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

February 3, 2010

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

Dear Mr. Wickham,

This workplan was prepared by Blue Rock Environmental, Inc. (Blue Rock), on behalf of Terradev Jefferson, LLC, for the site at 645 Fourth Street, Oakland, California (site) (Figure 1). This workplan was requested by the Alameda County Health Care Services Agency – Environmental Health Services (ACHCSA) in a letter dated October 16, 2009 in response to the document submitted by Amicus Strategic Environmental Consulting (Amicus) dated September 13, 2009, which included a site conceptual model and proposed source mass reduction utilizing mobile high-vacuum dual-phase extraction equipment.

Background

Site Description and UST History

The site is located southeast of the intersection of Fourth 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. The UST is located on the upgradient edge of a developed city block (which prohibits evaluation of subsurface conditions immediately downgradient of the UST – see section below).

In their *Tank Closure Report* dated September 21, 2006, Golden Gate Tank Removal, Inc. (GGT) 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.

GGT abandoned the UST in place by triple washing followed by filling to capacity with concrete slurry because of structural considerations due to the proximity of the UST to the building foundation. Abandonment was performed with the permission and under the oversight of the City of Oakland Fire Prevention Bureau.

Two soil samples were collected from below the UST at a depth of 9 ft bgs during abandonment activities. Both samples contained elevated concentrations of total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and xylenes (BTEX); however, TPH as diesel (TPHd) and the five fuel oxygenates MTBE, TBA, ETBE, DIPE, and TAME were not detected (Table 1). No groundwater was encountered during abandonment activities, though the soil samples collected beneath the tank were reported as "wet".

Summary of Investigation Activities

Ninyo & Moore Geotechnical and Environmental Sciences Consultants (Ninyo & Moore) completed a limited subsurface investigation in 2009, the findings of which were presented in their *Limited Phase II Environmental Site Assessment* dated July 24, 2009. Two temporary borings (B-1 and B-2) were advanced on each side of the UST by direct push drilling methods to a depth of 20 ft bgs. No soil samples were submitted for laboratory analysis; however, soil samples were screened in the field with a photo-ionization detector (PID) meter. In B-1, PID readings increased with depth to a maximum of 1,422 parts per million (ppm) at 9 ft bgs, and attenuated below that depth. Temporary wells were built in each boring, in which groundwater stabilized at a depth of approximately 9.6 ft bgs and sampled. Concentrations of TPHd, TPHg, BTEX, and MTBE were present in groundwater samples collected from both borings (Table 2), although TPHg levels were an order of magnitude greater than TPHd levels suggesting the former is the primary hydrocarbon range of interest at the site.

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 will be modified as new information regarding site conditions is acquired.

The subject site is located in a commercial/industrial neighborhood along the San Francisco Bay-Margin. The site is underlain by sediments characterized as silty and clayey sand with some layers of sandy clay and sand to a depth of 20 ft bgs (the maximum depth previously explored) and groundwater is present in unconfined conditions at a depth of approximately 10 ft bgs. Groundwater flows generally to the southeast, towards the estuary, 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 MTBE, a gasoline additive not used abundantly in California until the early/mid 1990s (MTBE became a mandated addition to California gasoline following passage of the Clean Air Act Amendments in 1990). Although it is uncertain when the subject UST was removed from service, it is expected that it was not in service during MTBE's lifespan as a gasoline additive.

The abandoned UST is located beneath the sidewalk along Fourth Street, at the upgradient edge of a city block. The location of densely packed, low ceiling (occupied) buildings prohibits 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 Third Street, on the other side of the city block. Review of the results of UST studies at nearby sites (Allen property at 345 Martin Luther King Jr. Way and Markus Hardware at 632-638 Second Street) suggest that a Third Street location for downgradient monitoring points for would simply be too far from the expected downgradient edge of the plume to serve any practical purpose. Yet, the results of corrective action at nearby sites can 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. It is notable that the UST at the subject site is much smaller than the Allen UST, and not obviously associated with a business employing a fleet of delivery trucks (implying a possibly lower throughput). Consequently, a conservative approximation of Terradev migratory extent may be the extent of migration of the Allen release (i.e. approximately 75 feet downgradient of the UST). This approximation is clearly far from the Third 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 groundwater quality in a human health context. Residual hydrocarbons in soil and groundwater do, however, likely represent an exposure risk to construction or utility workers, and serve as a source of hydrocarbon vapor in the vadose (water-unsaturated) zone beneath local buildings.

Blue Rock understands that an upgradient property at the corner of Fifth St. and Martin Luther King Jr. Way was formerly used as a gas station, the tanks for which were removed many years ago under Alameda County oversight. Additional data is not currently available to evaluate if the downgradient extent of any impact from that property has encroached onto the subject site.

Recommended Source Area Remediation

Amicus evaluated investigative and remedial options available at the site in the 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 merit remedial action. As a result, the use of mobile high-vacuum extraction equipment was recommended as an aggressive approach to reduce the remaining gasoline mass in the vicinity of the UST. A workplan for such follows below.

Mobile High-Vacuum Dual-Phase Extraction Remediation

The sections below present elements of work needed to reduce the remaining gasoline mass in the subsurface proximal to the abandoned UST and evaluate the performance and success of those actions. Several wells are proposed in locations around the UST, which will be constructed such that they will serve as remediation and monitoring wells, to the extent practical. A mobile high-vacuum dual-phase extraction (HVDPE) unit will be used to perform limited duration extraction events to recover gasoline mass from the ground. The remedial effectiveness will be evaluated by comparison of pre- and post-remediation groundwater analytical data, estimated gasoline mass recovery rates, total mass recovered, and trends in influent concentrations during the removal event(s). Additionally, one boring is proposed on the northern side of Fourth St. for the purpose of evaluating potential upgradient sources.

Proposed Drilling, Well Installation, Soil Sampling, and Groundwater Monitoring

Blue Rock proposes to install three wells at the source area for the dual purpose of remediation and groundwater monitoring (DPE-1 through DPE-#) (Figure 2b). Experience with similar projects suggests that the general minimum radius of vacuum influence is equal to or greater than the vadose zone thickness, which, at this site, is approximately 9.5 feet. The three proposed wells are anticipated to provide sufficient overlap in the expected radius of remedial influence in order to aggressively recover gasoline hydrocarbons from the subsurface. Several remedial wells also permit greater flexibility in extraction point configuration and mass recovery optimization. Additionally, these source area wells will also be useful as pre- and post-remedial monitoring points.

Blue Rock also proposes drill one soil boring along the northern side of Fourth Street for the purpose of evaluating if the former gas station located at the corner of Fifth St. and Martin Luther King Jr. Way is potential source of petroleum impact present in the area of the subject site (B-3) (Figure 2b). This boring will be used to collect soil and groundwater samples.

Prior to drilling, Blue Rock will obtain drilling/well installation permits from Alameda County and the City of Oakland, as well as any necessary encroachment permits or right-of-entry agreements to work on public property. Blue Rock will also obtain a no parking zone permit for the front of the property for the drilling event. The site will be marked by Underground Service Alert to identify utilities proximal to proposed drilling location, and a private utility locator may be employed to clear exact drilling locations. Blue Rock will prepare a site specific Health and Safety Plan.

A Blue Rock geologist will supervise all drilling and well installation activities. Drilling will be performed by a C-57 licensed driller using a limited access drill-rig equipped with hollow-stem augers. During drilling, soil samples will be collected at five-foot intervals in a California Modified Split-Spoon sampler lined with clean, brass tubes. The Blue Rock geologist will log soil types in accordance with the Unified Soil Classification System. Additionally, soil samples will be screened for the presence of volatile petroleum hydrocarbon vapors with a photoionizing detection meter (PID).

Soil samples will be retained for laboratory analysis from depth intervals not previously sampled in the area of the UST and from the capillary fringe in the upgradient boring. These samples will be covered with Teflon lined plastic caps, labeled, documented on a chain-of custody form, and placed on ice in a cooler for transport to the project laboratory. These samples, if collected, will be analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B and TPHd by EPA Method 8105M. These data, in addition to those obtained at the time of UST abandonment, will help to serve as a baseline of pre-remedial conditions.

Blue Rock recommends drilling B-3 to a total depth of approximately 17 ft bgs for the purpose of establishing water column sufficient for grab groundwater sampling. Temporary well screen will be placed in the boring and the water level allowed to equilibrate. A groundwater sample will be collected into laboratory supplied containers, labeled, documented on a chain-of-custody form, and placed on ice in a cooler for transport to the project laboratory. The sample will be analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B and TPHd by EPA Method 8105M. These data will be used to evaluate if subsurface petroleum impact from other sources is present upgradient of the subject site. Following sample collection, the boring will be closed with neat cement and the surface finished to match surrounding conditions.

Blue Rock will supervise construction of wells DPE-1 through DPE-3. Ninyo & Moore's log for B-1 suggests that native material is present at depth of 6.5 ft bgs, with fill (silty sand and sand) overlying it. Blue Rock recommends screening DPE-1 and DPE-2 from 8 to 15 ft bgs for the purpose of targeting contamination detected at the water table and capillary fringe (previously documented by UST abandonment samples and field observations during drilling of B-1). This screen interval will also reduce the likelihood of potential vapor extraction short-circuiting to the surface. Blue Rock recommends drilling and building DPE-3 in coarse-grained tank fill material, if possible, with a screen interval of approximately 6 to 10 ft bgs. If the tank fill material can be tapped by the screen of DPE-3, it may help improve vapor recovery from the area around the abandoned UST. If excessive water production becomes an issue, this well may also prove useful in limiting water extraction rates because it will not be screened in a clean sand (SP) logged in B-1 from 13.5 to 15 ft bgs.

The wells will be constructed of clean, flush-threaded, two-inch diameter PVC well materials with 0.01-inch slot for screen. A filter pack of Lonestar #2/12 sand will extend from the bottom of the boring to one foot above the screened interval. The filter pack will be sealed by a two-foot layer of hydrated bentonite. The remaining annular space will be filled with neat cement and a tamper-resistant box will be concreted in place over each wellhead. General well construction details are listed below:

Proposed Well	Casing Diameter (inches)	Slot Size (inches)	Total Depth (feet)	Blank Interval (feet)	Screen Interval (feet)	Filter Pack (feet)	Bentonite Seal (feet)	Neat Cement (feet)
DPE-1	2	0.01	15	0-8	8-15	7-15	5-7	0.5-5
DPE-2	2	0.01	15	0-8	8-15	7-15	5-7	0.5-5
DPE-3	2	0.01	12	0-6	6-10	5-10	4-5	0.5-4

The wells will be developed by surging and bailing; however, it is acknowledged that DPE-3 may not contain water due to its planned depth. Development will involve the removal of water from the well until such time that it is relatively free of sediment, and pH, temperature, and conductivity parameters have stabilized. It is anticipated that the water volume removed will not exceed 10 saturated casing volumes. After well development, groundwater will be allowed to equalize and groundwater samples will be collected from each well in laboratory supplied containers and submitted to the project laboratory under chain of custody. The samples will be analyzed for TPHg, BTEX, and MTBE by EPA Method 8260B and TPHd by EPA Method 8105M. If TPHd is detected, the sample will be reanalyzed using silica-gel clean-up to remove naturally occurring compounds that are present in the TPHd range yet not petroleum originated compounds. The results of these analyses will serve as pre-remedial data for the wells.

The new wells will be surveyed for vertical and horizontal coordinates compliant with GeoTracker requirements.

Prior to use all downhole drilling and sampling equipment will be prior to arrival at site or cleaned on site with an Alconox® wash followed by double rinse in clean tap water. Soil cuttings and auger/sampler rinseate and well development water will be stored in labeled 55-gallon drums in a secured location pending appropriate disposal.

Mobile HVDPE Remediation

Blue Rock proposes to perform up to two mobile HVDPE remedial events at the site. HVDPE equipment and methodology specific to the proposed events are described and explained below. Because no pilot study has been performed at the site, in order to be of most value, events will need to be flexible to adjust to results as they are experienced in the field.

Applicable permits will be obtained, if needed, from the Bay Area Air Quality Management District (BAAQMD) before the events occur. The BAAQMD will be provided with any requested information related to test procedures and process stream treatment.

A mobile HVDPE unit will be mobilized to the site. The unit is truck or trailer mounted and consists of liquid-ring pump capable of producing 25-inches Hg vacuum and a thermal oxidizer capable of treating an air flow of 250 cfm. The system will be capable of operation in catalytic mode, should extracted influent concentrations are in a range where catalytic destruction would be more appropriate. An onboard electric generator powers the equipment and onboard propane tanks provide supplemental fuel for the thermal/catalytic oxidizer. Adjustable "stinger" intake hose will be connected from an adjustable manifold on the mobile unit to the wells through a vacuum-tight cap attached to the wellhead.

The proposed wells DPE-1, DPE-2, and DPE-3 will be used as remedial wells, as all will be located proximal to the source area (Figure 2b). These wells will have proposed screened intervals across previously documented soil and groundwater impacts (Figure 3). A stinger hose will be lowered into each remedial well through a vacuum tight cap. The stinger end will be placed several inches into the static water. The HVDPE unit will be started and testing will begin. Soil vapor and groundwater (dual phases) will be extracted simultaneously by the high vacuum produced by the liquid-ring pump. If well recharge is slower than the water pumping rate, the well can be dewatered. If dewatering appears to be occurring, the stinger intake will continued to be lowered into the well until near well bottom, thereby maximizing the amount of screen exposed for vapor extraction.

A PID and lower explosive limit meter (LEL) will be used to monitor influent air concentrations. A flow sensor will measure process air stream volumetric flow and a separate flow meter will record gallons of water extracted and pumped. Extracted water will be stored in a 5,000 gallon capacity above-ground storage tank to be mobilized to the site.

The HVDPE remediation will proceed over the course 5 days (maximum event duration), during which time a combination of different applied vacuum to individual wells will be utilized for remedial optimization. The two parameters likely to shorten the event include excessive production of water (i.e. greater than 5,000 gallons per day) or sustained low influent gasoline vapors (i.e. less than approximately 50 ppmv) resulting in poor mass recovery rates. During the first day of the test, extraction data will be collected at least hourly. Extraction data collected will include: applied vacuum, water pumping rate, process air flow rate, and field monitoring of hydrocarbon concentrations in process air. The HVDPE unit operations will be 24 hours a day, although only limited data will be collected during nighttime operations. Data collection intervals will likely be lengthened as the event progresses.

Extracted water will be separated by a water knockout and transferred to a holding tank pending profiling and disposal. Extracted air will be routed through the oxidizer to destroy entrained hydrocarbon vapor. A schematic of the test set-up is included in Figure 4.

Influent air sample and mid-fluent water samples will be collected for laboratory analysis from the respective process streams of the high vacuum unit. These samples will be collected daily during the event. It is expected that no more than 5 sets of air/water samples will be collected. The water sample should be considered a mid-fluent sample because it will have been partially stripped of dissolved hydrocarbons by the HVDPE process. Theoretically, the stripped hydrocarbon constituent mass will be accounted for in the air sample results. The air samples will be collected into 1-liter tedlar bags and the water samples will be collected into preserved 40-milliliter VOA bottles. The samples will be labeled, documented on a chain-of-custody form, placed on ice in a cooler (water samples) or in a dark container (air samples), and transported to a licensed analytical laboratory. The air and water samples will be analyzed by a DHS-certified laboratory for TPHg, BTEX, and MTBE by EPA Methods 8015M/8020M or 8260B and TPHd by EPA Method 8015M (water only).

The HVDPE derived water will be chemically profiled during the first two days of the event for disposition. If possible, a temporary discharge permit with be obtained from the local public wastewater treatment works, or the water will be transported off-site to an appropriate wastewater treatment facility for disposition.

Post Remediation Groundwater Monitoring

After at least two weeks following the remedial events, a Blue Rock field technician will mobilize to the site to conduct post event groundwater monitoring. All three remedial/monitoring wells were gauged and sampled.

Upon arrival at the site, the wells will be opened to atmosphere and allowed to equilibrate. An electronic water level indicator, accurate to within ±0.01-feet, will be used to gauge depth to water. All wells will be checked for the presence of light non-aqueous-phase liquid (LNAPL) prior to purging. In preparation for sampling, the wells will be purged of groundwater until sampling parameters (temperature, pH, and conductivity) stabilize and approximately three wetted casing volumes have been removed. Following recovery of water levels to approximately

80% of their static levels, groundwater samples will be collected from the wells using disposable polyethylene bailers and transferred to laboratory-supplied containers. Sample containers will be labeled, documented on a chain-of-custody form, and placed on ice in a cooler for transport to the project laboratory. The water samples will be analyzed by a DHS-certified laboratory for TPHg, BTEX, and MTBE by EPA Method 8260B and TPHd by EPA Method 8015M. If TPHd is detected, the sample will be reanalyzed using silica-gel clean-up methods. The results of these analyses will serve as post-remedial data for the wells.

Evaluation of Remedial Efforts

The pre- and post-remedial event groundwater data, influent vapor concentration trends for the first HVDPE event, and total gasoline mass estimated to have been removed will be used to evaluate remedial effectiveness. A second HVDPE event may be completed if influent concentrations and mass recovery compare well with experience at similar sites yet have not decreased groundwater impacts to near to or below Water Quality Objectives (WQOs). If groundwater impact is significantly reduced to levels approaching WQOs, an additional remedial event will likely not be contemplated until additional groundwater monitoring events occur to verify those results.

Proposed Reporting

The results of the well installation, first HVDPE event, and pre- and post-HVDPE groundwater monitoring event will be used to prepare a report. The report will present the methods, results, and conclusions. The report will be supported by data presented in graphical and tabular form and include calculated mass recovery. The merits of second remedial event will be evaluated and recommended as conditions warrant. The report will also contain recommendations for completion of sub-slab soil vapor sampling, if an additional HVDPE remedial event does not appear warranted. The report will be prepared under the supervision of, and certified by, a California Professional Geologist at Blue Rock. Required GeoTracker uploads will be made.

Proposed Schedule

The following table provides a general schedule for implementation of work proposed herein.

Key Activity	Estimated Date
Submit *Remedial Action Workplan*	February 5, 2010
Receive ACHCSA Approval	April 5, 2010
Obtain Permits and Install Remedial Wells and Collect Baseline Data. Obtain BAAQMD and Batch Wastewater Discharge Permits for Mobile HVDPE Events	May 30, 2010 (within 60 days of Work Plan approval)
Perform 1st HVDPE	Early June, 2010
Perform Post-Remedial Event Groundwater Monitoring	Late June, 2010
Prepare & Submit Well Installation, Remedial Event and Groundwater Monitoring Report (combined)	August 1, 2010
Perform 2nd HVDPE Event	Early September 2010
Perform Post-Remedial Event Groundwater Monitoring.	Late September 2010
Prepare and Submit Post Remedial evaluation Report	November 1, 2010

References

Amicus Strategic Environmental Consulting, 2009, letter regarding Terradev Jefferson, LLC Property, 645 Fourth Street, Oakland, September 13.

Ninyo & Moore, 2009, *Limited Phase II Environmental Site Assessment*, 645 Fourth Street, Oakland, California, July 24.

Golden Gate Tank Removal, Inc. 2006, *Tank Closure Report*, 645 Fourth Street, Oakland, California, September 21.

Certification

This workplan 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 (65) 522-9292.

Sincerely,
Blue Rock Environmental, Inc.

Prepared by:

for

Loren Taylor
Project Geologist

Reviewed by:

PROFESSIONAL GEOLOGIST
BRIAN M. GWINN
No 6505
exp. 4/30/11
STATE OF CALIFORNIA

Brian Gwinn, PG
Principal Geologist

Attachments:

Table 1: Soil Sample Analytical Data
Table 2: Groundwater Sample Analytical Data

Figure 1: Site Location Map
Figure 2a: Site Plan with UST Location
Figure 2b: Proposed Well Locations & Remedial Equipment Setup
Figure 3: Proposed Well Construction Details
Figure 4: Mobile HVDPE Process Schematic

Distribution:

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

Mr. Markus Niebanck, Amicus Strategic Environmental Consulting
580 Second St. Suite 260, Oakland, CA 94607

TABLE 1
Soil Sample Analytical Data
Terradev Jefferson, LLC Property
645 Fourth Street
Oakland, CA

Sample ID	Depth (ft bgs)	Sample Date	TPHd (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)
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
Phase II Investigation Samples											
B-1 (none analyzed)		--	--	--	--	--	--	--	--	--	--
B-2 (none analyzed)		--	--	--	--	--	--	--	--	--	--

Notes:

ft bgs	Feet below ground surface
mg/kg	milligrams per kilogram
TPHd	Total petroleum hydrocarbons as diesel by EPA Method 8015B
TPHg	Total petroleum hydrocarbons as gasoline by EPA Method 8015M
BTEX	Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B
MTBE	Methyl tert-butyl ether by EPA Method 8260B
TBA	Tert-butyl alcohol by EPA Method 8260B
DIPE	Di-isopropyl ether by EPA Method 8260B
ETBE	Ethyl tert-butyl ether by EPA Method 8260B
TAME	tert-amyl methyl ether by EPA Method 8260B

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

Sample ID	Screen Interval (ft bgs)	Sample Date	TOC (ft MSL)	DTW (ft)	GWE (ft MSL)	TPHd (µg/L)	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X: (µg/L)	MTBE (µg/L)	TBA (µg/L)	DIPE, ETBE, TAME (µg/L)
Grab Groundwater Samples (Phase II temporary wells)														
B-1-GW	5 - 20	7/10/09	--	9.6	--	5,300	78,000	15,000	13,000	1,700	10,500	570	--	--
B-2-GW	5 - 20	7/10/09	--	9.6	--	2,300	60,000	13,000	13,000	890	4,800	120	--	--

Notes:

Screen Depth	Well screen depth interval.
TOC	Top of casing relative to feet above mean sea level (ft MSL).
DTW	Depth to groundwater below top of casing in feet.
GWE	Groundwater Elevation (TOC-DTW) in ft MSL.
TPHd	Total petroleum hydrocarbons as diesel by EPA Method 8015B(M).
TPHg	Total petroleum hydrocarbons as gasoline by EPA Method 8015B(M).
BTEX	Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8021B.
	Note: total xylenes equal the sum of sepearate isomers reported for the 7/09 samples.
MTBE	Methyl tert-butyl ether by EPA Method 8021B.
µg/L	Micrograms per liter.
<###	Not detected at or above the indicated reporting limit.

0 500 1,000 2,000

APPROX. SCALE IN FEET

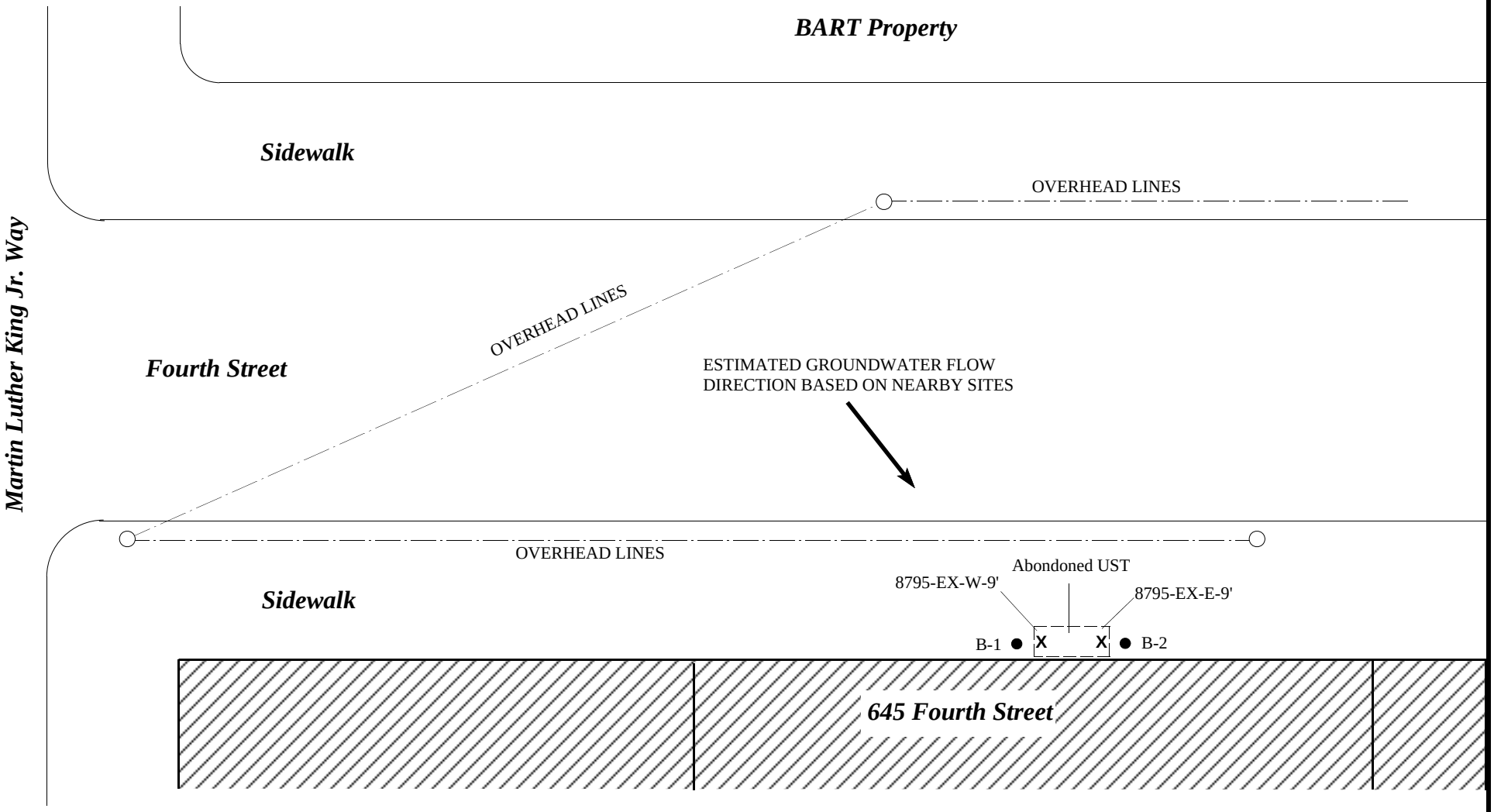
N

SOURCE: Google Earth

SITE LOCATION MAP
Terredev Jefferson, LLC Property
645 Fourth St.
Oaklnd, CA

BLUE ROCK
ENVIRONMENTAL, INC.

Project No.	Figure Date	Figure
ASE-1	2/10	1



EXPLANATION

8795-EX-W-9' X UST REMOVAL SOIL SAMPLE

B-1 ● HYDROPUNCH BORING

N

0 20

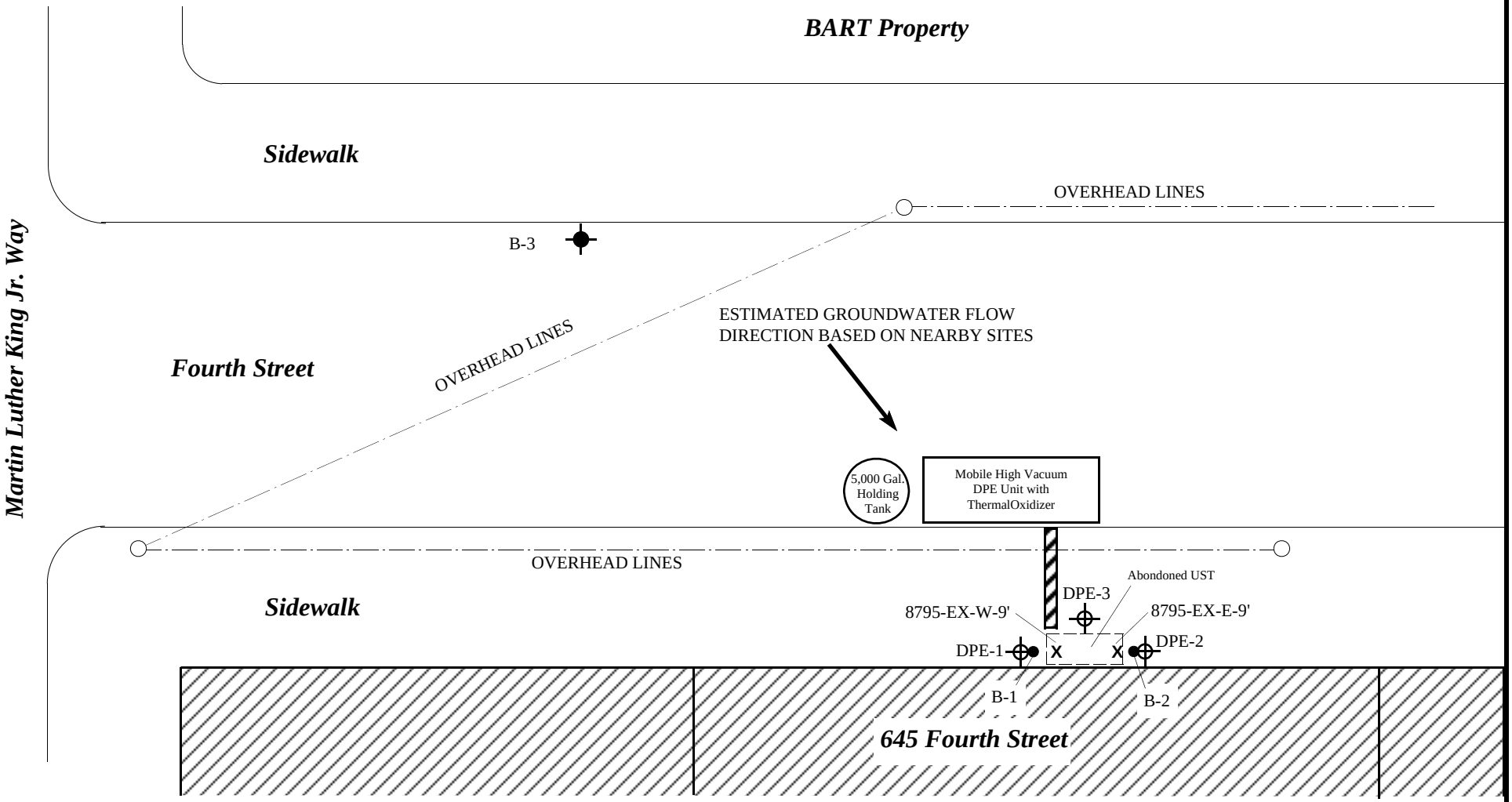
APPROXIMATE
SCALE IN FEET

SITE PLAN WITH UST LOCATION

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

BLUE ROCK
ENVIRONMENTAL, INC.

Project No.	Figure Date	Figure
ASE-1	2/10	2a



EXPLANATION

DPE-1 — PROPOSED WELL

B-3 — PROPOSED BORING

N

0 20

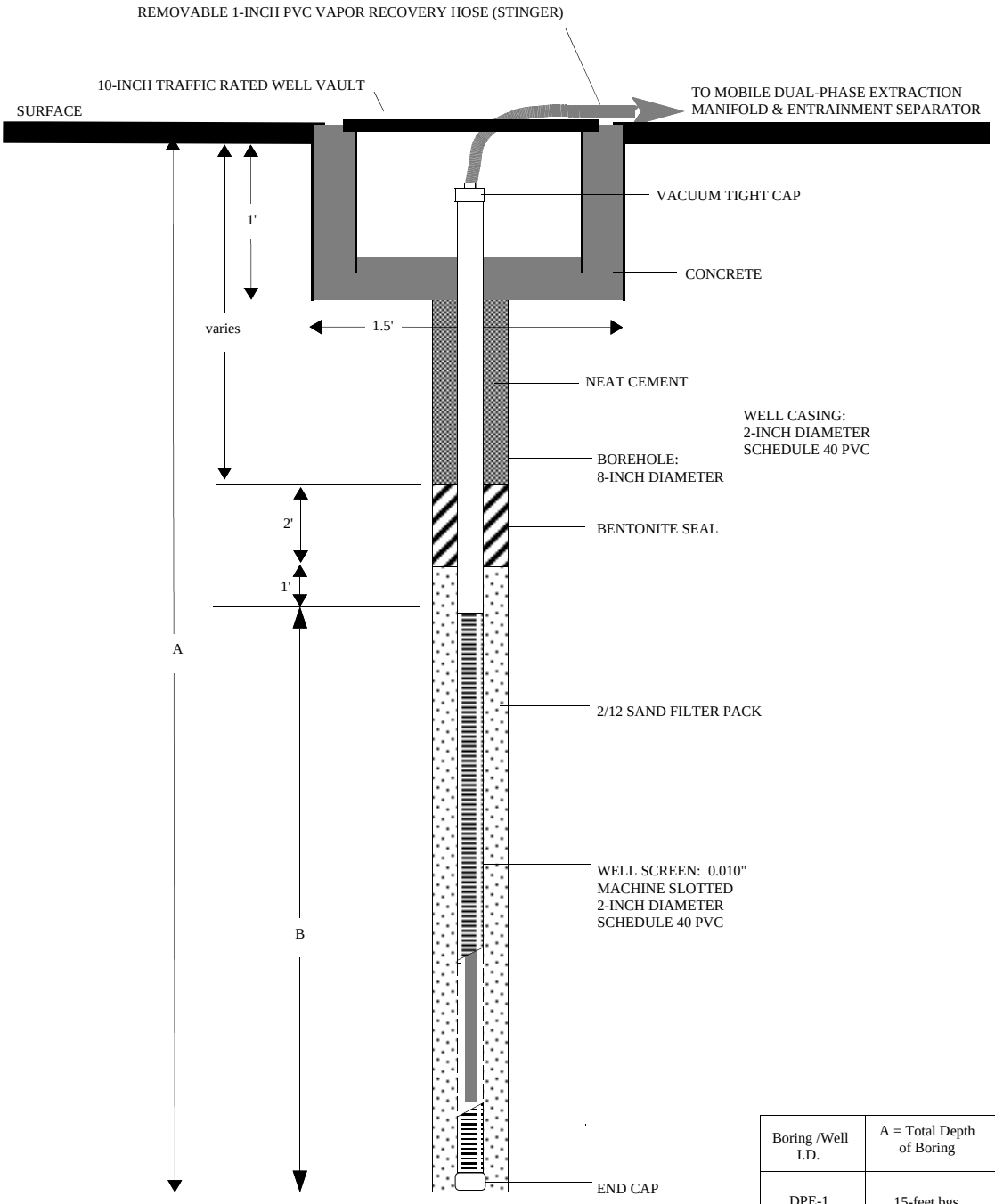
APPROXIMATE SCALE IN FEET

PROPOSED DRILLING LOACTIONS & REMEDIAL EQUIPMENT SETUP

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

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Figure Date	Figure
ASE-1	2/10	2b



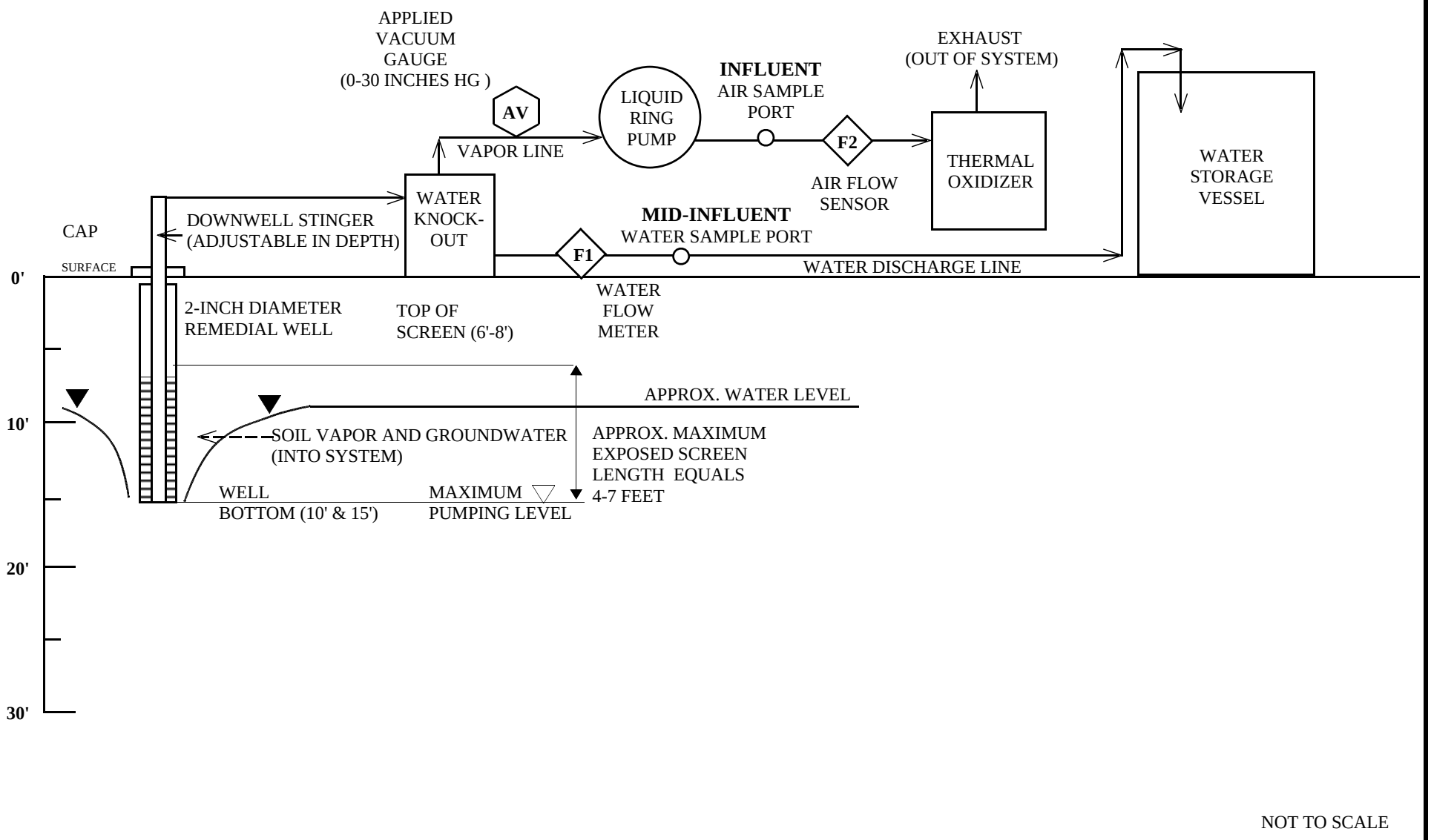
Two-Inch Vapor Well/Wellhead Details

Boring /Well I.D.	A = Total Depth of Boring	B = Length of Screened Interval	Depth of Screened Interval
DPE-1	15-feet bgs.	7-feet	8 to 15-feet bgs.
DPE-2	15-feet bgs.	7-feet	8 to 15-feet bgs.
DPE-3	10-feet bgs.	4-feet	6 to 10-feet bgs.

PROPOSED WELL DETAILS
Terradev Jefferson, LLC Property
645 Fourth Street
Oakland, CA

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Figure Date	Figure
ASE-1	2/10	3



NOT TO SCALE

HIGH-VACUUM DUAL-PHASE EXTRACTION PROCESS SCHEMATIC

Terradev Jefferson, LLC Property
465 Fourth Street
Oakland, California

BLUE ROCK ENVIRONMENTAL, INC.

Project No.	Report Date	Figure
ASE-1	2/10	4