EAST BAY ASIAN LOCAL
DEVELOPMENT CORPORATION

BUILDING HEALTHY, VIBRANT AND SAFE NEIGHBORHOODS

NeighborWorks CHARTERED MEMBER

January 18, 2018

Ms. Dilan Roe, P.E., Program Manager
Alameda County Health Care Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RE: Work Plan, Ground Water and Soil Vapor Investigation, Properties at 760 22nd Street and 2201 Brush Street, Oakland, California 94612
Fuel Leak Case No. RO0003153
GeoTracker Global ID T10000006348

Dear Ms. Roe:

Please find attached for your review the following document:

Work Plan, Ground Water and Soil Vapor Investigation, Properties at 760 22nd Street and 2201 Brush Street, Oakland, California 94612 (dated January 15, 2018).

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge.

Please call me at (510) 287-5353, ext. 339 if you have any questions.

Sincerely,

Everett Cleveland, Jr.
Senior Project Manager
East Bay Asian Local Development Corporation
1825 San Pablo Avenue, Suite 200
Oakland, California 94612

Attachment

Essel Environmental Consulting
1035 22nd Avenue, Unit 9
Oakland, California 94606
(800) 595-7616

January 15, 2018

Ms. Dilan Roe, P.E., Program Manager
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

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1.0 INTRODUCTION

East Bay Asian Local Development Corporation (EBALDC) has requested that Essel Environmental Consulting (Essel) prepare this work plan proposing ground water and soil vapor sampling at the properties located at 760 22nd Street and 2201 Brush Street in Oakland, California. In an October 17, 2017 directive letter to EBALDC, Alameda County Department of Environmental Health (ACDEH) requested submittal of summary tables of soil, ground water, and soil vapor data collected to date with notes on sampling methods and whether re-sampling was appropriate. The ACDEH also requested that a work plan, describing the proposed re-sampling work be submitted for review and approval. In addition, EBALDC has redesigned the building proposed to be constructed at the property and ACDEH requested (November 9, 2017 electronic mail to EBALDC) that previously prepared plates showing site plan views and cross sections be revised to show the new belowground and ground floor features.

On November 21, 2017, Essel submitted (via electronic mail to ACDEH) the summary tables with suggestions for re-sampling select ground water and soil vapor locations. Essel also submitted revised plates of the October 2016 Remedial Action Plan and geologic cross sections contained in earlier investigation reports incorporating the new belowground and ground floor building design. On receipt of the submittal, ACDEH requested a meeting be held to discuss the proposed re-sampling work. This meeting was convened on December 21, 2017 and additional work scope was requested based on the new ground floor design of the building. The following sections provide background information and describe the proposed re-sampling and additional work.

1.1 Site Description and Background

At present, the northern and larger parcel at 760 22nd Street is occupied by a metal frame/metal siding shop building, contains two mobile trailers and several parked buses, and is paved with concrete. A below grade pit, historically used for servicing large vehicles (trucks and buses) and referred to as the oil-changing pit, is located in the northern portion of the shop building. The smaller south-adjacent and abutting parcel at 2201 Brush Street is unpaved and also used to park buses. A 7,000-gallon diesel underground storage tank (UST) and a 2,000-gallon gasoline UST formerly were located at and next to (off-site, beneath the city sidewalk) the northeastern corner of the site, respectively. A small, raised concrete pedestal located at the east-central edge of the property is the location of a former fuel dispenser. During geophysical utility-locating work in September 2015, an area of unusually low-density soil and a nearby standpipe indicative of a UST vent pipe

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were identified at the west-central edge of the site. This area is referred to as the geophysical anomaly. Plate 1 presents the locations of the above-described features.

In 2015 and 2016, Essel conducted three subsurface investigations at the site and off-site to the west to evaluate impacts to soil, soil vapor, and ground water related to the former USTs, former fueling facilities, and former vehicle maintenance operations, and impacts to soil and ground water at the geophysical anomaly. The subsurface investigations identified notable petroleum-hydrocarbon impact to soil and ground water in the areas of the former USTs and geophysical anomaly and moderate petroleum-hydrocarbon impact to soil and ground water at the location of the former fuel dispenser. Minor concentrations of other contaminants of potential concern (COPC) were detected in the soil and ground water at these locations. Several COPC were detected in soil vapor; however, a focused human health risk assessment performed to evaluate vapor intrusion risk in the area of the former USTs found insignificant carcinogenic and non-carcinogenic health risk from potential intrusion of contaminant vapors into a future residential building.

In 2017, Essel performed additional sampling of ground water (total petroleum hydrocarbons [TPH], volatile organic compounds [VOCs], and polynuclear aromatic hydrocarbons [PNAs]) at the locations of the former USTs and fuel dispenser and sampling of ground water and soil vapor (methane, oxygen, carbon dioxide, naphthalene) at the geophysical anomaly. Laboratory analytical results for ground-water samples indicated approximately equivalent concentrations of TPH, VOCs, and PNAs as had been previously detected in ground water at the three locations. Evaluation of the data showed concentrations of COPC in the ground water do not pose a vapor intrusion human health risk to future on-site residents. Laboratory analytical results for soil vapor at and near the geophysical anomaly identified a relatively elevated (but less than the action level of 5,000 parts per million by volume) concentration of methane at one vapor well (SV-8), low concentrations or no detectable concentration of methane at three vapor wells, and no detectable concentrations of naphthalene at the four vapor wells. Plate 1 presents the locations of borings and vapor wells advanced/installed during Essel's investigations and earlier investigations performed by others.

1.2 Revised Building Design

Changes to the building design have been made to maintain the feasibility of the project. Significant revisions include reducing the height of the building to five stories and removing the originally planned second floor day care center. East Bay Asian Local Development Corporation plans to retain the number of residential units at 59 and the building will still occupy the entire footprint of the property. Notable redesign features of the below ground and ground floor of the new building include:

- relocating the northern elevators (and belowground shafts) and stairwells from the area of the former USTs to a north-central location more than 20 feet west of the former USTs;
- eliminating the southern elevator;
- moving one belowground car puzzle lift to the south–central portion of the site;
- replacing the second belowground car puzzle lift with an at grade car puzzle lift that will overlie much of the geophysical anomaly;
- replacing former office space along the northern side of the building with commercial retail space;
- placing five studio residential units on the ground floor at the southeastern corner of the site; and
- replacing the perimeter footing foundation with a 24-inch-thick concrete mat slab foundation beneath the entire ground floor of the building.

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Below grade parking associated with the belowground car puzzle lift will involve excavation of soil beneath the central portion of the property to an approximate depth of 7 feet below the ground surface. Essel understands that the elevator shafts may also extend to a depth of 7 feet below grade and the stairwells will not extend below the ground surface. Other ground floor features will include a manager's office, lobby, and fire command center at the east-central edge of the site; and at grade vehicle parking, bicycle parking, mechanical, and electrical rooms in the central and western portions of the site. In addition to the former and current site features, Plate 1 shows the planned ground floor and below ground development.

2.0 PROPOSED WORK

Based on review of the sampling methods and laboratory analytical data collected through September 2017, re-sampling of ground water at three locations (borings ECB-23, ECB-24, and ECB-25) and re-sampling of soil vapor at the former fuel dispenser and geophysical anomaly are proposed. Sampling of soil vapor in the southeastern portion of the site is also proposed to assess subsurface conditions in the area of the planned ground floor studio residences. The proposed work will include advancing three additional borings to sample ground water and advancing seven additional borings to sample soil vapor.

2.1 Permit, Utility Clearance, and Health and Safety

Essel will submit a permit application to advance the borings to the Alameda County Public Works Agency (ACPWA) and will notify the ACPWA a minimum of 5 working days before the start of on-site activities. Essel will also notify the ACDEH a minimum of 3 working days before the start of on-site activities. The 10 additional boring locations will be marked and Essel will notify Underground Services Alert of Northern California and Nevada a minimum of 72 hours before the date of planned drilling. The existing site-specific Health and Safety Plan (Plan) will be updated before conducting fieldwork and this Plan will be available at the site during field activities. Essel and subcontractor personnel will be apprised of potential on-site hazards during a field orientation meeting that will be conducted before field work begins.

2.2 Ground-Water Investigation

Soil borings will be advanced at the following locations, as shown on Plate 2, to assess water quality.

- Boring ECB-23R will be advanced adjacent to borings ECB-23 and ECB-15 where the highest concentrations of total petroleum hydrocarbons were detected in ground water in the area of the geophysical anomaly.
- Boring ECB-24R will be advanced next to borings ECB-24 and ECB-3 where the highest concentrations of total petroleum hydrocarbons were detected in ground water in the former UST area.
- Boring ECB-25R will be advanced next to borings ECB-25 and ECB-5 at the location of the former fuel dispenser.

A C-57-licensed drilling contractor will advance borings using a direct-push drill rig equipped with a 2¼-inch-outside-diameter, hollow steel rod. Ground water has been encountered, on average, at depths of 13 to 14¼ feet below grade and borings are proposed to be advanced to a maximum depth of 20 feet below the ground surface to collect water samples. Continuous soil cores will be collected from the borings in clear plastic sleeves that will be contained inside the steel rod. Each sleeve will be removed from the core barrel

after each sampling interval and replaced with a clean plastic sleeve for the next lower sampling interval. Soil cores retrieved from the borings will be screened in the field for moisture content to identify the depth to first ground water. Drilling equipment will be decontaminated between boring locations. After drilling and water sampling, each borehole will be backfilled with neat cement slurry from the total depth of the boring to the ground surface. A representative of the ACPWA will witness backfilling of the boreholes per requirements of the drilling permit.

Ground-water samples will be collected from the three borings through ¾-inch-diameter polyvinyl chloride (PVC) casings that will be placed in each borehole. After placement, each temporary well will be gauged for depth to ground water using an electronic water-level indicator. Using a clean stainless-steel bailer, the temporary wells will be purged, as practicable, and sampled to obtain a reasonably representative water sample. Water samples will be collected using the bailer and will be placed into laboratory-supplied containers that will be of appropriate size and contain the appropriate preservative for the laboratory analyses requested. Sample containers will be filled completely to eliminate air bubbles, sealed with the container caps, labeled with a unique identifying number, and placed on ice in a closed cooler. Essel will complete a Chain-of-Custody form for the ground-water samples and this form will accompany the samples to the laboratory.

2.3 Soil Vapor Investigation

Soil vapor sampling and analysis will conform to the protocols described in the Advisory - Active Soil Gas Investigations (Advisory) (California Environmental Protection Agency, 2015).

2.3.1 Geophysical Anomaly

At the request of ACDEH, soil vapor wells SV-8 through SV-11 were installed in July 2017 and sampled in August and September 2017 to assess the presence of naphthalene and methane in soil vapor in the geophysical anomaly area. Naphthalene was not detected and methane was detected at concentrations varying from 2.2 to 3,200 parts per million by volume (ppmv). Clay that is present between 3 and 10 feet below grade caused excessive downhole vacuums that resulted in leaks in the sampling systems at wells SV-8, SV-10, and SV-11. Acceptable vapor samples for methane were eventually collected from vapor wells SV-8, SV-9, and SV-10; however, unacceptable levels of the leak-check tracers (2-proponal and helium) were detected in the soil vapor samples collected from well SV-11. Based on these results, installation of a new larger-diameter vapor well to replace SV-11 and sampling and analysis of soil vapor for naphthalene, methane, oxygen, and carbon dioxide and re-sampling of wells SV-8, SV-9, and SV-10 for analysis for naphthalene are proposed.

Due to space limitations in the geophysical anomaly area, replacement vapor well SV-11R will be installed at the location of existing vapor well SV-11. A direct-push drill rig, equipped with a 4½ -inch-diameter solid-stem auger will be used to overdrill the 2¼-inch-diameter borehole to a depth of 10 feet below the ground surface. The well materials of SV-11 will be removed during the overdrill procedure. Well SV-11R will be constructed by placing approximately 4 feet of No. 3 Monterey sand (6 to 10 feet below grade) around the vapor probe tip, which will be set approximately 8 feet below the ground surface. The probe tip will be connected to ¼-inch-diameter Teflon tubing that will extend above the ground surface. The top end of the tubing will be capped with a valve to prevent atmospheric air from entering the probe hole. Dry bentonite crumbles (5 to 6 feet below grade) followed by bentonite slurry (½-foot to 5 feet below grade) will be placed

above the sand pack. Well SV-11R will be finished with a well box that will be set in concrete. Following construction, well SV-11R will be purged of at least one well volume to establish subsequent equilibrium with the adjacent earth materials. Purging will be performed using a vacuum pump at a maximum rate of 50 milliliters per minute. Plate 2 shows the locations of existing vapor wells SV-8, SV-9, and SV-10 and proposed replacement well SV-11R.

2.3.2 Former Fuel Dispenser and Southeastern Corner of Site

Review of laboratory analytical data indicates that re-sampling of soil vapor wells SV-6 and SV-7 located at the east-central edge of the site near the former fuel dispenser would be appropriate. Concentrations of the leak-check tracer gas were detected in samples collected from these two wells likely related to the substantial clay content and low permeability of the sediments underlying the eastern side of the site. East Bay Asian Local Development Corporation also proposes to place five ground-floor residential studio units in the southeastern corner of the property to the south of wells SV-6 and SV-7. Subsurface data suggests a relatively thick clay unit underlies the area of the proposed ground floor units. Based on discussions during the December 21, 2017 meeting, the following scope of work is proposed.

In lieu of re-sampling wells SV-6 and SV-7, a new larger-diameter vapor well will be installed at a location approximately mid-way between the two soil vapor wells. In addition, one new larger-diameter soil vapor well will be installed beneath the footprint of each proposed studio unit. Plate 2 shows the proposed locations of the six vapor wells. The boreholes for the six wells will be drilled using a 4½-inch-diameter, solid stem auger to a depth of 10 feet below the ground surface. As described above for proposed well SV-11R, the new wells will be installed with the vapor probe tip at 8 feet below grade, sand from 6 to 10 feet below grade, and granular bentonite followed by bentonite slurry from ½-foot to 6 feet below grade. Following construction, the six additional vapor wells will be purged of at least one well volume to establish subsequent equilibrium with the adjacent earth materials. Purging will be performed using a vacuum pump at a maximum rate of 50 milliliters per minute.

2.3.3 Sampling Soil Vapor

Re-sampling Existing Vapor Wells

Existing vapor wells SV-8, SV-9, and SV-10 (see Plate 2) will be sampled for naphthalene using metal sorbent (TO-17 VI) tubes and a low flow sampling pump. These wells were installed in July 2017 and the downhole environments are in equilibrium. Shut-in tests of each sorbent tube will be performed by attaching a disposable syringe to the outlet side of the tube and pulling on the plunger of the syringe. The shut-in test will be successful if the plunger does not move or immediately returns to the starting position when released.

Previous sampling indicates low or no flow conditions are present at wells SV-8 and SV-10. Vapor flow at well SV-9 occurred with little vacuum resistance. Purging and sampling the three wells will be performed using a vacuum pump at a maximum rate of 50 milliliters per minute. Wells SV-8 and SV-10 will be purged approximately 100 milliliters (approximately 1¼ tubing volumes). Depending on flow conditions, well SV-9 will be purged up to approximately three well volumes. After purging, the sorbent tube will be installed upstream of the sampling pump and vapor samples will be collected. Approximately 60 milliliters of air will be evacuated through each sorbent tube (calculated maximum volume to avoid breakthrough). During sampling, helium (leak check tracer gas) will be introduced into a shroud that will be placed over each well.

The helium concentration in the shroud will be monitored during sampling using field instrumentation. At the completion of sampling, each sorbent tube will be sealed, labeled, wrapped in aluminum foil, and placed on ice in a closed cooler. Essel will complete a Chain-of-Custody form for the soil vapor samples and this form will accompany the samples to the laboratory.

Sampling Larger Diameter Vapor Wells

Sampling of vapor well SV-11R and the six vapor wells to be installed in the southeastern portion of the site will take place a minimum of 2 weeks after the wells are installed to allow time for the wells to reach equilibrium with the adjacent earth materials. Vapor samples will be collected from the wells using 1-liter Summa canisters and a connected manifold assembly containing vacuum gauges, a flow controller, and moisture filter. The laboratory evacuates each Summa canister to a negative pressure (i.e. vacuum) of approximately 30 inches of mercury. Before sampling, a shut-in test will be performed on each sampling assembly to check for leaks in the aboveground sampling train. Shut-in tests will be conducted for a period of least 1 minute and fittings will be tightened as needed until no leaks are present in the assemblies.

Each vapor well will be purged up to a maximum of 200 milliliters of air (2½ tubing volumes) using a 6-liter evacuated Summa canister. Purging will be performed through the manifold assembly to maintain an average purge rate of approximately 167 milliliters per minute. After purging, the sampling assembly will be placed inside a shroud and helium will be introduced as a leak check tracer during sampling. Soil-vapor samples will be collected at the average controlled flow rate of approximately 167 milliliters per minute and the interior shroud concentration of helium will be monitored during sampling. At well SV-11R, a sorbent tube will initially be used to collect a sample followed by a 1-liter Summa canister to collect an additional sample from this well. At the completion of sampling, the valves on the sampling canisters will be closed, the manifold assemblies disconnected, and the canisters will be packaged in boxes. Essel will prepare Chain-of-Custody forms for the TO-17 VI tube and the 1-liter Summa canisters and these forms will accompany the samples to the laboratory.

2.4 Laboratory Testing

Ground-water samples will be analyzed by a state of California certified testing laboratory. The samples will be submitted for analysis for total petroleum hydrocarbons as gasoline (TPHg) using United States Environmental Protection Agency (USEPA) Method 8015Bm; total petroleum hydrocarbons as diesel (TPHd) and as motor oil (TPHmo) using USEPA Method 8015B; volatile organic compounds (VOCs) using USEPA Method 8260B; and polynuclear aromatic hydrocarbons (PAHs) using USEPA Method 8270C-Selective Ion Monitoring (SIM).

The soil vapor samples will be submitted to certified air-testing laboratories. Samples collected in the TO-17 VI sorbent tubes (wells SV-8, SV-9, SV-10, and SV-11R) will be analyzed for naphthalene using USEPA Method TO-17. The sample collected in the 1-liter Summa canister from well SV-11R will be analyzed for methane, oxygen, carbon dioxide, and helium using American Society for Testing & Materials (ASTM) Method D-1946.

Soil vapor samples collected from the six larger-diameter vapor wells proposed to be installed in the southeastern portion of the site will be analyzed for total petroleum hydrocarbons gasoline range using USEPA Method TO-3; VOCs and naphthalene using USEPA Method TO-15; and methane, oxygen, carbon

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dioxide, and helium using ASTM Method D-1946. The Advisory indicates that if TO-15 is used for naphthalene analysis, then Method TO-17 should be used to confirm TO-15 analytical results at a frequency of 5 to 10 percent of field samples. Therefore, a sample from one of the larger-diameter vapor wells will be collected through a sorbent tube and submitted for analysis for naphthalene using USEPA Method TO-17.

2.5 Technical Report of Subsurface Investigation

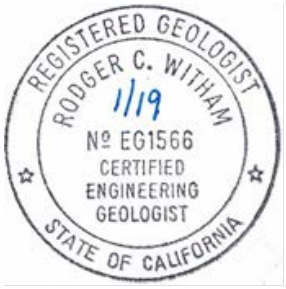
A technical report will be prepared for the subsurface investigation and will present the results of field and laboratory work. The report will be signed and stamped by an appropriately licensed person.

2.6 Health-Risk Evaluation

A toxicologist acceptable to the ACDEH will review the cumulative ground water and soil vapor laboratory analytical data collected at the site and evaluate potential health risk to future sensitive receptors. An updated human health risk assessment report presenting the results of this risk evaluation will be prepared and submitted as an appendix to the subsurface investigation report.

ESSEL ENVIRONMENTAL CONSULTING

Rodger C. Witham, P.G., C.E.G.
Senior Geologist



Nik Lahiri
Principal

Plate 1 – Site Plan, Previous Borings/Vapor Wells, and Future Ground Floor
Plate 2 – Proposed Boring/Vapor Wells

Reference Cited:

California Environmental Protection Agency, 2015, *Advisory - active soil gas investigations.* July.

EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY
- B-6, SB-6 ● SOIL BORING LOCATION (PES ENVIRONNMENTAL, INC., 2005, 2011)
- ECB-25 ● SOIL BORING LOCATION (ESSEL, 2015, 2016, 2017)
- SV-11 ■ SOIL VAPOR WELL LOCATION (ESSEL, 2015, 2016, 2017)
- HA-3 ○ HAND AUGER LOCATION (ESSEL, 2016)
- FORMER UNDERGROUND STORAGE TANK
- D DIESEL
- G GASOLINE
- FUTURE BUILDING FOOTPRINT (GROUND FLOOR AND BELOWGROUND FEATURES IN HALF TONE)
- LANDSCAPING

NOTES:

UNDERGROUND STORAGE TANK LOCATIONS FROM HAGEMAN-SCHANK, INC. (1987)

ECB-7 ADVANCED 30 DEGREES FROM VERTICAL. DASHED LINE SHOWS TRACE OF BORING.

24-INCH-THICK CONCRETE MAT SLAB FOUNDATION THROUGHOUT GROUND FLOOR OF BUILDING

N

Approximate Scale

0 30 60

feet

PROJECT NO.	DRAWN BY	REPORT DATE
15166	EC	January 2018

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Site Plan, Previous Borings/ Vapor Wells, and Future Ground Floor

760 22nd Street and 2201 Brush Street Oakland, California

PLATE 1

EXPLANATION

- APPROXIMATE PROPERTY BOUNDARY
- ECB–25 SOIL BORING LOCATION (ESSEL, 2015, 2016, 2017)
- SV–11 SOIL VAPOR WELL LOCATION (ESSEL, 2015, 2016, 2017)
- HA–3 HAND AUGER LOCATION (ESSEL, 2016)
- ECB–25R GROUNDWATER RE–SAMPLING LOCATION (TPH + VOCs)
- SV–10 SOIL VAPOR RE–SAMPLING LOCATION (NAPHTHALENE)
- PROPOSED LOW PERMEABILITY SOIL VAPOR WELL (INSTALLED TO DEPTH OF 10 FEET)
- FORMER UNDERGROUND STORAGE TANK
- D DIESEL
- G GASOLINE
- FUTURE BUILDING FOOTPRINT (GROUND FLOOR AND BELOWGROUND FEATURES IN HALF TONE)
- LANDSCAPING
- TPH TOTAL PETROLEUM HYDROCARBON
- VOCs VOLATILE ORGANIC COMPOUNDS

NOTES:

UNDERGROUND STORAGE TANK LOCATIONS FROM HAGEMAN–SCHANK, INC. (1987)

ECB–7 ADVANCED 30 DEGREES FROM VERTICAL. DASHED LINE SHOWS TRACE OF BORING.

24–INCH–THICK CONCRETE MAT SLAB FOUNDATION THROUGHOUT GROUND FLOOR OF BUILDING

N

Approximate Scale

0 20 40

feet

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Proposed Boring/Vapor Wells
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PLATE 2