/14	Date Analyzed:	02/06/14	QC Batch:	B013071
Date Received:	01/28/14	Method:	EPA TO-15		

Volatile Hydrocarbons by GC/MS in Air (µg/m³)

Lab#	Sample ID	Compound Name	Result (µg/m³)		RDL (µg/m³)
4012807-02	**VP-2**	Gasoline	ND	VA	330
		1,2-Dichloroethane (EDC)	ND		10
		Benzene	ND		8.0
		Toluene	ND		9.4
		1,2-Dibromoethane (EDB)	ND		3.8
		Ethylbenzene	ND		11
		m,p-Xylene	ND		11
		o-Xylene	ND		11
		Naphthalene	ND		13
		Methyl tert-Butyl Ether (MTBE)	ND		9.0

Surrogates	Result (µg/m³)	% Recovery	Acceptance Range (%)
Dibromofluoromethane	38.9	100	70-130
4-Bromofluorobenzene	34.4	89	70-130

Date Sampled:	01/25/14	Date Analyzed:	02/06/14	QC Batch:	B013071
Date Received:	01/28/14	Method:	EPA TO-15		

Volatile Hydrocarbons by GC/MS in Air (µg/m³)

Lab#	Sample ID	Compound Name	Result (µg/m³)		RDL (µg/m³)
4012807-03	**VP-3**	Gasoline	ND	VA	330
		1,2-Dichloroethane (EDC)	ND		10
		Benzene	ND		8.0
		Toluene	ND		9.4
		1,2-Dibromoethane (EDB)	ND		3.8
		Ethylbenzene	ND		11
		m,p-Xylene	ND		11
		o-Xylene	ND		11
		Naphthalene	ND		13
		Methyl tert-Butyl Ether (MTBE)	ND		9.0

Surrogates	Result (µg/m³)	% Recovery	Acceptance Range (%)
Dibromofluoromethane	41.9	108	70-130
4-Bromofluorobenzene	42.5	110	70-130

Date Sampled:	01/25/14	Date Analyzed:	02/06/14	QC Batch: B013071
Date Received:	01/28/14	Method:	EPA TO-15	

Fixed Gases (%)

Lab#	Sample ID	Compound Name	Result (%)	RDL (%)
4012807-01	**VP-1**	Oxygen (O2)	14	0.008
		Carbon Dioxide (CO2)	4.7	0.008
		Methane	ND	0.008
		Helium	0.023	0.003

Date Sampled:	01/25/14	Date Analyzed:	02/06/14	QC Batch: B013068
Date Received:	01/28/14	Method:	ASTM 1946 D	

Fixed Gases (%)

Lab#	Sample ID	Compound Name	Result (%)	RDL (%)
4012807-02	**VP-2**	Oxygen (O2)	12	0.008
		Carbon Dioxide (CO2)	7.4	0.008
		Methane	ND	0.008
		Helium	ND	0.003

Date Sampled:	01/25/14	Date Analyzed:	02/06/14	QC Batch: B013068
Date Received:	01/28/14	Method:	ASTM 1946 D	

Fixed Gases (%)

Lab#	Sample ID	Compound Name	Result (%)	RDL (%)
4012807-03	**VP-3**	Oxygen (O2)	19	0.008
		Carbon Dioxide (CO2)	1.5	0.008
		Methane	ND	0.008
		Helium	0.012	0.003

Date Sampled:	01/25/14	Date Analyzed:	02/06/14	QC Batch: B013068
Date Received:	01/28/14	Method:	ASTM 1946 D	

Quality Assurance Report

Volatile Hydrocarbons by GC/MS in Air (µg/m³)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B013071 - Air prep GC/MS										
Blank (B013071-BLK1)				Prepared: 01/27/14 Analyzed: 01/29/14						
Gasoline	ND	330	µg/m³							
1,2-Dichloroethane (EDC)	ND	10	µg/m³							
Benzene	ND	8.0	µg/m³							
Toluene	ND	9.4	µg/m³							
1,2-Dibromoethane (EDB)	ND	3.8	µg/m³							
Ethylbenzene	ND	11	µg/m³							
m,p-Xylene	ND	11	µg/m³							
o-Xylene	ND	11	µg/m³							
Naphthalene	ND	13	µg/m³							
Methyl tert-Butyl Ether (MTBE)	ND	9.0	µg/m³							
Surrogate: Dibromofluoromethane	*42.5*		*µg/m³*	*38.9*		*109*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*42.5*		*µg/m³*	*38.8*		*110*	*70-130*			

Fixed Gases (%)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B013068 - Air prep GC/MS										
Blank (B013068-BLK1)				Prepared & Analyzed: 02/06/14						
Oxygen (O2)	ND	0.005	%							
Carbon Dioxide (CO2)	ND	0.005	%							
Methane	ND	0.005	%							
Helium	ND	0.002	%							

Notes and Definitions

VA	The sample canister was received by the laboratory with a vacuum gauge reading of 5 inches of mercury.
RDL	Reporting Detection Limit
ND	Analyte NOT DETECTED at or above the reporting detection limit (RDL)
RPD	Relative Percent Difference
NR	Not Reported

P.O. Box 750336
Petaluma, CA 94975-0336
Telephone: (707) 769-3128

Analytical Sciences
P.O. Box 750336, Petaluma, CA 94975-0336
110 Liberty Street, Petaluma, CA 94952
(707) 769-3128

CHAIN OF CUSTODY

LAB PROJECT NUMBER: 4012807
CLIENT'S PROJECT NAME: Terraden Jefferson LLC
CLIENT'S PROJECT NUMBER: ASE-1

CLIENT INFORMATION		BILLING INFORMATION	
COMPANY NAME:	Blue Rock Environmental	CONTACT:	Henry Huckmans
ADDRESS:	1169 Chass Dr, Ste C	COMPANY NAME:	Blue Rock Environmental
	brian@bluerockenv.com	ADDRESS:	1169 Chass Dr, Ste C
CONTACT:	Brian Gwinn		henry@bluerockenv.com
PHONE#:	(650)522-9292	PHONE#:	(650)522-9292
FAX #:		FAX #:	

TURNAROUND TIME (check one)

MOBILE LAB			
SAME DAY		24 HOURS	
48 HOURS		72 HOURS	
5 DAYS		NORMAL	X

GEOTRACKER EDF: X Y ___ N
GLOBAL ID: T10000001072

COOLER TEMPERATURE
_____ °C

COC

PAGE 1 OF 1

ITEM	CLIENT SAMPLE I..D.	Summa Canister Serial #	Regulator Serial #	Sample Start Time & Vacuum	Sample End Time & Vacuum	Date Sampled	Matrix	ANALYSIS: EPA TO-15 BTEX/MTBE/Naphthalene/1,2-DCA & EDB		ASTM D-1946 He, CO, CO2, H2			COMMENTS	LAB SAMPLE #
1	VP-1	4295	Not provided	10:08 / 30 "Hg	10:15 / 5 "Hg	1/25/14	Air	X		X			call AM. if vacuum	-01
2	VP-2	4292	↓	10:21 / 30 "Hg	10:28 / 5 "Hg	1/25/14	Air	X		X			less than reported	-02
3	VP-3	4156	↓	10:32 / 30 "Hg	10:39 / 5 "Hg	1/25/14	Air	X		X			@ Sample End Time	-03
4														
5														
6														
7														
8														
9														
10														

SIGNATURES

SAMPLED BY: Loren Taylor

RELINQUISHED BY: _____ (SIGNATURE) 1/27/14 (DATE) 12:30 (TIME)

RECEIVED BY LABORATORY: _____ (SIGNATURE) 1/28/14 (DATE) 1150 (TIME)

110 Liberty Street
Petaluma, CA 94952