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By Alameda County Environmental Health 3:44 pm, Aug 23, 2017

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Subject:

Shallow Soil Assessment and Monitoring Well Installation Workplan

Former BP Facility No. 0374
6407 Telegraph Avenue, Oakland, California 94609
Alameda County LOP Case #RO0000078
SF-RWQCB Case #01-0114

ENVIRONMENT

Date:

August 23, 2017

Dear Ms. Detterman:

Contact:

James M. Jacobsen, P.G.

"I declare that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct."

Phone:

916 865 3144

Email:

james.jacobsen@arcadis.com

Sincerely,

Arcadis U.S., Inc.



James M. Jacobsen, P.G.
Project Manager



Our ref:

GP16BPNA.CA01.1A000

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Subject:
Shallow Soil Assessment and Monitoring Well Installation Workplan
ARCO Station #0374, 6407 Telegraph Avenue, Oakland, CA

ENVIRONMENT

Dear Ms. Detterman:

Date:
August 23, 2017

On behalf of BP West Coast Products, LLC (BP), Arcadis U.S., Inc. (Arcadis) prepared this Shallow Soil Assessment and Monitoring Well Installation Work Plan (Work Plan) for the Former ARCO Station #0374, located at 6407 Telegraph Avenue, Oakland, California (Site; **Figure 1**). This Work Plan details a proposed scope-of-work that has been designed in order to evaluate the current soil conditions at the Site. The laboratory analytical data will be compared to the State Water Resources Control Board's (SWRCB) Low-Threat Underground Storage Tank Case Closure Policy (LTCP) criteria in order to determine if the soil concentrations meet the Direct Contact and Outdoor Air Exposure criteria and to delineate the lateral extent of the groundwater plume.

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SITE DESCRIPTION

Currently, the Site is an active ARCO retail gasoline service station with an AM/PM Mini-Mart (**Figure 2**). Site facilities include three 12,000-gallon underground storage tanks (USTs), two dispenser islands, and associated product lines. The majority of the Site is covered by the station building and asphalt and concrete parking areas and driveways.

The Site is located at the northwest corner of Telegraph Avenue and Alcatraz Avenue in an area of mixed residential and commercial land use. The elevation of the Site is approximately 164 feet above mean sea level (msl) with local topography sloping gently to the southwest (United States Geological Survey [USGS], Oakland West Quadrangle, California). Surrounding land use is primarily single and multifamily residences with commercial buildings located east and southeast of the Site.

A former Mobil Oil Service Station located at 6398 Telegraph Avenue, across the intersection of Telegraph Avenue and Alcatraz Avenues to the southeast, was identified as a Leaking Underground Storage Tank (LUST) site. The leak was reported in March 1986; however, no action was taken by the responsible party since the initial leak was discovered although Alameda County Environmental Health Services recommended removing free product and excavation and treatment of contaminated soil.

GEOLOGY AND HYDROGEOLOGY

The Site is located in the Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin, a northwest trending alluvial plain bounded on the north by San Pablo Bay, on the east by the contact with Franciscan Basement rock, and on the south by the Niles Cone Groundwater Basin (DWR 2003). The lithology at the Site consists of silty clay and clayey silt to sandy gravel, with highly variable quantities of fines (Broadbent 2015).

The most recent groundwater monitoring event was conducted on March 14, 2017. Depth to groundwater ranged from approximately 1.34 feet below ground surface (bgs) to 6.30 feet bgs. Resulting groundwater elevations vary from approximately 152.61 feet above msl to 164.10 feet above msl. The groundwater flow direction during first quarter 2017 was towards the southwest direction with a hydraulic gradient of 0.03 foot per foot. A groundwater elevation map based on third quarter 2016 data was presented in the Third Quarter 2016 Groundwater Monitoring Report dated November 7, 2016, submitted by Arcadis.

PROPOSED SITE ASSESSMENT

Arcadis proposes to reassess areas, as described herein, based on historic analytical data in order to determine the current concentrations of benzene, ethylbenzene, and naphthalene and to delineate the groundwater plume. Arcadis proposes to collect soil samples for the LTCP Direct Contact and Outdoor Air Exposure constituents in order to satisfy existing data gaps with evaluating this Site against the SWRCB LTCP, reinstall one groundwater monitoring well onsite, and install two offsite groundwater monitoring wells.

Pre-Field Activities

Prior to initiating field activities, a Health and Safety Plan will be prepared in accordance with state and federal requirements for use during the proposed field activities. In compliance with local requirements, Arcadis will submit an application for the soil borings and monitoring well installation to the Alameda County Public Works Agency - Water Resources Division. Underground utilities and other potential subsurface obstructions near the proposed soil boring locations will be located and marked prior to implementing intrusive activities. The utility survey will include identifying the boring location using white colored paint and obtaining an Underground Service Alert-North (USA-North) ticket by calling USA-North at least three business days prior to implementing intrusive activities. Additionally, a private third-party utility locator will screen the proposed locations to mark the location(s) of nearby underground utilities.

Direct Contact and Outdoor Air Exposure Assessment

Four soil borings (SB-1 through SB-4) will be advanced to 10 feet bgs using direct-push technology. The proposed soil boring locations were selected to provide a representative assessment of locations

associated with historical benzene exceedances and areas where there was no soil analytical data. Soil borings SB-1 and SB-2 are proposed on the northern portion of the Site where there is no soil analytical data. Soil borings SB-3 and SB-4 are located on the southeastern portion of the Site where historic soil borings, D-4, PL-3, and B-13, have had benzene detections above the LTCP criteria. The locations of the proposed soil borings are illustrated on **Figure 2**. Historic soil boring analytical data is included in **Table 1**.

Prior to drilling, each location will be cleared a minimum of 110% of the diameter of the intrusive device or an additional 2-inches of overall diameter, whichever is greater, to a minimum depth of approximately 6.5 feet bgs to visually confirm the absence of subsurface utilities. Upon clearing a borehole of utilities, soil samples will be continuously collected and logged in accordance with the Unified Soil Classification System (USCS). All work will be performed under the supervision of a California licensed Professional Geologist. The soil samples will be examined using visual and manual methods for parameters including odor, staining, color, grain size, and moisture content. The pertinent geologic information will be recorded on a boring log. All down-hole equipment will be decontaminated using high-pressure steam following the completion of each soil boring. All soil boring locations will be backfilled in accordance with Department of Water Resources requirements and the surface will be restored to nearly match the existing surface materials.

Soil Sampling

Selected soil samples will be placed into sealed zip top bags and screened for volatile organic compounds (VOCs) using a photoionization detector (PID). The PID readings will be recorded on the field boring logs. The most elevated PID reading from 0 to 5 feet and from 5 to 10 feet will be retained for laboratory analytical analysis from SB-1 through SB-4. In the absence of PID readings, soil samples will be collected from the middle of each interval for laboratory analysis. A maximum of three samples may be collected for laboratory analysis from each of these proposed soil boring locations.

Soil samples will be collected using a Terracore[®] sampler driven into undisturbed soil and preserved in the field in accordance with USEPA Method 5035. Soil samples will be placed on ice in laboratory-supplied coolers, and delivered to a California certified laboratory under chain-of-custody protocol. Soil samples collected at SB-1 through SB-4 will be submitted for the following analyses:

- Benzene, ethylbenzene, and naphthalene by USEPA Method 8260B

According to historic records, no waste oil UST was located onsite; therefore, soil samples will not be analyzed for PAHs in general accordance with the SWRCB LTCP.

MONITORING WELL DESTRUCTION AND INSTALLATION

Monitoring well MW-4 was installed in 1989 and is located in a raised planter area on the southwest property line, west of the former USTs. Historically, monitoring well MW-4 has had the highest detected groundwater concentrations of petroleum hydrocarbons. The benzene concentrations in MW-4 have fluctuated above and below the LTCP criteria of 1,000 µg/L with no apparent correlation with groundwater elevation. The other onsite monitoring wells appear to have detected concentrations of constituents-of-concern below their respective LTCP criteria limits and are generally stable.

Monitoring Well Destruction

Monitoring well MW-4 will be destroyed using pressure grouting methods. Prior to pressure grouting, an Arcadis field staff will confirm the total depth of the well. A tremie pipe will then be inserted and the well will be filled bottom-up to approximately 1-foot below the top of the well casing with neat cement grout. The monitoring well will be pressurized to 25 pounds per square inch for approximately 5 minutes. If, during the observation time, a significant change in grout level occurs, additional grout will be added. The well box will subsequently be removed as well as the annular materials to approximately 1-foot bgs. The subsequent hole will be backfilled with concrete and the surface will be restored to match existing conditions.

Monitoring Well Installation

Three monitoring wells (MW-4R, MW-10, and MW-11) are proposed to assess and provide further delineation of the groundwater plume. Monitoring well MW-4R is proposed to be installed onsite, northeast of MW-4 within the former UST field and MW-10 and MW-11 are proposed to be installed offsite adjacent to former soil borings B-1 and B-2 along Alcatraz Avenue right-of-way.

Prior to drilling, each location will be cleared a minimum of 110% of the diameter of the intrusive device or an additional 2-inches of overall diameter, whichever is greater, to a minimum depth of approximately 6.5 feet bgs to visually confirm the absence of subsurface utilities. Upon clearing a borehole of utilities, soil samples will be continuously collected and logged in accordance with the USCS. All work will be performed under the supervision of a California licensed Professional Geologist. The soil samples will be examined using visual and manual methods for parameters including odor, staining, color, grain size, and moisture content. The pertinent geologic information will be recorded on a boring log. All down-hole equipment will be decontaminated using high-pressure steam following the completion of each soil boring. All soil boring locations will be backfilled in accordance with Department of Water Resources requirements and the surface will be restored to nearly match the existing surface materials.

Soil Sampling

Selected soil samples will be placed into sealed zip top bags and screened for VOCs using a PID. The PID readings will be recorded on the field boring logs. The most elevated PID readings from the borehole will be retained for laboratory analytical analysis from MW-4R, MW-10, and MW-11. In the absence of PID readings, soil samples will be collected at 3 feet and 7 feet for laboratory analysis. A maximum of three samples may be collected for laboratory analysis from each of these proposed monitoring well locations.

Soil samples will be collected using a Terracore[®] sampler driven into undisturbed soil and preserved in the field in accordance with USEPA Method 5035. Soil samples will be placed on ice in laboratory-supplied coolers, and delivered to a California certified laboratory under chain-of-custody protocol. Soil samples collected at MW-4R, MW-10, and MW-11 will be submitted for the following analyses:

- Benzene, ethylbenzene, and naphthalene by USEPA Method 8260B

According to historic records, no waste oil UST was located onsite; therefore, soil samples will not be analyzed for PAHs in general accordance with the SWRCB LTCP.

Monitoring Well Construction

The proposed monitoring wells will be constructed using a 2-inch diameter flush-threaded schedule 40 polyvinyl chloride (PVC) blank casing with a 0.020-inch slotted PVC well screen. It is anticipated that the proposed groundwater monitoring wells will be screened across the sandy unit from approximately 10 to 20 feet bgs; however, the final screen interval will be determined in the field based on location specific subsurface conditions. The sand pack will be placed within the annulus of the open borehole from the bottom of the boring to approximately 2-feet above the top of the well screen interval, followed by an approximate 2-foot well transition seal consisting of bentonite. The remaining open borehole annulus will be sealed with neat cement to approximately 6 inches bgs. Each monitoring well will be completed at the ground surface with a locking well plug and traffic-rated bolt down well vault lid. The vault will be installed slightly above the surrounding surface grade and finished with a concrete apron to provide positive relief away from the wellhead.

Monitoring Well Development

After allowing the cement grout and concrete apron to cure for at least 72 hours, the total well depth and depth to water at each well will be measured to the nearest 0.01 foot using a water level meter. The well will then be purged by pumping and/or bailing while monitoring the removed water for parameters such as pH, turbidity, temperature, and conductivity. Development will continue until the water quality parameters stabilize or ten casing volumes have been purged from the well. Water quality parameters will be recorded on a field sheet.

Monitoring Well Sampling

A minimum of 72 hours after well development, the monitoring wells will be gauged and an initial groundwater sample will be collected using a disposable bailer or pump with dedicated tubing. Groundwater samples will be labelled and placed in an ice-filled cooler for preservation pending transport. Monitoring wells MW-4R, MW-10, and MW-11 will then be incorporated into the groundwater sampling program for the Site.

Groundwater samples will be collected from monitoring wells MW-4R, MW-10, and MW-11 and submitted for the following analyses:

- GRO, BTEX, fuel oxygenates including methyl tert butyl ether (MTBE), tert butyl alcohol (TBA), diisopropyl ether (DIPE), ethylene tert butyl ether (ETBE), tert-Amyl methyl ether (TAME), and ethanol, and lead scavengers including 1,2-dichloroethane (1,2-DCA) and ethylene dibromide (EDB) by EPA Method 8260B.

Surveying

After completion, a California-licensed land surveyor will locate the monitoring wells within the California state plan coordinate system, and latitude-longitude (degree, minutes, seconds) to meet the State Water Resources Control Board location requirements. The top of the monitoring well casings will be surveyed by the California-licensed land surveyor for horizontal and vertical control. The coordinates will be referenced to a known benchmark according to the North American Datum of 1983 (NAD83) and the North American Vertical Datum of 1988 (NAVD88).

Investigation Derived Waste

Investigation Derived Waste (IDW) generated during the confirmation soil assessment field activities will be contained in 55-gallon drums and temporarily stored onsite pending characterization and offsite disposal at an appropriately licensed facility.

CONCLUSION

A report will be prepared following the completion of field activities and receipt of laboratory analytical data to document the results of this Work Plan. The report will include a scaled Site plan illustrating the soil boring locations, monitoring well locations, and other relevant Site features, documentation of soil sampling activities performed, well construction details, results of the laboratory analyses, analysis of current and historic site data against the LTCP criteria, and conclusions and recommendations relevant to the assessment objectives.

Upon receiving written approval of this Work Plan from Alameda County LOP, the Work Plan will be implemented. All necessary permits to complete the proposed work will be obtained. It is anticipated that the summary report will be submitted to Alameda County LOP within 120-days of receipt of all the laboratory analytical results from the additional site assessment activities.

PERJURY STATEMENT

"I declare to the best of my knowledge at the present time, that the information and/or recommendations contained in this document are true and correct."

Sincerely,

Arcadis U.S., Inc.



James Jacobsen, P.G.
Project Manager

Enclosures:

Tables

- 1 Soil Analytical Data

Figures

- 1 Site Location Map
- 2 Site Plan

REFERENCES

- Arcadis. 2017. First Quarter Groundwater Monitoring Report, Former BP Facility#0374, 6407 Telegraph Avenue, Oakland, California. April 28.
- Broadbent. 2013. Conceptual Site Model and Revised Soil Vapor Investigation Work Plan, Atlantic Richfield Company Station No. 374, 6407 Telegraph Avenue, Oakland, California. June 19.
- Broadbent. 2015. Soil Investigation and Vapor Intrusion Assessment Report, Former Richfield Oil Company Station #374, 6407 Telegraph Avenue, Oakland, California ACEH Case #RO0000078. March 31.
- SWRCB. 2012. Low Threat UST Case Closure Policy.
http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0016ata.pdf August 17.

TABLES



Table 1
 Soil Analytical Data
 Former BP Service Station No. 0374
 6407 Telegraph Avenue, Oakland, California



Sample ID	Date	Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	DIPE (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	TBA (mg/kg)	Ethanol (mg/kg)	Naphthalene (mg/kg)	Lead (mg/kg)
LTCP Criteria - 0 to 5 feet bgs			NA	8.2	NA	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	NA
LTCP Criteria - 5 to 10 feet bgs			NA	12	NA	134	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	NA
April 1988 - Limited Environmental Site Assessment																	
B1	Apr 1988	5	165	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B1	Apr 1988	10	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2	Apr 1988	5	260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2	Apr 1988	8.5	60	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3	Apr 1988	5	64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3	Apr 1988	9	62	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4	Apr 1988	5	389	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4	Apr 1988	8.5	930	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
June 1988 - Excavation and Removal of USTs																	
S-11-T1a	Jun 1988	11	399	14.7	20.0	20.5	91.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-11-T1b	Jun 1988	11	8	2.57	0.74	0.39	2.75	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-12-T2a	Jun 1988	12	4	0.35	0.10	0.38	0.70	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-12-T2b	Jun 1988	12	75	0.91	1.77	3.61	11.92	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-12-T3a	Jun 1988	12	4	2.54	0.13	<0.05	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-12-T3b	Jun 1988	12	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-12-T4a	Jun 1988	12	1,097	16.3	34.5	81.6	188.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-12-T4a2**	Jun 1988	12	795	23.1	24.9	67.1	130.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S-12-T4b	Jun 1988	12	3	0.76	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-13-PIT	Jun 1988	13	3.6	0.738	0.038	0.154	0.566	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
July 1989 - Limited Subsurface Investigation																	
B1/MW-1	Jul 1989	3.5	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B1/MW-1	Jul 1989	8.5	60	0.66	2.9	0.99	5.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2/MW-2	Jul 1989	3.5	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2/MW-2	Jul 1989	13.5	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2/MW-2	Jul 1989	18.5	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3/MW-3	Jul 1989	3.5	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4/MW-4	Jul 1989	3.5	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4/MW-4	Jul 1989	13.5	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4/MW-4	Jul 1989	18.5	<2	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4 (1a,b,c,d)*	Jul 1989	731	21	<0.05	<0.05	<0.05	0.37	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1995 - TR Samples																	
Product Lines																	
TR-A-1	9/21/1995	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	15
TR-A-2	9/21/1995	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-3	9/21/1995	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-8	9/21/1995	3	65	<0.025	0.15	0.096	6.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-9	9/21/1995	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-10	9/21/1995	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-11	9/21/1995	3	1.9	<0.0050	<0.0050	0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-12	9/21/1995	3	6.2	<0.0050	<0.0050	0.0067	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-13	9/21/1995	3	48	0.30	2.2	0.53	3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Product Dispensers																	
TR-A-4	9/21/1995	3	<1	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-6	9/21/1995	3	140	<0.50	1.1	0.80	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-14	9/21/1995	3	89	2.1	8.5	1.7	9.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TR-A-15	9/21/1995	3	19	0.0089	0.37	0.045	1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
November 13, 2008 - Soil Boring Samples																	
B-11	11/13/2008	15	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.014	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
B-12	11/13/2008	15.5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.0072	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.011	<0.10	NA	NA
Waste Comp.	11/13/2008	--	NA	<0.0010	<0.0010	<0.0010	<0.0010	0.0084	<0.0020	<0.0020	<0.0020	NA	NA	<0.010	NA	NA	NA

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Former BP Service Station No. 0374
6407 Telegraph Avenue, Oakland, California



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LTCP Criteria - 0 to 5 feet bgs			NA	8.2	NA	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	NA
LTCP Criteria - 5 to 10 feet bgs			NA	12	NA	134	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	NA
2008 - Pipeline Soil Data																	
D-1	12/4/2008	2.5	120	0.15	<0.10	1.8	9.7	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	4.76
D-2	12/4/2008	2.5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	5.50
D-3	12/4/2008	2.5	17	0.46	<0.10	0.91	1.8	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	11.70
D-4	12/4/2008	2.5	1,500	3.6	0.12	3.6	2.9	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	8.65
D-4	12/9/2008	5	5,300	19	1.1	23	31	<0.50	<1.0	<1.0	<1.0	<0.50	<0.50	<5.0	<50	NA	11.2
D-5	12/4/2008	2.5	2.9	<0.0010	0.0019	<0.0010	0.0021	0.0038	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	5.38
D-6	12/4/2008	2.5	1.7	0.0054	0.015	0.0037	0.021	0.0055	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	0.19	NA	5.81
PL-1	12/4/2008	3	8.0	<0.0010	<0.0010	<0.0010	<0.0010	0.046	<0.0020	0.0027	<0.0020	<0.0010	<0.0010	0.019	<0.10	NA	5.49
PL-2	12/4/2008	3	<0.50	0.0059	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.10	<0.10	NA	6.03
PL-3	12/4/2008	3	6,500	18	0.74	25	12	<0.20	<0.40	<0.40	<0.40	<0.20	<0.20	<2.0	<20	NA	12.20
PL-3	12/9/2008	5	0.78	0.035	<0.0010	0.019	0.0021	0.012	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	5.43
PL-4	12/4/2008	3	26	<0.10	<0.10	0.35	<0.10	0.16	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	5.16
PL-5	12/4/2008	3	15	<0.10	<0.10	0.36	0.10	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	4.89
September 2009 - On Site Investigation																	
B13	9/21/2009	4.5	1.7	0.048	0.0017	0.036	0.019	0.024	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.052	<0.10	NA	NA
B13	9/21/2009	6.5	67	0.38	<0.10	0.82	1.8	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
B13	9/21/2009	8.5	1,800	8.2	71	32	190	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<10	<100	NA	NA
B14	9/21/2009	4.5	<0.50	0.0018	<0.0010	<0.0010	<0.0010	0.012	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.014	<0.10	NA	NA
B14	9/21/2009	6.5	0.73	0.011	<0.0010	0.0023	<0.0010	0.025	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.031	<0.10	NA	NA
B14	9/21/2009	8.5	390	0.56	<0.10	6.3	0.70	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
B15	9/21/2009	4.5	1,400	0.87	<0.10	4.3	3.0	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
B15	9/21/2009	6.5	170	0.91	<0.10	2.8	7.5	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
B15	9/21/2009	8.5	940	2.2	<1.0	13	52	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<100	NA	NA
November 22-24, 2010 - On Site Investigation																	
B19	11/23/2010	3	2.7	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
B19	11/23/2010	5	2.6	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
B19	11/23/2010	6	<0.50	0.0053	<0.0010	<0.0010	<0.0010	0.0032	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
B19	11/23/2010	8	190	0.84	0.0065	5.5	0.044	0.015	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
B19	11/23/2010	9.5	250	0.19	0.0016	1.4	0.0094	0.011	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
B19	11/23/2010	11	18	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
B19	11/23/2010	12.5	47	0.018	<0.0010	0.026	0.0025	0.0013	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.013	<0.10	NA	NA
B19	11/23/2010	14	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
B19	11/23/2010	15.5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.0034	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-7	11/22/2010	3	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-7	11/22/2010	5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.0017	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-7	11/22/2010	6	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.0023	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-7	11/24/2010	8	650	0.0047	<0.0010	9.2	9.3	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-7	11/24/2010	9.5	<0.50	<0.0010	<0.0010	0.0014	0.0014	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-7	11/24/2010	11	<0.50	<0.0010	<0.0010	0.0015	0.0017	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-7	11/24/2010	12.5	<0.50	<0.0010	<0.0010	0.0018	0.0021	0.0017	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-7	11/24/2010	14	1.2	<0.0010	<0.0010	0.0020	0.0024	0.0080	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA

Table 1
Soil Analytical Data
Former BP Service Station No. 0374
6407 Telegraph Avenue, Oakland, California



Sample ID	Date	Depth (ft)	GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	DIPE (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)	TBA (mg/kg)	Ethanol (mg/kg)	Naphthalene (mg/kg)	Lead (mg/kg)
LTCP Criteria - 0 to 5 feet bgs			NA	8.2	NA	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	NA
LTCP Criteria - 5 to 10 feet bgs			NA	12	NA	134	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	NA
November 22-24, 2010 - On Site Investigation (Continued)																	
MW-8	11/22/2010	3	2.6	0.0099	<0.0010	<0.0010	0.0023	0.011	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.013	<0.10	NA	NA
MW-8	11/22/2010	5	1.7	0.057	<0.0010	0.028	0.0033	0.0075	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.013	<0.10	NA	NA
MW-8	11/22/2010	6	3.2	0.23	<0.10	0.75	<0.10	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
MW-8	11/23/2010	8	510	2.7	<0.10	8.8	5.0	0.13	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
MW-8	11/23/2010	9.5	900	1.2	<0.10	12	6.7	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
MW-8	11/23/2010	11	1,400	<0.10	<0.10	<0.10	0.11	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
MW-8	11/23/2010	12.5	0.93	0.0041	<0.0010	0.0036	0.0018	0.0014	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-8	11/23/2010	14.5	0.57	0.022	<0.0010	0.011	0.0056	0.036	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.011	<0.10	NA	NA
MW-9	11/22/2010	3	5.2	0.0069	<0.0010	0.0012	0.0028	0.046	<0.0020	0.0030	<0.0020	<0.0010	<0.0010	0.026	<0.10	NA	NA
MW-9	11/22/2010	5	1.4	0.0024	<0.0010	0.0052	<0.0010	0.031	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.037	<0.10	NA	NA
MW-9	11/22/2010	6	3.5	0.025	<0.0010	0.060	0.0036	0.033	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	0.036	<0.10	NA	NA
MW-9	11/23/2010	8	710	1.2	<0.20	16	28	<0.20	<0.40	<0.40	<0.40	<0.20	<0.20	<2.0	<20	NA	NA
MW-9	11/23/2010	11	54	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.20	<0.10	<0.10	<1.0	<10	NA	NA
MW-9	11/23/2010	12.5	46	<0.0010	<0.0010	<0.0010	0.0014	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	0.12	NA	NA
MW-9	11/23/2010	14	9.3	0.0012	<0.0010	0.0013	0.0017	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
MW-9	11/23/2010	15.5	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	0.031	<0.0020	<0.0020	<0.0020	<0.0010	<0.0010	<0.010	<0.10	NA	NA
December 2014 - January 2015																	
B-1B	1/16/2015	3	1.6	0.0043	<0.0010	0.0020	0.0050	<0.0020	<0.0020	<0.0020	<0.0020	NA	<0.0010	<0.050	<0.20	0.050	NA
B-1B	1/16/2015	7	0.95	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NA	<0.0010	<0.050	<0.20	<0.0020	NA
B-2	12/4/2014	3-3.5	<0.39	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NA	<0.0010	<0.050	<0.20	<0.0020	NA
B-2	12/4/2014	8-8.5	<0.38	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NA	<0.0010	<0.050	<0.20	<0.0020	NA
B-3	12/10/2014	3-3.5	<0.40	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NA	<0.0010	<0.050	<0.20	<0.0020	NA
B-3	12/10/2014	5-5.5	<0.40	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	NA	<0.0010	<0.050	<0.20	<0.0020	NA

Notes:

ft = feet

feet bgs = feet below ground surface

mg/kg = milligrams per kilogram

GRO = gasoline range organics (C6 - C12)

MTBE = methyl tert-butyl ether

ETBE = ethyl tert-butyl ether

TAME = tert-amyl methyl ether

DIPE = di isopropyl ether

1,2-DCA = 1,2-dichloroethane

EDB = 1,2-dibromoethane

TBA = tert-butyl alcohol

LTCP - Low Threat UST Closure Policy, California State Water Resources Control Board (SWRCB), August 17, 2012

LTCP Criteria listed in Table1, page 8 of the LTCP for a commercial / industrial exposure scenario

BOLD = concentrations detected above LTCP criteria

< = not detected above reporting limit in mg/kg

NA = not analyzed

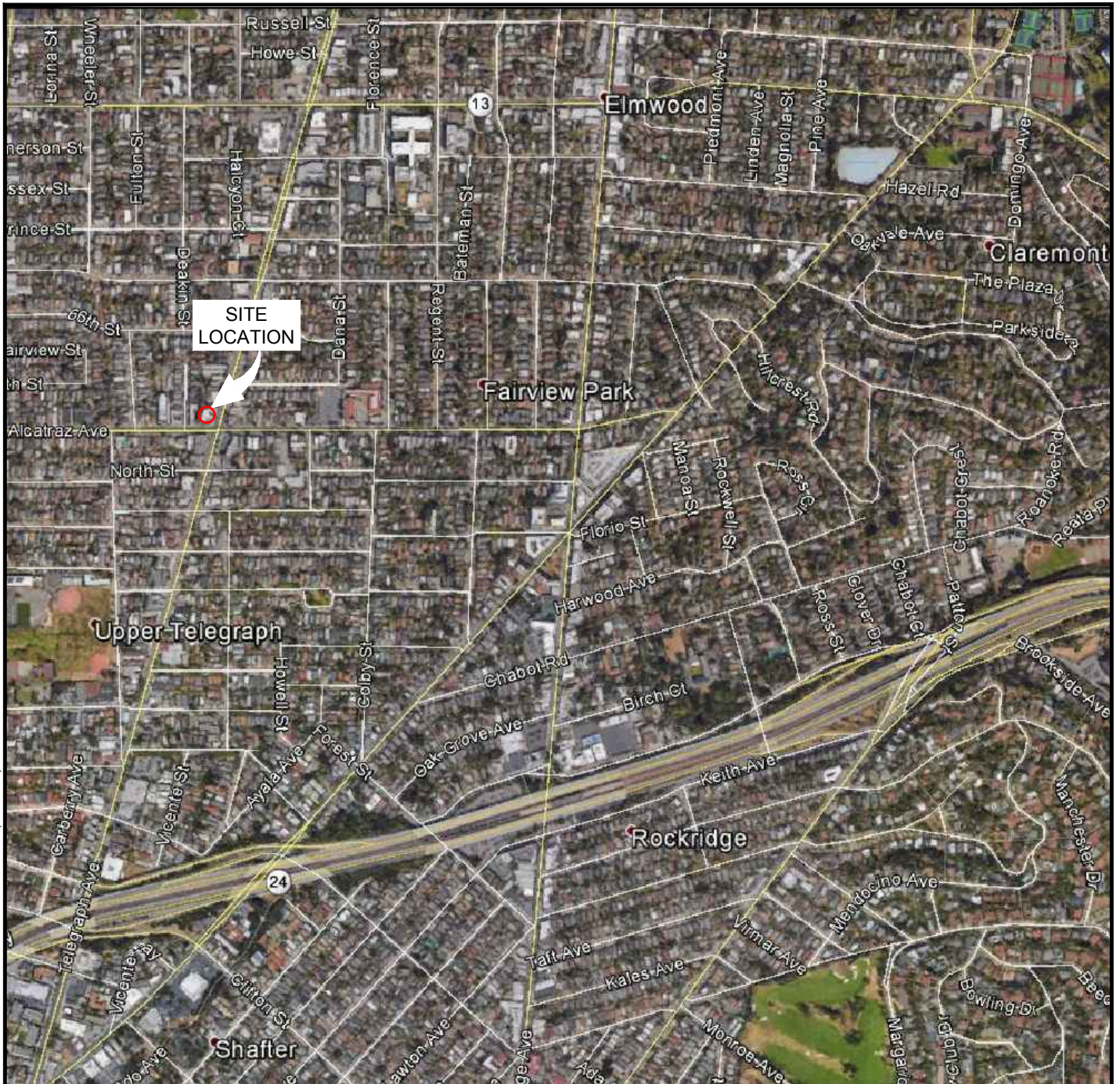
* = signifies composite sample following aeration

** = resample area near T4A following additional excavation

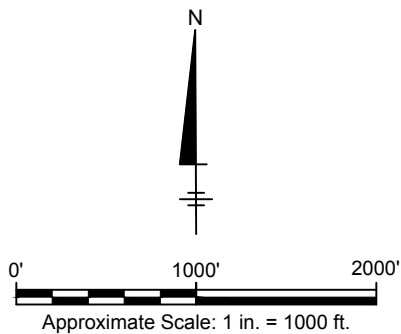
FIGURES



CITY:MUMBAI, INDIA DIV:GROUP:ENVCAD DB: S.DSOUZA LD: PIC: ES: TM: ES: SAVED: 4/10/2017 5:47 PM ACADVER: 20.1S (LMS TECH) PAGES: 20 PLOT: 4/11/2017 2:33 PM BY: VIKRAM CHANDREGOWDA
 E:\PROJECTS\119_#0374_Oakland CLR\Fig 1-0374_Site Location Map.dwg LAYOUT: LAYOUT1



MAP SOURCE: Google Earth 2016, 37°50'50.91"N, 122°15'21.28"W



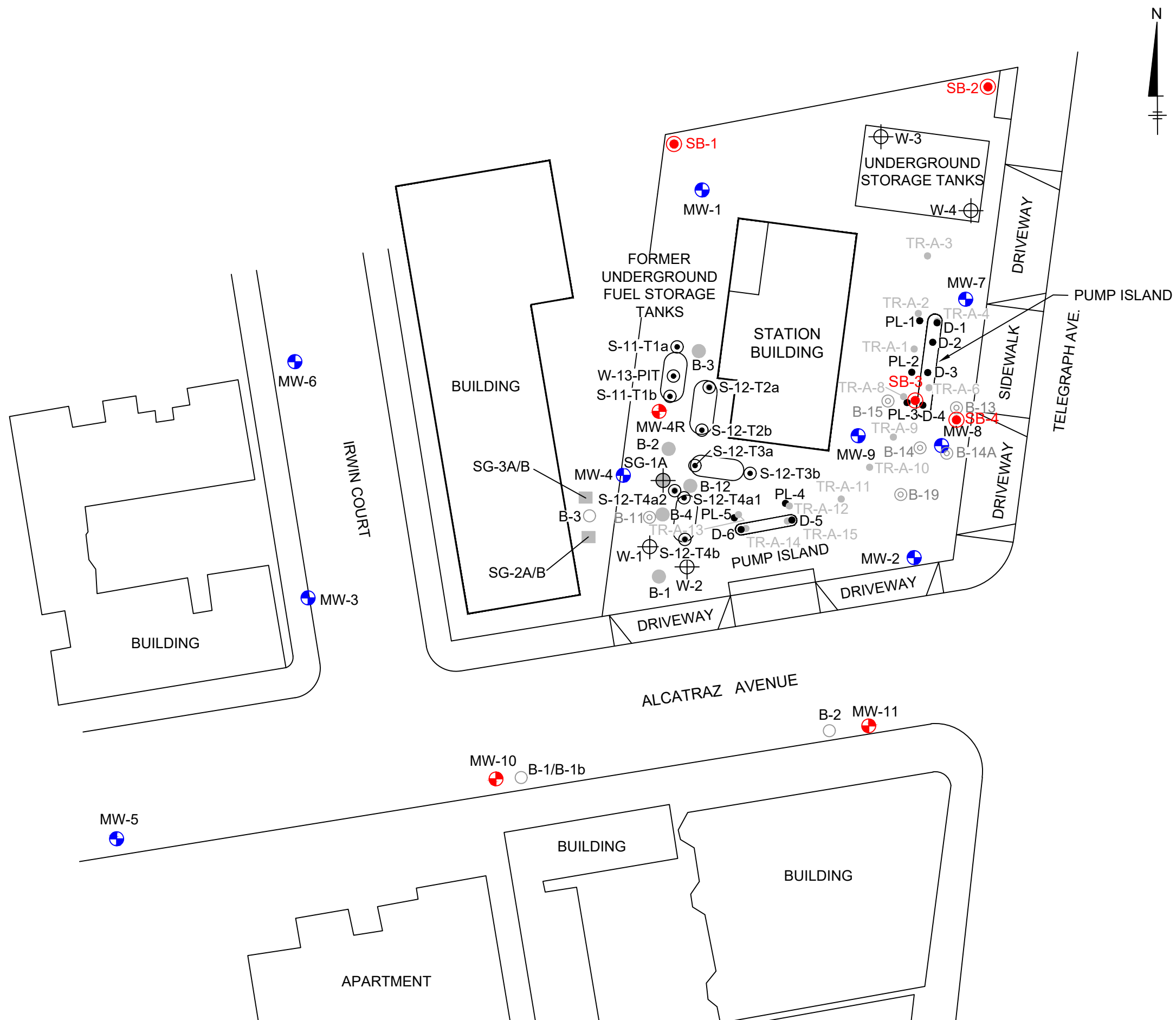
FORMER BP SERVICE STATION NO. 0374
 6407 TELEGRAPH AVENUE
 OAKLAND, CALIFORNIA

SITE LOCATION MAP



FIGURE
1

CITY: MUMBAI, INDIA DIV/GROUP: ENVCAD DB: S.DSOUZA.LD: TM: LYR:
 G:\Projects\BP North America - James Jacobsen\CA-0374\Data\Figures\Figure_2_Option 1.dwg LAYOUT: 2 - SAVED: 8/22/2017 2:03 PM ACADVER: 2015 (LMS TECH) PAGESETUP: PLOTSTYLETABLE: PLOTTED: 8/22/2017 2:04 PM BY: WONG, MELANIE

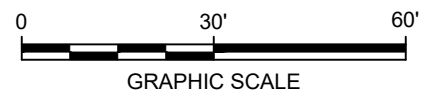


LEGEND:

- MONITORING WELL LOCATION
- TANK PIT MONITORING WELL LOCATION
- PROPOSED SOIL BORING LOCATION
- PROPOSED MONITORING WELL LOCATION
- SOIL VAPOR PROBE LOCATION
- NESTED SOIL VAPOR PROBE LOCATION
- SOIL BORING LOCATION (1988)
- EXCAVATION & UST REMOVAL SAMPLES (1988)
- PRODUCT LINE & DISPENSER SAMPLES (1995)
- SOIL SAMPLE (DEC 2008)
- SOIL BORING LOCATION (2008, 2009 & 2010)
- SOIL BORING LOCATION (2014 & 2015)

NOTES:

- 1) SITE MAP ADAPTED FROM IT CORPORATION FIGURES.
- 2) SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



FORMER BP SERVICE STATION NO. 0374
 6407 TELEGRAPH AVENUE
 OAKLAND, CALIFORNIA

SITE PLAN