11J Family Housing, L.P.

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By Alameda County Environmental Health 11:37 am, Nov 15, 201(

14 November 2016
Project 750622603

Mr. Keith Nowell, PG
Alameda County Health Care Services Agency
Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Subject: Underground Storage Tank Closure Investigation Report
1110 Jackson Street
Oakland, California
Alameda County SCP Case No. RO0003232
Langan Project: 7506220603

Dear Mr. Nowell:

The property referred to above, (APN: 002-0081-008-01), has been leased from the Oakland Housing Authority for a period of seventy-five (75) years, beginning March 16, 2015, pursuant to the terms of a lease agreement with the 11J Family Housing, Limited Partnership.

As a legally authorized representative of the 11J Family Housing Limited Partnership (*Lessee, Developer, and Building Owner of 188 11th Street, formerly 1110 Jackson Street*) and on behalf of the Oakland Housing Authority (*Lessor*), I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document titled *Work Plan for Phase II Environmental Site Assessment, 1110 Jackson Street, Oakland, CA,* are true and correct to the best of my knowledge.

Sincerely yours,

Everett Cleveland Jr.
11J Family Housing, L.P.

1825 San Pablo Avenue, suite 200 Oakland, CA 94612 T: (510) 287-5353 | F: (510) 763-4143

WORK PLAN FOR PHASE II ENVIRONMENTAL SITE ASSESSMENT

1110 Jackson Street
Oakland, California 94612

Prepared For:
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Prepared By:
Langan Engineering and Environmental Services, Inc.
501 14th Street, 3rd Floor
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Joshua Graber, CHMM
Senior Project Manager

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STATE OF CALIFORNIA

Elizabeth Kimbrel, PE
Senior Staff Engineer

10 November 2016
750620603

LANGAN

Technical Excellence
Practical Experience
Client Responsiveness

10 November 2016

Mr. Keith Nowell, PG
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502

Re: Work Plan for Phase II Environmental Site Assessment
1110 Jackson Street
Oakland, California
Langan Proposal No.: 750622603

Dear Mr. Nowell,

Langan Engineering and Environmental Services, Inc. (Langan), on behalf of the East Bay Asian Local Development Corporation (EBALDC), is pleased to submit this *Work Plan for Phase II Environmental Site Assessment* (Work Plan) associated with the Alameda County Environmental Health department's (ACEH) open fuel leak case RO0003232 located at the 1110 Jackson Street development in Oakland, California.

If you have any questions or need any information clarified, please call Joshua Graber at (510) 874-7086.

Sincerely yours,
Langan Engineering and Environmental Services, Inc.

Elizabeth Kimbrel, PE
Senior Staff Engineer

REGISTERED PROFESSIONAL ENGINEER
ELIZABETH JH KIMBREL
NO. C 85887
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STATE OF CALIFORNIA

Joshua Graber, CHMM
Senior Project Manager

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WORK PLAN FOR PHASE II ENVIRONMENTAL SITE ASSESSMENT
1110 JACKSON STREET
OAKLAND, CALIFORNIA

1.0 INTRODUCTION

Langan Engineering and Environmental Services, Inc. (Langan), on behalf of the East Bay Asian Local Development Corporation (EBALDC), has prepared this *Work Plan for Phase II Environmental Site Assessment* (Work Plan) for the 1110 Jackson Street development in Oakland, California (site, Figure 1). During construction, three underground storage tanks (USTs) containing gasoline were discovered in the sidewalk of Jackson Street, adjacent to the development (Figure 2). Preliminary soil and groundwater samples collected from the areas surrounding the former USTs indicate the soil and groundwater may be impacted by petroleum and petroleum related compounds.

Given the site development and proposed site use, the purpose of this Work Plan is to 1) delineate the potential extent of petroleum impacted soil and groundwater; 2) evaluate subsurface conditions to facilitate regulatory site closure under the State Water Resources Control Board's Low-Threat Underground Storage Tank Case Closure Policy (LTCP), and 3) evaluate the site for vapor intrusion by collecting sub-slab and soil gas samples. A summary of our proposed environmental investigation sampling and analytical testing methods are presented in this Work Plan. Following the completion of the investigation, we will share and discuss the results with Alameda County Environmental Health (ACEH). We will also prepare a technical memorandum presenting our sampling methods, analytical results and recommendations.

1.1 Site Description

The site is located at 1110 Jackson Street in Oakland, California (Figure 1). The site is bound by 12th Street to the north, Jackson Street to the west, 11th Street to the south and multiple buildings to the east. The site is L-shaped, with long dimensions measuring approximately 190 feet by 200 feet, along 11th and Jackson Streets, respectively.

We understand that EBALC is currently constructing an at-grade, 5-story mixed use building that will occupy the entire footprint of the L-shaped lot. The ground floor will be comprised primarily of openly ventilated parking with a small portion of retail (commercial) space located in the southwestern portion of the building (Figure 2). The remaining floors will be residential units. The foundation and structure of the building are complete and the internal fixtures and external sidewalks are in progress at this time.

The subsurface profile generally consists of layers of fine to coarse sands with varying amounts of silts and clays. Groundwater is located at approximately 20 feet below ground surface (bgs). Groundwater predominantly flows east towards Lake Merritt, which is located approximately ¼ mile away from the site (Langan, 2016).

2.0 PREVIOUS INVESTIGATIONS

The following environmental reports document soil and groundwater sampling and analytical testing conducted at the site and are referenced as part of this Work Plan.

- *Limited Phase II Environmental Site Assessment, Jackson Tower, Oakland, California* dated 18 January 2006, prepared by Tetra Tech EM, Inc. (Tetra Tech);
- *Underground Storage Tank Closure Report, 1110 Jackson Street, Oakland, California* dated 23 June 2016, prepared by Golden Gate Tank Removal (GGTR); and
- *Underground Storage Tank Closure Investigation Report, 1110 Jackson Street, Oakland California* dated 13 September 2016, prepared by Langan.

2.1 2006 Limited Phase II Environmental Site Assessment

In December 2005, Tetra Tech conducted a limited Phase II Environmental Site Assessment to evaluate potential petroleum impacts at site that may have been associated with an adjacent property. Tetra Tech advanced three borings SB-1, SB-2, and SB-3 located approximately 50 to 60 feet from the former UST locations in both the northeast and southeast directions, as illustrated on Figure 2. Soil samples were collected at approximately 12 feet bgs from each boring. Groundwater was encountered at depths ranging between 20 to 22 feet bgs. One groundwater sample was collected from each boring. Soil and groundwater samples were analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs) and metals. TPH as gasoline (TPHg), diesel (TPHd) and motor oil (TPHmo) were not detected in any of the samples collected.

This report recommended that no further assessment of the site was necessary.

2.2 UST Removal

In April 2016, three USTs were discovered in the sidewalk of Jackson Street during site development activities. The USTs were designated as UST #1, #2 and #3, all contained gasoline and were approximately 265-, 265- and 110-gallons, respectively. The locations of UST #1, #2 and #3 are shown on Figure 2. Based on a review of Sanborn maps, the USTs were likely in place since prior to 1911. The three USTs were found to be in generally poor condition. GGTR removed the three USTs from beneath the sidewalk and conducted the corresponding soil excavation and soil sampling activities on 15 April 2016. UST removal activities were completed under the observation of Langan personnel and a representative from ACEH. After the USTs and associated piping were removed, GGTR collected confirmation soil samples from excavation sidewalls and bottoms. Soil samples collected from soil beneath former UST #2 had elevated concentrations of petroleum hydrocarbons.

Based on the elevated confirmation sample results and a recommendation by ACEH, GGTR returned to the site on 4 May 2016 to perform over-excavation and additional confirmation sampling activities. GGTR over-excavated from the north side of UST#1 to the south side of UST#3 to a depth of 12 feet below bgs. TPHg was detected at concentrations ranging from 6.96 to 6,320 mg/kg in soil collected from over-excavation sidewalls and bottoms.

Following over-excavation and additional confirmation sampling activities, ACEH requested collection of groundwater samples near the former UST locations to evaluate potential impacts of petroleum and petroleum related compounds to groundwater.

2.3 UST Investigation

On 11 August 2016, Gregg Drilling & Testing, Inc. (Gregg Drilling) of Martinez, California, a California-licensed drilling company advanced four borings (EB-1 through EB-4) at locations shown on Figure 2. Environmental borings EB-1 through EB-3 were advanced in the vicinity of former UST #1, #2 and #3. Environmental boring EB-4 was advanced east and downgradient of EB-1 through EB-3. All borings were hydraulically driven direct push boings advanced by a truck-mounted drill rig operated by Gregg and observed by Langan. The borings were advanced to a depth of 28 feet bgs.

Groundwater samples were collected from each of the four environmental borings EB-1 through EB-4. Groundwater was encountered at approximately 20 feet bgs in each borehole. Temporary 1-inch diameter PVC well casings were installed in each well. The lower ten foot section of each casing (from 18 to 28 feet bgs) was comprised of a slotted well screen to facilitate groundwater sample collection.

Due to elevated concentrations of TPH in soil at the former UST #2 location, Langan collected three soil samples from environmental boring EB-2. Samples were collected at depths of 13, 15.5 and 22.5 feet bgs. Samples were collected based on field observations including visual and olfactory contamination and organic vapor measurement using a photoionization detector (PID).

Soil and groundwater samples collected during this environmental investigation indicate that petroleum hydrocarbons and related compounds are present in subsurface soil and groundwater. Elevated TPHg concentrations were detected in deeper subsurface soil (greater than 10 feet bgs) in the vicinity of former UST #2. Elevated concentrations of TPHg and TPHd (with significant contribution from TPHg range hydrocarbons) were detected in borings EB-2 and EB-4, which were advanced directly through the former UST #2 and approximately 12 feet downgradient to the east, respectively. Benzene was detected in the EB-2 groundwater sample above the commercial vapor intrusion ESLs, but not in the EB-4 sample closest to the existing building.

3.0 BUILDING SURVEY

In order to appropriately plan for the next phase of investigation, Langan performed a building survey and inventory at the site on 28 October 2016 in the presence of representatives from EBALDC. The building survey and inventory was completed to identify future sub-slab, soil gas, soil and groundwater sample locations and potential preferential pathways for vapor migration and appropriate indoor, pathway, and ambient air sample locations, if necessary. The survey consisted of evaluating all accessible areas with a PID capable of measuring volatile organic vapors down to the part per billion (ppb) level. During the survey, the PID was used to assess background indoor air concentrations and possible preferential pathways for soil vapor migration such as gaps and cracks in building foundations, slab penetrations (such as piping and utility lines), floor drains, sumps, fire suppression lines, and sanitary sewer cleanouts. The building is currently undergoing active construction in preparation for occupancy in January 2017. Construction activities currently underway include painting, window installation, elevator servicing, flooring and appliance installation and exterior siding installation. Additionally, we also noted vehicular traffic and the use of generators onsite. All of these activities can contribute to elevated PID readings. In general, PID readings across the building were consistent with an active construction site and no apparent preferential pathways were registering elevated readings.

3.1 Interior Building Observations

The majority of the first floor of the building is parking, which is openly and naturally ventilated with outside air via the vehicle entrance and exit and grated openings in the walls. The southwestern portion of the first floor is comprised of a lobby, bathrooms and commercial/retail space, which are enclosed. There are stairwells on the northeastern and southeastern corners of the building and a pump room, boiler room, and maintenance room along the eastern side of the building. These internal features are illustrated on Figure 2.

Langan personnel surveyed the interior of the building noting the presence and use of numerous construction materials, including adhesives, paints, and cleaning chemicals (including solvents). Since the site is an active construction site and the first floor is the main parking area, numerous vehicles were observed to be idling and entering/exiting the building. VOCs are known to be present in the construction materials currently in active use at the building and in vehicular exhaust. The presence of VOCs related to these activities would likely interfere with indoor air sampling and misrepresent the results.

Langan also noted slab penetrations (including floor drains and sanitary sewer cleanouts), and observed the general condition of the building's concrete slab to be in good condition.

3.2 Ventilation Systems

No heating, ventilation, or air conditioning (HVAC) units were operational on the ground floor of the building. We understand that the future tenant will be responsible for installing an HVAC unit prior to occupancy of the commercial, ground level (first floor) unit.

4.0 SAMPLING WORK PLAN AND METHODOLOGY

4.1 Site Specific Health and Safety Plan

A site-specific *Health and Safety Plan* has been prepared by Langan as required by the Occupational Health and Safety Administration Standard "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120). The *Health and Safety Plan* will be reviewed and signed by Langan personnel and subcontractors performing work at the site before field operations begin and is presented in Appendix A.

4.2 Pre-investigation Tasks

We will coordinate site access as needed with the EBALDC prior to sampling. At least 72 hours before beginning field work, we will visit the site to mark out the sample locations and to notify the Underground Service Alert One-Call Notification Center. In addition, we will engage the services of a private utility locator to provide clearance around the proposed sample locations. As required, Langan will procure the required permit for completion of temporary soil gas monitoring wells and a drilling permit from Alameda County Public Works Agency-Water Resources Department, in advance of drilling.

4.3 Proposed Sampling Activities

This section outlines the proposed sub-slab, soil gas, soil and groundwater sampling activities. Pending the results of the sub-slab analytical results, the need for indoor air, pathway and grab pathway area samples will be determined in conjunction with the ACEH.

4.3.1 Sub-slab Sampling

As described in our *Proposed Sampling Locations Memorandum* dated 1 November 2016 to the ACEH, sub-slab samples were proposed in locations illustrated on Figure 2. This section further describes the methods used to collect the sub-slab samples. Sub-slab samples were collected to assess the sub-slab VOC concentrations. A total of five sub-slab vapor samples were collected from areas closest to identified VOC source areas on the first floor of the building, as shown on Figure 2. Three sub-slab vapor samples were collected in the northern half of the parking garage on the first floor and two sub-slab vapor samples were collected within the area proposed for commercial use along the western boundary of the first floor.

Sub-slab samples were collected using Vapor Pins™ manufactured by and in accordance with Cox-Colvin and Associates Incorporated's Standard Operating Procedure Installation and Extraction of the Vapor Pins™ (Appendix B) and in general accordance with the California Department of Toxic Substances Control's (DTSC) documents titled "Advisory – Active Soil Gas Investigation" dated July 2016 and "Final, Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" dated October 2011. Vapor Pins™ allow for easy installation and removal and provide an air-tight seal between the slab and the exterior of the pin.

At each sub-slab sample location, a 5/8-inch hole will be drilled through the approximately 5-inch thick slab. The drill hole was cleaned out drill hole and the Vapor Pin™ was installed. The vapor probes were allowed to equilibrate for a minimum of two hours. After the equilibration period, leak testing (using a helium shroud) and shut-in testing was performed at each location prior to purging and sample collection. Helium was used as a tracer gas during field sampling to confirm that leakage will not occur during sampling. The sampling system was sealed within the shroud and a known concentration of helium (typically about 20% by volume) was added inside the shroud and maintained at this concentration during sampling. Helium concentrations will be tested at the laboratory to verify the quality of the field sampling program. In addition to laboratory testing, field instrumentation was used to evaluate whether leakage is occurring by testing pre-sample purge gas.

Clean, laboratory-supplied one-liter summa canisters were used for both purging and sample collection along with flow controllers set to a maximum rate of 200 milliliters per minute (mL/min). Following sample collection, summa canisters were delivered to Curtis and Tompkins Analytical Laboratory, a State of California certified laboratory.

4.3.2 Soil Gas Sampling

The soil gas sampling program was designed in consideration of the California DTSC Vapor Intrusion Guidance (DTSC, 2011). Soil gas samples will be collected in general accordance with DTSC-approved methods (DTSC, 2015).

TEG Northern California of Rancho Cordova, California (TEG)will install five temporary soil gas wells, as shown on Figure 2. Temporary soil gas well locations were selected to delineate the extent of potential soil gas impacts associated with the former tanks. Soil gas wells are located near sub-slab utility trenches, the elevator pit and near the first floor occupied spaces.

4.3.2.1 Temporary Soil Gas Probe Installation

Temporary soil gas wells will be installed to a depth of 5 feet bgs. To install the temporary soil gas probe, 1/8-inch diameter disposable nyla-flow tubing will be threaded onto the top of a 1.5-inch long, 3/8-inch diameter nylon soil gas screen implant. The assembly will then be placed into the boring. The soil gas screen implant will be surrounded by approximately 1-foot of sand filter pack. A three- to six-inch layer of dry bentonite chips will be placed above the sand filter pack. Hydrated bentonite chips will be placed above the dry bentonite to create a seal around the tubing to prevent ambient air intrusion into the soil gas sample. The Teflon tubing attached to the soil gas probe will extend at least 2 feet above the surface and will be fitted with a sealable sample valve or port at the end. Temporary soil gas wells will be installed using either direct push macrocore technology or in a borehole created using a hand auger.

4.3.2.2 Sampling Train Assembly

The sampling train will be assembled using the following steps:

1. The initial vacuum of the SUMMA canister (or equivalent) will be recorded prior to sampling. If the initial vacuum reading is less than 28 inches mercury (Hg), the canister will not be used. In addition, the canister will be inspected for damage and a canister that has visible damage will not be used.
2. Following the initial inspection, a dedicated flow controller and vacuum gauge will be attached to the SUMMA canister and sealed with a compression fitting cap (e.g., Swagelok or equivalent).
3. The sample port and sampling manifold will be connected using ¼-inch outside diameter (OD) Teflon tubing and stainless steel compression fitting nut and ferrules. The sampling manifold consists of compression fittings with three valves and one pressure gauge to attach the probe tubing to the SUMMA canister.
4. A syringe will also be connected to the sampling manifold using ¼-inch OD Teflon tubing and stainless steel compression fitting nut and ferrules.
5. The assembled SUMMA canister, flow controller, and pressure gauge shall be connected to the sampling manifold using stainless steel compression fitting nut and ferrules.

4.3.2.3 Shut-in Test

Prior to soil gas purging and sample collection, a shut-in test will be performed to check for leaks in the aboveground sampling train assembly:

1. The valve that connects the soil gas probe to the sampling manifold will be closed and the valve that connects to the SUMMA canister will be closed.
2. The syringe will then be pulled to empty air from the manifold.
3. A leak-free system will be evident by observing no loss of vacuum within the sampling manifold system. Noted leaks will be repaired prior to sample collection by checking and tightening the compression fittings on the manifold. The manifold will then be re-checked to make sure it passes the physical leak check before proceeding

4.3.2.4 Leak Check

Helium will be used as a leak-check tracer gas around the nyla-flow tubing during sampling as a quality control/quality assurance measure to confirm the sample integrity. The leak check will be conducted using the following steps:

1. The helium shroud is placed over the soil gas probe at ground surface, along with the entire sampling train (sampling manifold, pump, and sampling canister).
2. A minimum helium atmosphere of 10 percent will be induced within the shroud. The atmosphere within the shroud will be monitored using the Dielectric MGD 2002 instrument (or equivalent), inserted through a small aperture in the shroud. Following the three-volume purge, a small aliquot of soil gas will be collected into the syringe for helium screening.
3. If helium is detected in the aliquot of purged soil gas at a concentration less than 5 percent of the atmosphere induced under the shroud during the purge (e.g., if the helium concentration under the shroud is 10 percent, the purged soil gas should contain less than 0.5 percent helium), the sample flow train integrity will be considered adequate and within an acceptable range (DTSC, 2015).
4. The leak check test is performed during purging and sample collection at each soil gas sampling location.

4.3.2.5 Sample Collection Methodology

Langan and TEG will collect on soil gas sample from each well. According to DTSC guidelines, if soil gas wells are installed via hand augering then soil gas samples will be collected after withdrawing three purge volumes and at least 48 hours after installation of the temporary soil gas monitoring wells. If soil gas wells are installed via direct push then soil gas samples will be collected after withdrawing three purge volumes and at least 2 hours after installation of the temporary soil gas monitoring wells. The samples will be collected in a 1-liter Summa canister, following protocols:

1. Before collecting the sample, confirm that the sampling system valves are set as follows: 1) the syringe valve is confirmed to be closed, 2) the soil gas probe valve is open, and 3) the SUMMA canister valve is open.
2. Helium will be reintroduced into the shroud and be allowed to stabilize until at least a 10 percent helium concentration has been reached.

3. Upon reaching a stable helium concentration, the SUMMA canister inlet valve will be slowly opened (counter-clockwise) one full turn to begin sample collection at approximately 200 mL/min. During the sample collection, the helium concentration will be monitored using a Dielectric MGD 2002 helium detector and the approximate average concentration will be recorded on the sample field data sheet.
4. The start time and initial vacuum reading from the vacuum gauge will be recorded on the sample label, chain of custody records, and on the field log, along with the SUMMA canister and flow controller identifications.
5. The valve will remain open until the final vacuum reading on the vacuum gauge on the SUMMA canister is between 2 to 4 inches Hg. It is important to leave 2 to 4 inches of vacuum remaining in the SUMMA canister so the receiving analytical laboratory can verify that the sample was not compromised during shipment.
6. The valve on the SUMMA canister will be closed clockwise until it is finger-tight.
7. Turn off the helium and close the valve at the soil gas probe tubing.
8. The stop time and final vacuum reading will be recorded on the sample label, chain of custody record, and on the field log. The sampling information on the chain of custody records will be completed and checked against the sample labels and field log.
9. The SUMMA canister will be removed from the sampling manifold and placed in the laboratory-supplied cardboard boxes.

The soil gas samples will be submitted under chain of custody protocol to K-Prime Technologies Inc., a State of California-certified analytical laboratory.

4.3.2.6 Temporary Soil Gas Well Decommissioning

After soil gas sampling is completed, the temporary soil gas wells will be abandoned by removing the tubing assembly and sand pack from the temporary soil gas well location and the borehole will be grouted.

4.3.3 Soil and Groundwater Sampling

Four borings will be advanced to facilitate soil and groundwater sample collection. Boring locations are shown on Figure 2 and are proposed at locations east and downgradient of the former USTs. Borings will be advanced using a limited access track-mounted direct-push drill rig operated by Gregg Drilling. Borings will be advanced to 5 feet bgs with a hand auger to clear the location for buried utilities and will be drilled to a depth of at least 5 feet below the groundwater table (20 to 25 feet bgs), depending on actual field conditions.

Soil materials encountered during drilling activities will be logged in the field by a Langan geologist or engineer following the Unified Soil Classification System (USCS). Soils will be examined in the field for evidence of contamination (including visible staining, odors, elevated readings on a PID. Up to two soil samples will be collected at each boring to assess soil concentrations. Soil samples will be collected based on field observations but generally around 5 and 10 feet below ground surface. Once the boring depth has been achieved, a temporary PVC casing will be placed in the boreholes to facilitate groundwater sampling. Groundwater levels will be measured within the temporary PVC at each location. Additionally, we will note whether free product is present with a clear bailer. One groundwater sample will be collected from each boring using a peristaltic pump or disposable bailer.

Soil samples will be collected into acetate liners or stainless steel tubes with tight-fitting end caps. Groundwater samples will be collected into laboratory provided bottles and preservative. All samples will be placed on ice in a cooler following collection and shipped under chain-of-custody procedures to McCampbell Analytical, a State of California-certified analytical laboratory in Pittsburgh, California.

To avoid cross contamination, all sampling equipment used during the investigation activities will be thoroughly cleaned between sample locations. All borings will be backfilled with neat cement grout and the surface cover will be restored in accordance with the Alameda County Public Works Agency's requirements.

4.3.4 Air Sampling

If sub-slab and soil gas analytical results are above sub-slab ESLs then we will discuss the distribution with the ACEH to determine if indoor air is warranted. If sub-slab and soil gas concentrations are below sub-slab/soil gas ESLs then no indoor air sampling will be proposed. If indoor air sampling is warranted, up to nine air samples (including one duplicate) will be collected from the first floor of the building both inside and outside the commercial area located in the southwest corner of the building. Two indoor air samples (identified in Figure 2 with an 'IA' in the sample designation) will be collected in areas normally occupied over the course of a typical business day (i.e. offices, work cubicles and laboratory areas). Three pathway samples (identified in Figure 2 with a 'PS' in the sample designation) will be collected to evaluate potential vapor intrusion in areas that are either not accessed by workers or are not normally occupied for a full work day (i.e. 8-hour period), such as bathrooms or areas adjacent to preferential pathways. One grab pathway sample (GPS) location is also proposed. The grab pathway sample will be collected from the elevator pit, if warranted.

Due to the multitude of influences on indoor air quality, two ambient air (AA) samples will be collected on the day that the indoor air and pathway samples are collected. Two ambient air samples are proposed to evaluate both the air in the parking area and the air entering the parking area from outside. The ambient air samples will be collected from the grated opening on the first floor to evaluate outside air entering the parking space and from the garage to evaluate air entering the commercial space. For quality control/quality assurance (QA/QC) purposes, one duplicate air sample will be collected.

Indoor air, pathway and ambient air samples will be collected into batch-certified 6-liter stainless steel Summa canisters with an 8-hour flow controller provided by the laboratory. Following sample collection, the canisters will be delivered to K-Prime Technologies Inc., a State of California certified laboratory.

4.4 Laboratory Analyses

Sub-slab, soil gas and indoor air samples will be analyzed for VOCs using method TO-15 analysis with selective ion monitoring (SIM) for VOCs detected in groundwater at the site.

Soil and groundwater samples will be analyzed for VOCs by EPA method 8260, TPH-g, TPH-d and TPH-mo by EPA method 8015B, and polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8310. Soil samples will also be analyzed for leaking underground storage tank (LUST) five metals by EPA method 6010.

4.5 Sample Identification

Sample nomenclature shall be assigned, as follows:

- Sub-slab air samples shall be sequentially identified as SS (sample number) (e.g., SS1).
- Soil gas samples shall be sequentially identified as SG (sample number)-year-month-date (e.g., SG1-2016-11-04).
- Soil samples shall be identified as SL (groundwater boring location)-bottom depth of sample (i.e. a sample collected at boring location GW-1 at a depth of 4.5 to 5 feet bgs will be labeled as SL-GW-1-5).
- Groundwater samples shall be identified by boring location (i.e. GW-1).

- Indoor air samples shall be sequentially identified as IA (sample number)-year-month-date (e.g., IA1-2016-11-04).
- Ambient air samples shall be sequentially identified as AA (sample number)-year-month-date (e.g., AA1-2016-11-04).

Duplicate sample nomenclature is sequentially as DUP (sample number)--year-month-date (e.g., DUP1-2016-11-04). The primary sample and duplicate sample ID pairs will be recorded in the field logs.

4.6 Field Documentation

Field activity logs will be completed for each site visit. Field activity logs shall identify the following: site name and address, date and time onsite, onsite field personnel, general weather conditions, purpose of site visit, a summary of field activities, and any other important details.

In addition to field activity logs, air sampling logs will be completed to track sampling information. The following information will be included on air sampling logs: sample ID, sample type, sample location, date of sample collection, time of sample collection, sample canister number, flow-controller number, start/stop time, and name of sampler(s).

Photographs will be taken at each sampling location. A photograph log will be completed to identify the contents of each photo. The field documentation will be kept in the project files.

4.7 Chain of Custody

Samples will be collected and transported to the analytical laboratory following COC procedures. The COC documents the identity and integrity of the sample from the time of collection through receipt at the laboratory. The COC will be completed as samples are collected, and will include the following information: sample ID, date of sample collection, time of sample collection, sample type, and sampler name(s). Additionally, the starting and ending pressures for the summa canisters should be noted on the COC form.

4.8 Sample Packing and Shipping

Samples will be packed in boxes and transported, by shipment or courier, to the analytical laboratory. Each sample will be individually labeled and will be accompanied by the COC. All samples will be transported to the analytical laboratory within 24 hours of sample collection. Sample delivery will be coordinated with the laboratory 48 hours in advance to ensure timely and safe delivery. The COC will be signed by the sampler and relinquished to the sample custodian.

4.9 Investigation Derived Waste

Investigation derived waste including soil cuttings, used sampling equipment and decontamination rinsate will be placed in 55-gallon drums, sealed and labeled. The drums will be stored onsite, pending analytical profiling and proper disposal.

5.0 DATA EVALUATION AND REPORTING

Upon the completion of the field activities and analytical testing, Langan will prepare a letter report summarizing the data collected. The report will include boring locations and logs and sampling and analytical methodologies. The report will compare the analytical data to appropriate screening levels and describe the nature and extent of petroleum compounds. The report will indicate the potential health impacts of contamination to the future users of the redeveloped site and the need for mitigation of potential health risks, if necessary.

6.0 PROJECT SCHEDULE AND CONCLUSION

We are requesting your review and approval of this work plan for completion of field activities that are anticipated to require up to three work days. The work is scheduled for to commence on 16 November 2016, as previously indicated. Laboratory analyses are expected to be completed within one week after sample collection. The letter report is anticipated to be complete within one week of receipt of the analytical data from the laboratory.

REFERENCES

Department of Toxic Substances Control (DTSC), 2011. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance).* October 2011.

DTSC, 2015. *Advisory Active Soil Gas Investigations*. July 2015.

Langan, 2016. *Underground Storage Tank Closure Investigation Report. 1110 Jackson Street, Oakland, California.* 13 September

FIGURES

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Notes:
1. Aerial imagery provided through Langan's contract with Near Map. Aerial imagery flown on 6/20/16.
2. Map displayed in California State Coordinate System 3, California (Teale) Albers, North American Datum of 1983 (NAD83), US Survey Feet.

0 100 200 400
Feet

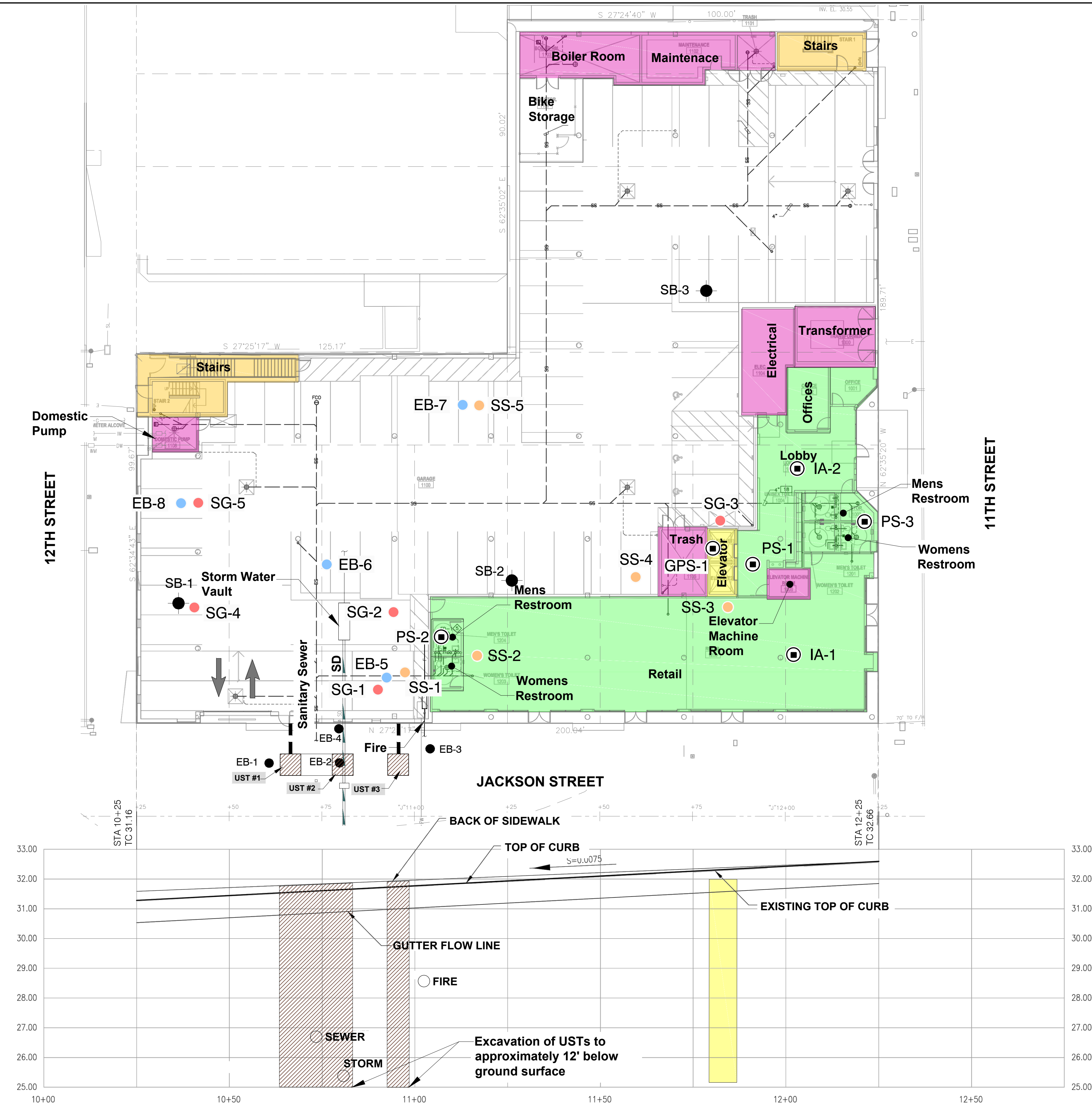
N

1110 JACKSON STREETT
Oakland, California

LANGAN TREADWELL ROLLO

SITE LOCATION MAP

Date 8/26/2016	Project 750622603	Figure 1



EXPLANATION

- Stair
- Machine rooms, utility rooms, trash, and storage
- Elevator
- Retail lobby/ offices
- Approximate location of former USTs
- SS — Sanitary sewer
- SD — Storm drain
- SS-1 — Sub-slab sample sample location (completed November 2016)
- SG-1 — Proposed soil gas sampling location
- EB-1 — Proposed soil and groundwater sample location
- Proposed air monitoring location (Indoor air = IA, Pathway samples = PS, Grab pathway sample = GPS)
- Capped in-place former product pipeline
- EB-1 — Grab groundwater sample location
- SB-1 — Approximate location of boring conducted by D.R. Horton in 2005

Notes:
1. Fire and water supply lines are located above ground in building footprint.
2. Elevator pit constructed with waterproof concrete walls and flooring.
3. Pipeline was cut at building extent during foundation work. Samples collected beneath former product pipelines during tank removal were non-detect for petroleum hydrocarbons.
4. SG-3 will be collected form approximately 5 feet below bottom of slab elevation.

0 — 30 Feet

Approximate scale

1110 JACKSON STREET
Oakland, California

SITE PLAN WITH SAMPLING LOCATIONS

Date 11/10/16	Project No. 750622603	Figure 2

LANGAN

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APPENDIX A
HEALTH AND SAFETY PLAN

SITE SPECIFIC SAFETY PLAN
Limited Phase II Environmental Site Assessment
1110 Jackson Street, Oakland, California

Background Information

Project Name:	1110 Jackson Street
Job Number:	750622603
Project Manager:	Joshua Graber Langan Engineering and Environmental Services
Site Safety Officer (SSO):	Elizabeth Kimbrel Langan Engineering and Environmental Services
Client Contact:	Mr. Everett Cleveland East Bay Asian Local Development Corporation
Site Address:	1110 Jackson Street Oakland, California

Overall Objective of Site Work:

Install 5 sub-slab vapor probes up to 5 feet bgs for the collection of vapor samples. Drill 5 soil gas and 4 groundwater borings up to 30 feet bgs for the collection of soil gas, soil and groundwater samples. Collect nine indoor air, pathway, grab pathway and ambient air samples.

Site Description:

Current Status: Construction site.

Hazardous Materials Handled, Disposed, or Stored: Potential petroleum hydrocarbons, volatile organic compounds and heavy metals in soil gas, soil and groundwater.

Potential Degradation Products: Potential petroleum hydrocarbons.

Potential Environmental Hazards: Potential petroleum hydrocarbons, volatile organic compounds and heavy metals in soil gas, soil and groundwater.

Potential Worker Hazards Due to Environmental Hazards: Potential petroleum hydrocarbons, volatile organic compounds and heavy metals in soil gas, soil and groundwater.
Potential Physical Hazards On-Site: Those common to sub-slab vapor probe installation and subsurface drilling. Proper clothing, hard hat, shoes, and ear protection should be worn while

the drill rig is operating, be careful of slips, trips, falls, and overhead machinery. Use caution working around heavy equipment.

Overall Hazard Estimation: Low.

Required Personal Safety Training: Per the California Code of Regulations (CCR) Title 8, Section 5192 all onsite personnel participating in field activities are required to be 40 hour HAZWOPER trained.

Level of Protection: "Level D" including steel-toed boots, safety glasses, and hard hats. If petroleum hydrocarbons are encountered, gloves will be required when handling and contaminated soil and/or groundwater.

Location(s) to be used: All people must wear Level D protection whether working or visiting the site.

Disposal of Contaminated Materials or Equipment: If contaminated soil and/or groundwater is encountered, it will be contained in 55-gallons drums, separately, with lids and will remain on-site until tested for proper disposal.

Monitoring for Contaminated Material: Monitoring using a photo-ionization detector.

Medical Monitoring: Langan employees undergo medical screening and monitoring.

ON-SITE ORGANIZATION AND COORDINATION

General: The following personnel are designated to carry out the stated job functions on-site:

Project Manager: Josh Graber (510) 874-7086

Langan Health and Safety: Anthony J. Moffa, Jr. (215) 491-6599 Ext 6545

Langan SSO: Elizabeth Kimbrel (501) 874-7018

Contractor on-site (state function): Gregg Drilling & Testing
950 Howe Rd.
Martinez, CA 94553
CA-57 485165
Phone: (925) 313-5800

TEG
11350 Monier Park Place
Rancho Cordova, CA 95742
Phone: (916) 853-8010

Agency Representatives: Alameda County Environmental Health

The Project Manager and SSO are responsible for on-site organization and coordination of the field activities. The SSO onsite is responsible for implementation of this Site Specific Safety Plan.

Site Access Control: The site is currently unoccupied, but is under active construction. In areas of construction, an exclusion zone with a radius of 20 feet will be set up surrounding the drill rig, while in operation, such that no unauthorized person enters during field activities.

Safety Briefings: Project personnel will be given briefings by the site health and safety officer on a daily or as-needed basis to further assist site personnel in conducting their activities safely. Briefings will include the review of a daily health and safety tailgate meeting and review of applicable Job Safety Analysis (JSA), which provide a step-by-step evaluation of the hazards associated with the tasks covered under this HASP. A hand auger soil sampling JSA is included as an attachment to this HASP.

Safety briefings will be provided when new activities are to be conducted, changes in work practices must be implemented due to new information made available, or if site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safe practices when performance deficiencies are identified during routine daily activities or as a result of jobsite safety inspections.

EMERGENCY MEDICAL CARE AND PROCEDURES

Nearest emergency medical facility: Kaiser Permanente Oakland Medical Center

Facility Name: Kaiser Permanente Oakland Medical Center

Address: 3600 Broadway Street
Oakland, California

Telephone: (510) 752-1000

Directions to Hospital: See map attached

Emergency Telephone Numbers:

Fire: 911

Police: 911

Ambulance: 911

Poison Control Center: (800) 662-9886

Emergency First Aid for Possible Substances Present:

Petroleum Hydrocarbons	Eye splash	Rinse with fresh water for 15 min. - take to doctor if irritation continues
	Ingestion	Do not induce vomiting - contact doctor

First Aid Equipment On-Site

To provide first line assistance to field personnel in the case of a sickness or injury, the SSO shall have the following items immediately available:

First aid kit - containing supplies for initial treatment of minor cuts and abrasions, severe lacerations, shock, heat stress, eye injuries, skin irritation, thermal and chemical burns, snake and insect bites, and for immobilization of fractures.

Supply of clean water for flooding exposed skin areas or treatment of heat stroke

Soap or hand cleaner and towels

If suitable water supplies are not immediately available, or where water use is inappropriate for fire suppression, a ten pound ABC fire extinguisher will be available.

On-Site Emergency Procedures

1. Personal injury or illness:

   If an emergency involving actual or suspected personal injury occurs, the SSO shall follow these steps:

   - Remove the exposed or injured person(s) from immediate danger.
   - Render First Aid if necessary.
   - Obtain paramedic services or ambulance transport to local hospital. This procedure shall be followed even if there is no visible injury.
   - Other personnel in the work area shall be evacuated to a safe distance until the SSO determines that it is safe for work to resume. If there is any doubt regarding the condition of the area, work shall not commence until all hazard control issues are resolved.

- At the earliest time practicable, the SSO shall contact the Project Manager, or their designees, giving details of the incident, and the steps taken to prevent its recurrence.

2. Fire or Explosion: Turn off all motorized equipment; evacuate working area; meet at designated upwind location.

3. Earthquake: Turn off all motorized equipment; evacuate working area; meet at designated upwind location.

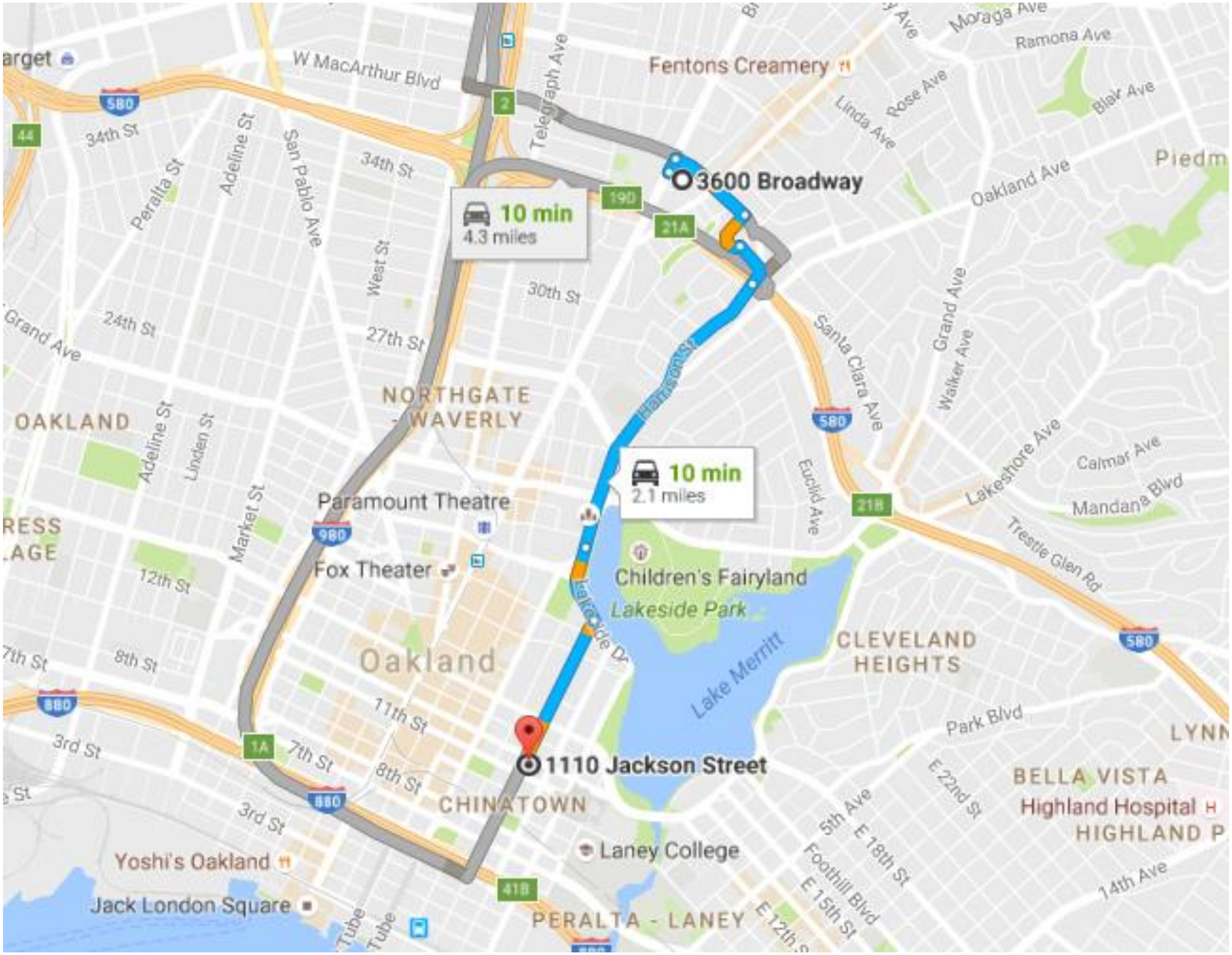
4. Hazardous Material Spill or Release: Turn off all motorized equipment; evacuate work area in an upwind direction of the spill or release; meet at designated upwind location.

5. Personal Protective Equipment Failure: If any site worker experiences a failure or alteration of protective equipment that affects the protection factor that person and his/her buddy shall immediately leave the Exclusion Zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

6. Other Equipment Failure: If any other equipment on-site fails to operate properly, the project team leader and SSO shall be notified and then shall determine the effect of this failure on continuing operations on-site. If the failure affects the safety of personnel or prevents completion of the work plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

Prepared By: ______________________ **11/10/2016**

Joshua Graber, Senior Project Manager **Date**


3600 Broadway
10 min
4.3 miles
10 min
2.1 miles
1110 Jackson Street
Fentons Creamery
W MacArthur Blvd
Telegraph Ave
Paramount Theatre
Fox Theater
NORTHGATE - WAVERLY
OAKLAND
Oakland
CHINATOWN
Children's Fairyland
Lakeside Park
Lake Merritt
CLEVELAND HEIGHTS
BELLA VISTA
Highland Hospital
Laney College
Yoshi's Oakland
Jack London Square
PERALTA - LANEY
Harrison St
Lakeside Dr
Santa Clara Ave
Oakland Ave
Lakeshore Ave
Grand Ave
Park Blvd
Trestle Glen Rd
Mandana Blvd
Moraga Ave
Ramona Ave
580
980
880

On-Site Personnel

I have read and reviewed this Site Safety Plan and will comply with the requirements stated herein and directions from the site safety officers.

Name	Signature
__________________________	______________________________
__________________________	______________________________
__________________________	______________________________
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APPENDIX B

STANDARD OPERATING PROCEDURE INSTALLATION AND EXTRACTION OF THE VAPOR PINS™

Standard Operating Procedure
Installation and Extraction of the Vapor Pin™

May 4, 2011

Scope:

This standard operating procedure describes the installation and extraction of the Vapor Pin™[1] for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the Vapor Pin™ for the collection of sub-slab soil-gas samples.

Equipment Needed:

- Assembled Vapor Pin™ [Vapor Pin™ and silicone sleeve (Figure 1)];
- Hammer drill;
- 5/8-inch diameter hammer bit (Hilti™ TE-YX 5/8" x 22" #00206514 or equivalent);
- 1½-inch diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- Vapor Pin™ installation/extraction tool;
- Dead blow hammer;
- Vapor Pin™ flush mount cover, as necessary;
- Vapor Pin™ protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel.

[1]Cox-Colvin & Associates, Inc., designed and developed the Vapor Pin™; a patent is pending.

Figure 1. Assembled Vapor Pin™.

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch diameter hole at least 1¾-inches into the slab.

4) Drill a 5/8-inch diameter hole through the slab and approximately 1-inch into the underlying soil to form a void.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of Vapor Pin™ assembly into the drilled hole. Place the small hole located in the handle of the extraction/installation tool over the Vapor Pin™ to protect the barb fitting and cap, and tap the Vapor Pin™ into place using a

dead blow hammer (Figure 2). Make sure the extraction/installation tool is aligned parallel to the Vapor Pin™ to avoid damaging the barb fitting.

Figure 2. Installing the Vapor Pin™.

For flush mount installations, unscrew the threaded coupling from the installation/extraction handle and use the hold in the end of the tool to assist with the installation (Figure 3).

Figure 3. Flush-mount installation.

During installation, the silicone sleeve will form a slight bulge between the slab and the Vapor Pin™ shoulder. Place the protective cap on Vapor Pin™ to prevent vapor loss prior to sampling (Figure 4).

Figure 4. Installed Vapor Pin™.

7) For flush mount installations, cover the Vapor Pin™ with a flush mount cover.

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the Vapor Pin™ (Figure 5).

Figure 5. Vapor Pin™ sample connection.

10) Conduct leak tests [(e.g., real-time monitoring of oxygen levels on extracted sub-slab soil gas, or placement of a water

dam around the Vapor Pin™) Figure 6]. Consult your local guidance for possible tests.

Figure 6. Water dam used for leak detection.

11) Collect sub-slab soil gas sample. When finished sampling, replace the protective cap and flush mount cover until the next sampling event. If the sampling is complete, extract the Vapor Pin™.

<u>Extraction Procedure:</u>

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the Vapor Pin™ (Figure 7). Continue turning the tool to assist in extraction, then pull the Vapor Pin™ from the hole (Figure 8).

Figure 7. Removing the Vapor Pin™.

Figure 8. Extracted Vapor Pin™.

2) Fill the void with hydraulic cement and smooth with the trowel or putty knife.

3) Prior to reuse, remove the silicone sleeve and discard. Decontaminate the Vapor Pin™ in a hot water and Alconox® wash, then heat in an oven to a temperature of 130° C.

The Vapor Pin™ to designed be used repeatedly; however, replacement parts and supplies will be required periodically. These parts are available on-line at www.CoxColvin.com.

<u>Replacement Parts:</u>

Vapor Pin™ Kit - VPC001
Vapor Pins™ - VPIN0522
Silicon Sleeves - VPTS077
Installation/Extraction Tool - VPIE023
Protective Caps - VPPC010
Flush Mount Covers - VPFM050
Water Dam - VPWD004
Brush - VPB026