

17 March 2017
Project 770638301

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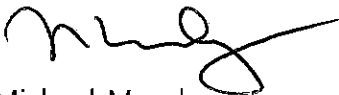
Kit Soo, P.G.
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**Subject: Data Gaps Investigation Work Plan
M&M Property LLC
2800 Broadway
Oakland, California
Case No. RO0003201
Langan Project No. 770638301**

Dear Ms. Soo:

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document submitted on my behalf to ACDEH's FTP server and the State Water Resources Control Board's GeoTracker website.

Sincerely yours,



Michael Murphy
M&M Property LLC.

DATA GAPS INVESTIGATION WORK PLAN
2800 Broadway
Oakland, California

Prepared For:

M&M Property LLC
2800 Broadway
Oakland, California

Prepared By:

Langan Engineering and Environmental Services, Inc.
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17 March 2017
770638301

LANGAN

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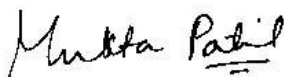
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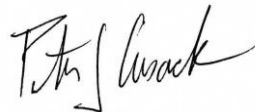
On behalf of M&M Property LLC, we are pleased to present this *Data Gaps Investigation Work Plan* for the property located at 2800 Broadway, Oakland, California. The intent of the work plan is to address potential data gaps in our conceptual site model to evaluate remedial objectives to advance site cleanup.

If you have any questions or concerns, please contact either of the undersigned at (408) 283-3600.

Sincerely yours,
Langan Engineering and Environmental Services, Inc.



Mukta Patil, PE
Project Engineer



Peter Cusack
Senior Associate/VP

cc: Michael Murphy, M&M Property LLC

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DATA GAPS INVESTIGATION WORK PLAN
2800 Broadway
Oakland, California

1.0 INTRODUCTION

This Data Gaps Investigation Work Plan (work plan) has been prepared by Langan Engineering and Environmental Services, Inc (Langan) for M&M Property LLC. The work plan proposes investigation activities to address potential data gaps and to prepare a conceptual site model for the property located at 2800 Broadway in Oakland, California (site, Figure 1). The data gaps were identified during a review of previously prepared historical documents for the site and nearby properties. Based on our review, we propose performing soil, soil gas, and groundwater subsurface investigation activities which will provide additional information on the lateral and vertical extent of volatile organic compounds (VOCs), primarily trichloroethene (TCE) and its daughter products, and total petroleum hydrocarbons and which will assist in our current understanding of potential source(s).

This work plan presents the site description and background (Section 2.0), the current conceptual site model (Section 3.0); a data gaps assessment (Section 4.0); a proposed investigation to close data gaps (Section 5.0); data evaluation and reporting (Section 6.0); and a schedule for the proposed work (Section 7.0).

2.0 SITE DESCRIPTION AND BACKGROUND

The site is located to the northeast of the intersection between Broadway and 28th Street in Oakland, in an area known as "Auto Row", characterized primarily by commercial and high density residential buildings. The site area is approximately 13,200 square feet and currently contains a one-story warehouse building with a mezzanine which was built in 1916 (Figure 2). According to the Alameda County Assessor's Office, the property is identified as Assessor's Parcel Number (APN) 09-685-68. The building is used for storing vehicles for Premier Hyundai of Oakland and Volkswagen of Oakland, both automobile dealerships. The surface topography across the site and surrounding area generally slopes toward south. The site is bound by Broadway to the west, a commercial building under construction to the north (2820 Broadway, formerly a Hyundai dealership), a smog station (Broadway Smog Station, 288 28th Street) to the east and 28th Street to the south. To the south across from 28th Street is the Broadway Volkswagen Dealership building (2740 Broadway)

3.0 CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) is one of the primary planning tools that can be used to support the decision making process managing potential exposures to contamination. The CSM organizes available information about a site in a clear and transparent structure and facilitates the identification of data and information gaps. As part of the CSM, the site geology and hydrogeology, the site history, historical site investigations and potential source areas are presented in the following sections.

3.1 Site Geology and Hydrogeology

The subsurface has been explored to a depth up to 28 feet bgs. The soils at these properties reportedly consist of silt, silty sand, silty clay, sandy clay and clayey sand, with clays ranging from soft to very stiff. The site is located within the Coast Ranges geomorphic province, which is characterized by a series of parallel, northwesterly trending, folded and faulted mountain chains and valleys. In central California, these ranges are separated by a geologic depression that formed mainly by Franciscan Formation rock series, consisting of Jurassic Franciscan melanges. The East Bay ranges forms the eastern boundary of the Bay and consist of Late Mesozoic shelf and slope sedimentary rocks. Situated between the East Bay ranges and San Francisco Bay is the East Bay Plain. This plain measures approximately 25 miles long and 2 to 7 miles wide. Prior to urban development, the plain consisted of tidal flats, estuaries and alluvial plains.

Groundwater has been encountered approximately 15 feet below ground surface (bgs) in a soft loose sandy clay or sandy silt layer, and is assumed to be 'semi-confined' as groundwater rises from first encountered depth to about 12 feet bgs. The groundwater flow direction in the site vicinity varies, with data from the site to the south (the Volkswagen dealership property at 2470 Broadway), indicating a northern and western flow direction, while the site to the northwest of the property indicates a southern groundwater flow direction (ATC, 2015). Glen Echo Creek is approximately 375 feet east of the site, and flows in a southeasterly direction towards Lake Merritt, which is approximately 0.5 miles southeast of the site.

3.2 Site Usage History

According to the Phase I Environmental Site Assessment (ESA) by ATC, dated 4 September 2015, the site was vacant prior to 1902. Two residential buildings occupied the site from 1903 through 1912. The existing building was constructed approximately in 1916. Historical uses of the on-site building have included a car dealership in 1933, an auto parts and service center in

1938, used car sales from 1943 through 1945, a lighting retail store from 1950 through 1991, an automotive upholstery service from 1996 through 2008, and storage of cars for an auto dealership from 2008 to present.

3.3 Site Investigations

In February 2015, as part of due diligence activities, AEI Consultants (AEI) performed a Phase I Environmental Site Assessment (ESA) for M&M Property LLC for the three parcels located at 2800, 2820 and 2855 Broadway, Oakland, CA. The Phase I ESA report, dated 19 February 2015, recommended that a Phase II ESA be performed based on historical light industrial and auto repair activities associated with the properties. AEI advanced 11 exploratory borings (SB1 through SB-11) on 8 April 2015 to a depth of 15 feet bgs. Three of the exploratory borings (SB-4 through SB-6) were located on the 2800 Broadway parcel (see Figure 2 for exploratory boring locations). The volatile organic compound (VOC) trichloroethene (TCE) was detected in borings SB-5 and SB-6 at concentrations of 0.015 and 0.0069 milligrams per kilogram (mg/kg), respectively at depths of 12 feet bgs, which were below the San Francisco Regional Water Quality Control Board (Water Board) Tier 1 commercial/industrial environmental screening level (ESL) of 0.46 mg/kg. No other volatile organic compounds (VOCs) were detected in the soil samples analyzed from the three exploratory borings drilled at the site. No further investigation was recommended by AEI.

ATC performed an additional Phase I ESA dated 4 September 2015 for Premier Hyundai of Oakland for the properties located at 2800, 2820 and 2855 Broadway in Oakland, California. Based on the findings of the Phase I ESA, a Limited Phase II ESA was performed by ATC between 19 September 2015 to 6 November 2015. The Phase I ESA and Phase II ESAs were performed as part of due diligence activities for the proposed Broadway–Valdez redevelopment project. While the property at 2800 Broadway was not part of the property transaction for Broadway-Valdez redevelopment project, the data from the site was required to understand impacts on the adjoining 2820 Broadway property. The Limited Phase II ESA focused on investigating automotive uses on the three properties as well as potential impacts from the former leaking underground storage tank (UST) case at 2740 Broadway, which is located upgradient (assuming northerly gradient) and across 28th Street to the south of 2800 Broadway. ATC advanced 22 exploratory borings (B-1 through B-22) on the three parcels. Eleven of the exploratory borings (B-2, B-4 through B-10, and B-12 through B-14) were located on the 2800 Broadway property (Figure 2). The exploratory borings were drilled to a maximum depth of 28 feet bgs. ATC submitted a total of 37 soil and 11 groundwater samples that were collected

from the exploratory boring drill on the site for analytical testing. In soil sample B-2-16', total petroleum hydrocarbons (TPH) as gasoline (TPH-g) was reported at a concentration of 89 mg/kg, and TPH-as diesel (TPH-d) was detected at concentration of 94 mg/kg. These concentrations were above the established Tier I commercial/industrial ESLs. Petroleum hydrocarbons concentration below ESLs were also detected reported in soil samples from exploratory borings B-12-12', B-12-15', B-2-16', and B-4-14'.

TPH-g and TPH-d concentrations were detected in all 11 grab groundwater samples collected from the site. Maximum concentrations of TPH-g and TPH-d were detected in the sample collected from boring B-2, which was located at the southern border of the site, at concentrations of 880,000 microgram per liter ($\mu\text{g/L}$) and 170,000 $\mu\text{g/L}$, respectively. TPH-fuel oil (TPH-fo) was not detected in any of the grab groundwater samples, however, it should be noted that some of the detection levels were raised due to high concentrations of TPH-g and TPH-d. Benzene, toluene, ethylbenzene, and xylenes (BTEX) were also detected at significant concentrations in grab groundwater samples from borings B-2, B-4, B-5, and B-12. TCE was also detected in all the 11 samples at a concentration exceeding the established ESL of 5 $\mu\text{g/L}$. The detected TCE concentrations ranged from 17 $\mu\text{g/L}$ (in boring B-10 located in the northwestern portion of the site) to 14,000 $\mu\text{g/L}$ in borings B-1 and B-5 (both located along the southern border of the site).

3.4 Potential Source Areas

Previous reports prepared for the site have suspected the sewer line, which runs from a sink located in a utility closet to the north wall of the building and runs south to its discharge point to the city sewer located beneath 28th Street, as a potential source area. Previous reports have also suspected that there may be additional off-site sources contributing to the petroleum contamination present in the site groundwater. Therefore, Langan reviewed the Water Board and the Alameda County Environmental Health (ACEH) online databases to evaluate the potential for off-site contributions from upgradient properties. Groundwater data from the Broadway Volkswagen (VW) dealership property at 2470 Broadway and the adjoining 2820 Broadway and 2855 Broadway sites located upgradient were reviewed.

2820 Broadway

Site investigations performed as part of Phase II ESAs by AEI and ATC, soil analytical results indicated the presence of TPH-g at a maximum concentration of 188 mg/kg, TPH-d at a maximum concentration of 680 mg/kg and TPH-motor oil (TPH-mo) at a maximum

concentration of 3,100 mg/kg. Low concentrations of BTEX were also detected, but the detected concentrations were below their respective ESLs. Chlorinated hydrocarbons were not detected above reporting limits in the analyzed vadose zone soil samples.

Benzene and ethylbenzene detections were reported in grab groundwater samples exceeding their respective ESLs, however TPH detections were below the ESLs. TCE concentrations ranged in concentrations of 79 to 116 µg/L.

2855 Broadway

Site investigations performed as part of Phase II ESAs by AEI and ATC soil analytical results indicated the presence of TPHg and TPHd at maximum concentrations of 12 and 290 mg/kg, and TPHmo was detected at a maximum concentration of 590 mg/kg. Ethylbenzene, total xylenes, and naphthalene were detected at low concentrations ranging from 0.0076 to 0.15 mg/kg, however, benzene was not detected above reporting limits in any of the analyzed vadose zone soil samples.

According to the historical Phase II ESA reports, TPH-g, TPH-d, and TPH-mo concentrations in groundwater at this property did not exceed applicable ESLs. Low concentrations of TCE and tetrachloroethene (PCE) were also detected in the groundwater samples beneath the property but below established Tier I commercial/industrial ESLs.

Based on the reviewed historical data and the concentrations of VOCs detected at 2820 and 2855 Broadway properties, it is unlikely that these properties are impacting the current condition of the site.

2470 Broadway

Historical data collected at the Broadway Volkswagen property, a closed LUST UST property, indicate several soil, groundwater and soil vapor investigations have been performed at the property. The initial work at the property included removal of four USTs: one 1,000-gallon UST (Tank A) used to store waste oil (formerly located near the garage near 27th Street), one 300-gallon UST (Tank B) used to store waste oil (formerly located along Broadway), one 550-gallon UST (Tank C) and one 1,500-gallon UST (Tank D) both used to store gasoline (formerly located along 28th Street). Soil samples collected during the removal of Tank A did not detect the presence of petroleum contamination. Soil samples collected during the removal of Tank B detected TPH-g at a concentration of 640 mg/kg and total oil and grease at a concentration of 2,400 mg/kg. Soil samples collected during the removal of Tanks C and D contained TPHg and

BTEX at elevated concentrations. Also, a light non-aqueous phase liquid (LNAPL) was identified during the excavation activities of the former Tanks C and D.

Six groundwater monitoring wells (MW-1 and MW-3 through MW-7) were installed to total depths of 20 and 30 feet bgs in the sidewalk along 28th Street and on the street near Tanks C and D. Groundwater monitoring well MW-2 was installed near the former waste oil UST along Broadway. . Three groundwater monitoring wells, MW-4 through MW-6, were reportedly abandoned in 1994, and groundwater monitoring well MW-2 was reportedly abandoned in 1991.

Reportedly, a soil vapor and groundwater extraction system operated from February 1996 through March 1998. Soil vapor extraction wells (SV-1 through SV-3) and monitoring well MW-3 were included in the extraction system. Reportedly a total of approximately 44,837 gallons of water was extracted, treated and discharged to the sewer system. Approximately 1,048 grams of TPHg and 180 grams of benzene were removed by the vapor extraction system. However, the operational details and treatment methods were not available in the historical reports. Case closure requests submitted to ACEH in 1999 by QST Environmental and in 2003 by Mactec were both denied due to the concentrations of VOCs in MW-3, which had detected concentrations of VOCs at the levels detected prior to the extraction and treatment operations.

Based on no reported data, the groundwater monitoring activities were likely not performed from 1999 to 2012. In June 2012, ARCADIS performed redevelopment and sampling activities at the remaining groundwater monitoring wells (MW-1, MW-3 and MW-7) and soil vapor extraction wells (VW-1, VW-2 and VW-3). ARCADIS installed two additional groundwater monitoring wells MW-8 and MW-9 in July 2013. Soil samples collected during the groundwater monitoring well installation activities were analyzed for TPHg, TPHd, TPHmo, BTEX and MTBE. Analytical results of the soil samples were below their respective laboratory reporting limits. However, several VOCs were detected above ESLs in the two groundwater samples. ARCADIS prepared a work plan for additional subsurface investigation and after obtaining ACEH approval in July 2013, ARCADIS advanced five membrane interface probes (MIP) soil borings (MIP-1 through MIP-5, Figure 2) to approximately depths of 30 to 35 feet bgs using a direct-push drill rig equipped with an electrical conductivity (EC) measurement device and MIP sample collector. The response from the petroleum-related MIP detectors suggested the presence of petroleum compounds within a three-foot-thick sand layer, between the depths of approximately 11 to 21 feet bgs. The response from the EC/MIP detectors did not detect the presence of chlorinated VOCs at MIP-1 and MIP-2 locations, however, MIP-3 through MIP-5 indicated the presence of

low concentrations of chlorinated VOCs. Grab groundwater samples collected from the MIP borings detected concentrations of TPHg, d, mo, BTEX and naphthalene above ESLs.

ARCADIS performed a soil vapor investigation in February 2014 to evaluate vapor intrusion into the 2740 Broadway building. Three soil vapor monitoring locations (VW-4 through VW-6) were installed to depths of 5.5 feet bgs and five sub-slab monitoring probes (SS-SV-1 through SS-SV-5) were installed and sampled. The results indicated absence of soil vapor concentrations above commercial ESLs.

Although significant detections of VOCs were not reported in soils beneath the property, groundwater samples collected from the years of 1991 to 1993 indicated concentrations of chlorinated VOCs, specifically TCE and dichloroethane (DCA). Three of the groundwater monitoring wells (MW-4 through MW-6) were screened within shallow sand layer (at depths of 11 or 17 feet bgs) and the deeper semi-confined aquifer (depths of 22 to 23 feet bgs), had elevated detections of TCE (530 to 2,100 µg/L). The deeper semi-confined aquifer was likely impacted by the leaking USTs. The TCE was suspected to be from an unknown off-site source. Upon receiving ACEH approval, the groundwater monitoring wells MW-4, MW-5 and MW-6 were destroyed on 16 March 1994 to prevent vertical migration of TCE into shallow groundwater from the deeper semi-confined aquifer.

Based on the subsurface investigations and remedial activities performed over the years, ARCADIS submitted a Conceptual Site Model and Low-Threat Closure Request for the 2740 Broadway property in their report dated 5 June 2014. In a letter dated 5 May 2015, the fuel leak case for the USTs formerly located at 2740 Broadway was closed consistent with the Water Board's Low-Threat Underground Storage Tank Closure Policy, by the ACEH. The closure letter notes that the groundwater plume has not been fully delineated to the north due to the presence of a large off-site building.

4.0 DATA GAPS

After reviewing historical documents and existing analytical data, additional data collection is proposed to close data gaps, update the conceptual site model and obtain information for possible future remedial alternatives evaluation and design. After reviewing the most recent (2015) soil, soil vapor and groundwater monitoring data, we identified locations where additional data would provide a more complete picture of the distribution of contaminants of concern (COCs). This section summarizes the data gaps identified for further investigation. The

data gaps and recommended sampling is provided in this section and sampling methodology and analysis is described in Section 5.0.

4.1 Source Identification

On-site – 2800 Broadway

The source area for the COCs in soil and groundwater has not been identified. The working theory is that a utility sink in the central portion of the building was used to dispose of petroleum and solvent wastes from the historical automotive repair operations performed at the site. The sewer line that connects the utility sink to its discharge point at the city sewer which is located beneath 28th Street has been denoted as the source area. However, based on the highest concentrations of COCs detected along the southern border of the site, this hypothesis needs to be re-assessed. Therefore, a video survey of the sewer line is proposed to determine the integrity and connections of the sewer line.

Off-site

Significant concentrations of COCs, particularly TCE, TPHg and TPHd, have been detected along the southern and eastern portions of the site. The off-site sources to the south of the site across 28th Street are closed former leaking USTs at the 2740 Broadway property. The leaking UST case was closed with the contamination plume not fully delineated due to site constraints. It is currently unknown whether there is an on-site source impacting off-site or if there is an off-site source impacting the site or if there is a case of comingled plume. Therefore, additional MIP borings are proposed to fill this data gap.

4.2 Groundwater Flow Direction

The groundwater gradient at the 2740 Broadway property located to the south of the site reported a groundwater gradient direction ranging from west to northwest. However, the regional groundwater flow in the area is generally towards south or southeast. Therefore, hydraulic gradient beneath the site needs to be determined. Installation of groundwater monitoring wells, survey of top of casing elevations and measurement of depth to groundwater is proposed to fill this data gap.

4.3 Vapor Intrusion Evaluation

Based on the historical documentation, VOC concentrations in soil and groundwater beneath the site suggest possible vapor intrusion into the building. In addition, the elevated

concentrations of VOCs in the eastern portion of the site suggest potential vapor intrusion risk to the occupants at the adjacent smog station building (288 28th Street). To date, soil vapor samples have not been collected at the site. This data gap is proposed to be filled by installing and sampling soil vapor probes on-site along the perimeter of the building.

5.0 PROPOSED INVESTIGATION

5.1 Video Survey

A video survey will be performed of the sink drain inside the building to assess the integrity of the discharge line and discharge location. Any observations (cracks, line separations) resulting from the video survey may contribute to selecting more appropriate soil, soil vapor and groundwater monitoring well locations. If additional sampling locations are needed, we will provide a revised proposed sampling plan, and ACEH will be notified of any proposed modification of the assessment scope.

5.2 Soil, soil vapor and groundwater sampling

Additional soil, soil vapor and groundwater sampling is proposed to update the conceptual site model and to obtain information for possible future remedial alternatives evaluation and design. The scope includes advancing eight exploratory soil borings using membrane interface probe (MIP) technology, drilling eight exploratory borings for soil sample collection based on the MIP data, drilling four soil vapor points for the collection of soil vapor samples along the site boundary, and installation of six groundwater monitoring wells based on the MIP data (see Figure 2).

5.2.1 Pre-field Activities

Langan will prepare a site-specific health and safety plan (HASP) detailing the scope of the subsurface investigations and identifying the potential health and safety risks associated with the subsurface investigations. Langan will obtain permits required to access the City of Oakland right-of-way from the City of Oakland Public Works Department. Drilling permits will also be obtained by the Alameda County Public Works Agency, Water Resources Section. Prior to all drilling and sampling activities, Langan will mark each proposed drilling location for Underground Services Alert (USA) and will retain a private utility locator to perform subsurface utility locating at each of the drilling locations. Each boring location in asphalt or concrete will be cored prior to drilling and all borings will be hand-cleared to at least five feet bgs prior to any drilling, to identify and prevent encountering subsurface utilities or obstructions.

5.2.2 MIP Data Acquisition and Soil Borings

Langan will observe the advancing and logging of the MIP data at eight locations using a direct-push drill rig equipped with a MIP tool. The MIP is a system manufactured by Geoprobe System® for the detection and measurement of VOCs in the subsurface. The MIP is a screening tool designed to find the depth at which VOC contamination is located by continuously measuring and logging the responses registered on the three detectors listed below.

- Detector 1 – photo ionization detector (PID);
- Detector 2 – electron capture device (ECD); and
- Detector 3 – flame ionization detector (FID).

The tubing that houses the carrier gas and conductivity cable is connected to the MIP tool and is strung through the probe rod. As the probe is driven below grade into undisturbed soil, the advancement is stopped at desired intervals (typically 6-inches) to heat the permeable membrane interface located on the wall of the probe and gather VOC data. Conductivity logging data (which provide lithologic soil-type information) are gathered on a continuous basis. VOCs that are exposed to the membrane are volatilized and picked up by the carrier gas behind the membrane, which in turn delivers the gas to the gas chromatograph detector at the surface. Langan will contract with a California-licensed drilling contractor to advance eight MIP soil borings to depth of approximately 30 feet bgs.

After obtaining and evaluating the MIP data, Langan will propose any changes to the sampling plan and submit to the ACEH for approval. Upon obtaining ACEH approval, eight exploratory soil borings will be advanced adjacent to the MIP borings using direct push techniques for the collection of soil samples. At a minimum, three soil samples will be collected at each location depending on the MIP results. Soil borings will be continuously logged in general conformance with the Unified Soil Classification system by a Langan field staff. Upon reaching total boring depth, a temporary 1-inch PVC screen will be inserted through the rods. Grab groundwater samples will be collected with a clean disposable bailer or peristaltic pump, and decanted into laboratory-prepared and supplied containers. Soil and groundwater samples will be stored in an ice-chilled cooler until delivery to a State of California-certified analytical laboratory. Figure 2 shows the locations of the proposed MIP and soil borings. Soil and groundwater samples from each boring will be analyzed for TPH-g, TPH-d, TPH-mo by EPA Method 8015 and VOCs by EPA Method 8260.

5.2.3 Monitoring Wells Installation

Based on the MIP boring logs, the soil and grab groundwater results, the locations and number of groundwater monitoring wells will be proposed for installation. Figure 2 shows the likely locations of the proposed groundwater monitoring wells.

The groundwater monitoring wells will be constructed with 5 to 10 feet of 2-inch diameter PVC 0.020 slotted screen, followed by 2-inch diameter flush threaded Schedule 40 PVC blank casing to approximately ground surface. The annular well space will be filled with No. 2/12 sand pack from the total depth to approximately one foot above the screen interval, followed by one foot of hydrated bentonite seal above the sand pack. Cement grout will be placed above the bentonite seal to about one foot bgs. The final surface completion will consist of a traffic-rated flush-mount well box. The groundwater monitoring wells will be surveyed by a licensed surveyor.

The monitoring wells will be allowed to set for a minimum of 48 hours after installation, prior to well development. Well development will be performed using a combination of surge block, bailer, and/or pumping to remove entrained fines. A maximum of ten casing volumes will be purged from each groundwater monitoring well. Groundwater parameters including temperature, pH, specific conductivity, and turbidity will be measured during development, and the well will be considered developed when groundwater parameter measurements vary by +/- 10 percent or less.

The groundwater monitoring wells are proposed to be sampled semi-annually for TPH-g, TPH-d, TPH-mo by EPA Method 8015 and VOCs by EPA Method 8260.

5.2.4 Soil Vapor Sampling

Four soil vapor probes will be installed along the eastern and northern perimeter of the 2800 Broadway building to determine if the onsite VOCs are impacting the vapor quality at the adjacent properties. A direct push drill rig will be advanced to a depth of five-foot bgs for the collection of soil vapor samples. The soil vapor samples will be collected in general accordance with the California Department of Toxic Substances Control's (DTSC) documents titled "*Advisory – Active Soil Gas Investigation*" dated July 2015 and "*Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*" dated October 2011. A shut-in test will be performed to ensure that no leaks exist in the laboratory provided sampling equipment. Soil vapor samples will be collected directly into one-Liter Summa canisters at a flow rate of 200 milliliter per minute (ml/min). Helium will be used as a tracer gas around the

probe rods during sampling as a quality assurance/quality control (QA/QC) measure to confirm the sample integrity. Soil vapor samples will be transported under chain-of-custody procedures to a State of California-certified laboratory.

After soil vapor sampling is completed, the temporary soil gas wells will be abandoned by removing the tubing assembly and backfilling the borings with neat-cement grout. Soil gas samples will be analyzed for VOCs by EPA Method TO-15 and Helium by ASTM Method D-1946.

All sampling equipment will be decontaminated between sampling locations. All soil and drilling waste will be stored at the site in sealed and labeled 55-gallon drums pending analytical profiling for proper off-site disposal.

6.0 DATA EVALUATION AND REPORTING

Following field activities, Langan will prepare a report detailing the results of the MIP borings, soil and grab groundwater sampling, groundwater monitoring well installations and soil vapor sampling, as well as descriptions of methods used, analytical laboratory results, and site-specific maps. The results of the investigation will be used to update the conceptual site model and to delineate the nature and extent of the contaminant plume. The report will also make recommendations for additional environmental studies or mitigation/remediation measures, as appropriate. In accordance with ACEH requirements, all reports and data will be uploaded to ACEH FTP website and Water Board's GeoTracker site.

7.0 SCHEDULE

Field work will begin within three weeks after obtaining ACEH approval, depending on subcontractor availability, field coordination, and permits procurement. The field investigation, analytical testing and preliminary data evaluation is estimated to take up to six weeks to complete. The anticipated order of activities will be:

1. Video survey of the drain and sewer Lines;
2. Pre-sampling field activities (USA and utility locating);
3. MIP boring advancement (Mobilization 1);
4. Soil, grab groundwater, and soil vapor borings advancement and sampling (Mobilization 2);
5. Groundwater monitoring well installations, development, sampling and analysis (Mobilization 3); and
6. Reporting.

We anticipate the final analytical results will be obtained in the summer of 2017 which will be used to update the conceptual site model and develop a groundwater remediation plan in the fall of 2017.

REFERENCES

Cardno ATC, 2015. *Draft Phase I Environmental Site Assessment, Premier Hyundai of Oakland, 2800, 2820 and 2855 Broadway, Oakland, California.* 4 September

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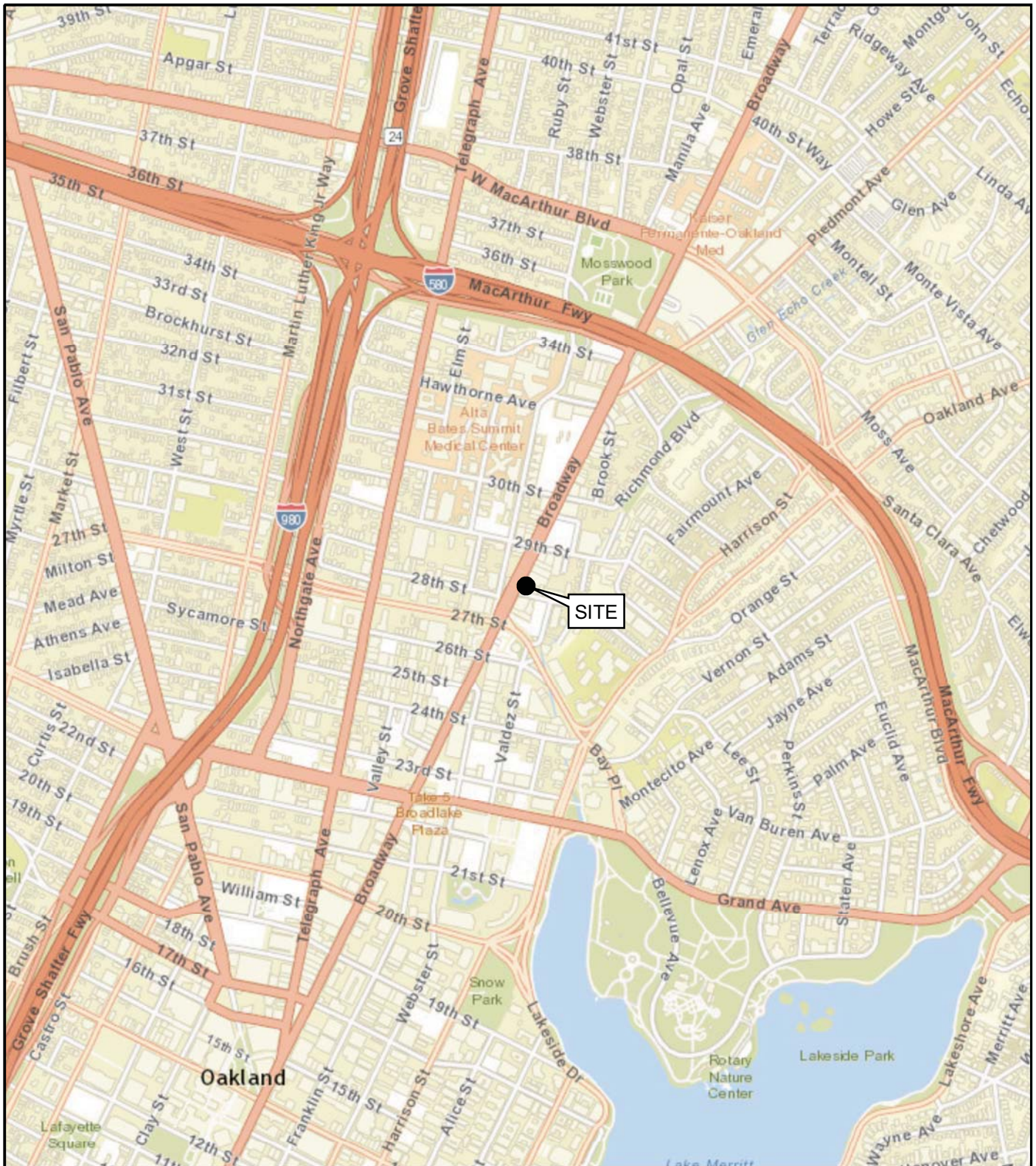
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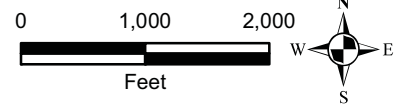
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FIGURES



NOTES:

World street basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online.
 Credits: Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN.



2800 BROADWAY
 Oakland, California

SITE LOCATION MAP

LANGAN

Date 03/03/17










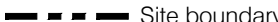
Project No. 770638301

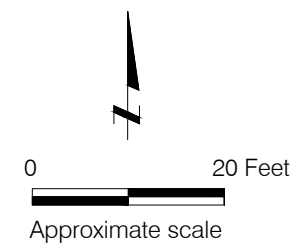
Figure 1

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EXPLANATION

- L-SB**  Approximate location of proposed soil boring by Langan
- L-MIP**  Approximate location of proposed MIP boring by Langan
- L-SV**  Approximate location of proposed soil-vapor probe by Langan
- L-MW**  Approximate location of proposed groundwater monitoring well by Langan
- B-1**  Approximate location of boring by ATC Cardno, September and November 2015
- SB-4**  Approximate location of boring by AEI, April 2015
- MIP-1**  Approximate location of boring by Arcadis, April 2013
- MW-9**  Approximate location of monitoring well by Arcadis (Abandoned in April 2015)
- VW-1**  Approximate location of vapor extraction monitoring well by Arcadis (Abandoned in April 2015)
-  Site boundary



2800 BROADWAY
Oakland, California

SITE PLAN WITH PREVIOUS AND PROPOSED SAMPLING LOCATIONS

Date 03/07/17 | Project No. 770638301 | Figure 2



Reference: © 2017 Microsoft Corporation, Bing

APPENDIX A

HISTORICAL ANALYTICAL RESULTS TABLE

TABLE 1
Summary of Soil Laboratory Analytical Data - Organics
 2800, 2820, 2855 Broadway
 Oakland, CA

| Sample ID | Sample Depth (ft bgs) | Sample Date | TPHg | TPHd | TPHo | Benzene | Toluene | Ethyl benzene | Total Xylenes | MTBE | cis-1,2-Dichloroethene | Trichloroethene (TCE) | Naphthalene | Other VOCs |
|--|-----------------------|-------------|---|------------|--------------|--|---------|---------------|---------------|---------|------------------------|-----------------------|-------------|--|
| | | | (mg/kg) | (mg/kg) | (mg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) | (µg/kg) |
| B20-12' | 12 | 11/06/15 | 3.6 | 9.7 | 19 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B20-16' | 16 | 11/06/15 | <0.250 | <1.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B20-19' | 19 | 11/06/15 | <0.250 | <1.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B20-24' | 24 | 11/06/15 | <0.250 | <1.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B21-3' | 3 | 11/06/15 | 40 | 680 | 3,100 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B22-8' | 8 | 11/06/15 | <0.250 | <1.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B22-12' | 12 | 11/06/15 | <0.250 | <1.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B22-16' | 16 | 11/06/15 | <0.250 | <1.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B22-21' | 21 | 11/06/15 | <0.250 | <1.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | ND |
| B23 | na | 11-/6/15 | Collected groundwater sample only. No soil samples collected. | | | | | | | | | | | |
| ESL, Summary Table A (<9.8 feet) | | | 100 | 100 | 100 | 44 | 2,900 | 3,300 | 2,300 | 23 | 190 | 460 | 1,200 | Chloroform - 1,100; Trichloroethene - 460; Carbon tetrachloride - 110; * |
| ESL, Summary Table C (>9.8 feet) | | | 500 | 110 | 500 | 44 | 2,900 | 3,300 | 2,300 | 23 | 190 | 460 | 1,200 | Chloroform - 1,100; Trichloroethene - 460; Carbon tetrachloride - 110; * |
| Definitions/Abbreviations: | | | | | | Notes: | | | | | | | | |
| EPA -- Environmental Protection Agency | | | | | | ESL, Summary Table A (<9.8 feet): | | | | | | | | |
| TPHg -- Gasoline Range Organics ((GRO) C5-C12) by EPA 8015 Gas chromatograph (GC) | | | | | | San Francisco Bay, Regional Water quality Control Board, <i>Environmental Screening Levels (ESL's)</i> , Summary Table A . | | | | | | | | |
| TPHd -- Extractable fuel hydrocarbons ((EFC) C10 - C28) by EPA 8015 GC | | | | | | Environmental Screening Levels (ESLs), <i>Shallow Soils (<3m bgs)</i> , Groundwater is Current or Potential Source of Drinking Water, Residential Land Use. December 2013. | | | | | | | | |
| TPHo -- Extractable fuel hydrocarbons ((EFC) C24 - C36) by EPA 8015 GC | | | | | | Source: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml . Viewed December 9, 2015. | | | | | | | | |
| mg/kg -- Milligrams per kilogram (equivalent to parts per million [ppm]) | | | | | | ESL, Summary Table C (>9.8 feet): | | | | | | | | |
| µg/kg -- Micrograms per kilogram (equivalent to parts per billion [ppb]) | | | | | | San Francisco Bay, Regional Water quality Control Board, <i>Environmental Screening Levels (ESL's)</i> , Summary Table C . | | | | | | | | |
| Total Xylenes -- Meta-, ortho-, and para-xylenes by EPA Method 8260B | | | | | | Environmental Screening Levels (ESLs), <i>Deep Soils (>3m bgs)</i> , Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use. December 2013. | | | | | | | | |
| MTBE -- Methyl tertiary-butyl ether by EPA Test Method 8260B | | | | | | Source: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml . Viewed December 9, 2015. | | | | | | | | |
| Ethanol -- Analyzed by EPA Test Method by 8260B | | | | | | | | | | | | | | |
| bgs -- Below Ground Surface | | | | | | | | | | | | | | |
| ft -- feet | | | | | | | | | | | | | | |
| < -- Less than the laboratory reporting limit indicated. | | | | | | | | | | | | | | |
| ND -- not detected above laboratory method detection limits | | | | | | | | | | | | | | |
| J -- Estimated value between method detection limit and reporting limit. | | | | | | | | | | | | | | |
| * -- "Other VOCs" ESLs are not listed in this table because they are not listed in the ESL table | | | | | | | | | | | | | | |
| Results reported above the laboratory reporting limit (RL) are presented in bold font. | | | | | | | | | | | | | | |
| Results reported above the ESL are highlighted in yellow | | | | | | | | | | | | | | |

TABLE 2
Summary of Groundwater Laboratory Analytical Data - Organics
 2800, 2820, 2855 Broadway
 Oakland, CA

| Sample ID | Sample Date | TPHg | TPHd | TPHo | Benzene | Toluene | Ethylbenzene | Total Xylenes | MTBE | cis-1,2-Dichloroethene | Trichloroethene | Naphthalene | Other VOCs |
|----------------------------------|-------------|---------|---------|--------|---------|---------|--------------|---------------|--------|------------------------|-----------------|-------------|---|
| | | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) |
| Soil Borings | | | | | | | | | | | | | |
| B1-W | 09/19/15 | <50 | <65 | <130 | <0.50 | <0.50 | <0.50 | <1.0 | 1.6 | <0.50 | <0.50 | <1.0 | ND |
| B2-W | 09/19/15 | 880,000 | 170,000 | <7,500 | 150 | 3,000 | 6,500 | 27,000 | <50 | 310 | 14,000 | 4,200 | n-Butylbenzene - 1,900 sec-Butylbenzene - 460 Isopropylbenzene - 970 4-Isopropyltoluene - 530 N-Propylbenzene - 3,000 1,2,4-Trimethylbenzene - 18,000 1,3,5-Trimethylbenzene - 5,700 Vinyl acetate - 4,100 |
| B3-W | 09/19/15 | <50 | 160 | 350 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 0.79 | 32 | <1.0 | ND |
| B4 | 10/04/15 | 3,800 | 830 | <100 | 25 | 0.77 | 40 | 6.5 | <0.50 | 180 | 4,400 | 10 | n-Butylbenzene - 14 sec-Butylbenzene - 4.7 1,2-Dichloroethane - 3.6 1,1-Dichloroethene - 0.85 trans-1,2-Dichloroethene - 1.0 Isopropylbenzene - 30 4-Isopropyltoluene - 7.4 N-Propylbenzene - 29 1,1,2-Trichloroethane - 6.1 1,2,4-Trimethylbenzene - 25 1,3,5-Trimethylbenzene - 15 |
| B5 | 10/04/15 | 14,000 | 710 | <110 | 56 | 1.5 | 7.5 | 6.0 | <0.50 | 190 | 14,000 | 4.2 | Acetone - 230 n-Butylbenzene - 7.5 sec-Butylbenzene - 7.1 Chloroform - 3.8 Chloromethane - 1.1 1,2-Dichloroethane - 1.0 1,1-Dichloroethene - 6.4 trans-1,2-Dichloroethene - 3.9 Isopropylbenzene - 52 4-Isopropyltoluene - 1.2 N-Propylbenzene - 5.5 Tetrachloroethene - 5.8 1,1,2-Trichloroethane - 5.6 1,2,4-Trimethylbenzene - 0.98 Vinyl acetate - 47 |
| B6 | 10/04/15 | <500 | 140 | <110 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | 2.2 | 340 | <1.0 | ND |
| B7 | 10/04/15 | 340 | 270 | <100 | <0.50 | <0.50 | 0.71 | <1.0 | 0.90 | 4.8 | 460 | <1.0 | Dichlorobromomethane - 4.6 Isopropylbenzene - 0.73 1,2,4-Trimethylbenzene - 0.64 |
| B8 | 10/04/15 | <50 | 170 | <100 | <0.50 | <0.50 | <0.50 | <1.0 | 1.1 | 12 | 1,900 | <1.0 | Chloroform - 1.2 trans-1,2-Dichloroethene - 0.72 Tetrachloroethene - 0.87 1,1,2-Trichloroethane - 0.70 |
| B9 | 10/04/15 | <50 | 200 | <110 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | 36 | <1.0 | ND |
| B10 | 10/04/15 | 51 | 320 | <100 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | 17 | <1.0 | ND |
| B11 | 10/04/15 | <50 | 480 | 460 | <0.50 | <0.50 | <0.50 | <1.0 | <0.50 | <0.50 | <0.50 | <1.0 | Carbon tetrachloride - 34 Chloroform - 8.3 |
| B-12 | 10/10/15 | 12,800 | -- | -- | 6.9 | 1.6 | 59.9 | 29.5 | -- | 9.4 | 121 | 54.3 | n-Butylbenzene - 13.8 sec-Butylbenzene - 9.7 Isopropylbenzene - 40.4 p-Isopropyltoluene - 14.5 n-Propylbenzene - 60.6 1,2,4-Trimethylbenzene - 240 1,3,5-Trimethylbenzene - 110 |
| B-13 | 10/10/15 | 3,550 | -- | -- | <12.5 | <12.5 | <12.5 | <25 | -- | <12.5 | 2,800 | <12.5 | ND |
| B-14 | 10/10/15 | 7,800 | -- | -- | <25.0 | <25.0 | <25.0 | <50.0 | -- | 26.1 | 6,160 | <25.0 | ND |
| B-15 | 11/05/15 | <50 | 120 | <500 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | ND |
| B-16 | 11/05/15 | <50 | <50 | <250 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | Carbon Tetrachloride - 4.8 Chloroform - 9.5 |
| B-17 | 11/05/15 | <50 | 95 | 310 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | Carbon Tetrachloride - 1.9 |
| B-18 | 11/05/15 | <50 | 190 | 1,000 | <0.50 | <0.50 | <0.50 | <0.50 | 0.58 | <0.50 | <0.50 | <0.50 | Carbon Tetrachloride - 0.8 |
| B-19 | 11/06/15 | <50 | <150 | <750 | <0.50 | <0.50 | <0.50 | <0.50 | 1.1 | <0.50 | 7.9 | <0.50 | ND |
| B-20 | 11/06/15 | <50 | 640 | 1,800 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | 0.72 | 14 | <0.50 | ND |
| B-21 | 11/06/15 | 5,500 | 1,100 | 880 | 120 | 42 | 83 | 210 | <5.0 | <5.0 | 28 | 13 | 2-Butanone (MEK) - 64 2-Hexanone - 10 Isopropylbenzene - 26 n-Propyl benzene - 21 1,2,4-Trimethylbenzene - 130 1,3,5-Trimethylbenzene - 39 |
| B-22 | 11/06/15 | 75 | 420 | 3,400 | <1.2 | <1.2 | <1.2 | <1.2 | <1.2 | 3.3 | 39 | <1.2 | ND |
| B-23 | 11/06/15 | 800 | 160 | <500 | 16 | 3.2 | 3.1 | <2.5 | <2.5 | 4.7 | 79 | <2.5 | Isopropylbenzene - 6.2 n-Propyl benzene - 2.5 1,3,5-Trimethylbenzene - 6.8 |
| ESL, Summary Table A (<9.8 feet) | | 100 | 100 | 100 | 1 | 40 | 30 | 20 | 5 | 6 | 5 | 6.1 | Acetone - 1,500; Carbon tetrachloride - 0.5; Chloroform - 80; Chloromethane - 130; 1,2-Dichloroethane - 0.5; 1,1-Dichloroethene - 6; trans-1,2-Dichloroethene - 10; 2-Butanone (MEK) - 4,900; Tetrachloroethene - 5; 1,1,2-Trichloroethane - 5 Trichloroethene - 5; * |

| | |
|--|---|
| <p>Definitions/Abbreviations:</p> <p>EPA -- Environmental Protection Agency</p> <p>TPHg -- Gasoline Range Organics (GRO) C5-C12 by EPA 8015 Gas chromatograph (GC)</p> <p>TPHd -- Extractable fuel hydrocarbons (EFC) C10 - C28 by EPA 8015 GC</p> <p>TPHo -- Extractable fuel hydrocarbons (EFC) C24 - C36 by EPA 8015 GC</p> <p>µg/kg -- Micrograms per kilogram (equivalent to parts per billion [ppb])</p> <p>Total Xylenes -- Meta-, ortho-, and para-xylenes by EPA Method 8260B</p> <p>MTBE -- Methyl tertiary-butyl ether by EPA Test Method 8260B</p> <p>Ethanol -- Analyzed by EPA Test Method by 8260B</p> <p>bgs -- Below Ground Surface</p> <p>ft -- feet</p> <p>< -- Less than the laboratory reporting limit indicated.</p> <p>ND -- not detected above laboratory method detection limits</p> <p>J -- Estimated value between method detection limit and reporting limit.</p> <p>* -- "Other VOCs" ESLs are not listed in this table because they are not listed in the ESL tables.</p> <p>Results reported above the laboratory reporting limit (RL) are presented in bold font.</p> <p>Results reported above the ESL are highlighted in yellow</p> | <p>Notes:</p> <p>ESL, Summary Table A (<9.8 feet): San Francisco Bay, Regional Water quality Control Board, <i>Environmental Screening Levels (ESL's), Summary Table A</i>. Environmental Screening Levels (ESLs), Shallow Soils (<3m bgs), Groundwater is Current or Potential Source of Drinking Water, Residential Land Use. December 2013. Source: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml. Viewed December 9, 2015.</p> <p>ESL, Summary Table C (>9.8 feet): San Francisco Bay, Regional Water quality Control Board, <i>Environmental Screening Levels (ESL's), Summary Table C</i>. Environmental Screening Levels (ESLs), Deep Soils (>3m bgs), Groundwater is a Current or Potential Source of Drinking Water, Residential Land Use. December 2013. Source: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/esl.shtml. Viewed December 9, 2015.</p> |
|--|---|