Federal Realty
INVESTMENT TRUST

FOUNDATIONS OF OPPORTUNITY

356 Santana Row, Suite 1005
San Jose, CA 95128
PH: 408.551.4600
FX: 408.551.4616

July 11, 2016

Mr. Mark Detterman, P.G., C.E.G.
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Data Gap Investigation Work Plan and Focused Conceptual Model; East Bay Bridge Center, 3839 Emery Street, Emeryville, CA 94608. Fuel Leak Case No. RO0003210; Geotracker Global ID T10000008569

Dear Mr. Detterman:

Attached is the Data Gap Investigation Work Plan and Focused Conceptual Model for the East Bay Bridge Center, located at 3839 Emery Street in Emeryville, California. This report was prepared for Federal Realty Investment Trust by Cornerstone Earth Group. I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report is true and correct to the best of my knowledge.

If you have any questions, please contact Chris Heiny at (925) 988-9500 ext. 14 or cheiny@cornerstoneearth.com.

Sincerely,

By: EAST BAY BRIDGE RETAIL, LLC, a Delaware limited liability company

By: East Bay Bridge Retail REIT, a Maryland statutory trust, its sole member

By: FR East Bay Bridge, LLC, a Delaware limited liability company, its Trustee

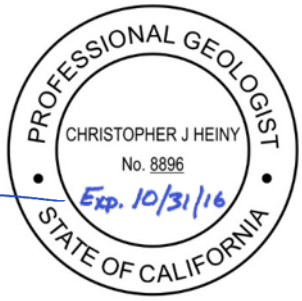
By: Federal Realty Investment Trust, a Maryland real estate investment trust, its Managing Member

By: _____
Name: Michael Strahs
Title: Director, Development

Attachment: Data Gap Investigation Work Plan and Focused Conceptual Model

CORNERSTONE EARTH GROUP

Type of Services	**Data Gap Investigation Work Plan and Focused Conceptual Model**
Location	**East Bay Bridge Center** **3839 Emery Street** **Emeryville, California**
Client	**Federal Realty Investment Trust**
Client Address	**356 Santana Row, Suite 1005** **San Jose, California 95128**
Project Number	**371-5-4**
Date	**July 11, 2016**



Prepared by **Christopher J. Heiny, P.G.**
Principal Geologist

Reviewed by **Kurt M. Soenen, P.E.**
Principal Engineer

1259 Oakmead Parkway | Sunnyvale, CA 94085
T 408 245 4600 | F 408 245 4620

1270 Springbrook Road, Suite 101 | Walnut Creek, CA 94597
T 925 988 9500 | F 925 988 9501

www.cornerstoneearth.com

CORNERSTONE EARTH GROUP

Table of Contents

SECTION 1: INTRODUCTION 1
SECTION 2: SITE BACKGROUND AND ENVIRONMENTAL SITE HISTORY 1
2.1 SITE HISTORY 1
2.2 PREVIOUS ENVIRONMENTAL STUDIES 1
2.2.1 Initial Environmental Studies and Characterization 1
2.2.2 1994 Soil Management Plan 2
2.3 2015 SOIL MANAGEMENT PLAN ADDENDUM AND IMPLEMENTATION 3
2.4 UNDERGROUND STORAGE TANK REMOVAL 4
SECTION 3: FOCUSED SITE CONCEPTUAL MODEL 4
3.1 HISTORICAL SITE USE 4
3.2 CURRENT SITE AND VICINITY CHARACTERISTICS 5
3.3 GEOLOGY AND HYDROGEOLOGY 5
3.4 PROPERTY-WIDE ENVIRONMENTAL CONDITIONS 5
3.5 ENGINEERING AND INSTITUTIONAL CONTROLS 5
3.6 PRIMARY SOURCE 5
3.7 CONTAMINANTS OF POTENTIAL CONCERN 6
3.8 EXTENT OF ENVIRONMENTAL IMPACTS 6
3.8.1 Soil 6
3.8.2 Ground Water 6
3.8.3 Soil Vapor 7
3.9 TRANSPORT MECHANISMS 7
3.9.1 Direct Contact with Soil 7
3.9.2 Volatilization 7
3.9.3 Leaching into Ground Water 7
3.10 POTENTIAL RECEPTORS 7
3.10.1 On and Off-Site Receptors 7
3.10.2 Ecological 8
3.11 EXPOSURE PATHWAY EVALUATION 8
SECTION 4: LOW-THREAT UST CASE CLOSURE POLICY EVALUATION 8
4.1 GENERAL CRITERIA 8
4.2 MEDIA-SPECIFIC CRITERIA 9
4.2.1 Ground Water Specific Criteria 9
4.2.2 Petroleum Vapor Intrusion to Indoor Air Criteria 10
4.2.3 Direct Contact and Outdoor Air Exposure Criteria 10
SECTION 5: DATA GAP ANALYSIS 10
SECTION 6: DATA GAP WORK PLAN 10
6.1 PRE-FIELD ACTIVITIES 10
6.2 SOIL SAMPLE COLLECTION 11
6.3 GROUND WATER SAMPLE COLLECTION 11
6.4 SOIL VAPOR SAMPLE COLLECTION 11
6.5 SAMPLE STORAGE AND SAMPLE TRANSPORT 12
6.6 QUALITY ASSURANCE / QUALITY CONTROL 12
6.7 REPOR PREPARATION 12
SECTION 7: SCHEDULE 12
SECTION 8: LIMITATIONS 12
SECTION 9: REFERENCES 13

FIGURES

FIGURE 1 – VICINITY MAP
FIGURE 2 – SITE MAP
FIGURE 3 – SOIL SAMPLING LOCATIONS AND FINAL EXCAVATION DEPTHS
FIGURE 4 – UST AND VERIFICATION SAMPLE LOCATION MAP
FIGURE 5 – SITE CONCEPTUAL MODEL

TABLES

TABLE 1 – SUMMARY OF INITIAL LANDSCAPING TRENCH SAMPLES, TRENCH VERIFICATION SAMPLES, UST VERIFICATION SAMPLES, UST SOIL STOCKPILE SAMPLES, AND DOCUMENTED PETROLEUM HYDROCARBONS IN CAPPED SOIL
TABLE 2 – SITE CONCEPTUAL MODEL
TABLE 3 – POTENTIAL DATA GAPS AND PROPOSED INVESTIGATION

CORNERSTONE EARTH GROUP

Type of Services	**Data Gap Investigation Work Plan and Focused Conceptual Model**
Location	**East Bay Bridge Center** **3839 Emery Street** **Emeryville, California**

SECTION 1: INTRODUCTION

On behalf of the Federal Realty Investment Trust (Federal Realty), Cornerstone Earth Group (Cornerstone) prepared this Data Gap Investigation Work Plan and Focused Conceptual Model for the East Bay Bridge Center located at the 3839 Emery Street in Emeryville, California (Site, Figures 1 and 2). This report was prepared per the Alameda County Department of Environmental Health (ACDEH) letter dated April 21, 2016, subsequent discussions with the ACDEH, and for Federal Realty Investment Trust (Federal Realty) in accordance with our May 11, 2016 agreement.

SECTION 2: SITE BACKGROUND AND ENVIRONMENTAL SITE HISTORY

2.1 SITE HISTORY

Historically, the Site was used for industrial purposes that consisted of railroad car repair and maintenance, automotive storage and repair, a trucking business, railroad freight depot and passenger station, and general storage yards. As discussed below, many Site investigations have been performed to evaluate the environmental impacts of these historical site uses. In the 1990s, the Site was redeveloped into the East Bay Bridge Center, which is currently present and consists of retail stores. In 2014 to 2015, Federal Realty performed improvements to the Site that consisted of interior improvements to portions of the building, exterior improvements to the façade, and landscaping improvements along the front drive aisle and walkways. As discussed below, Cornerstone Earth Group (Cornerstone) was contracted to assist with soil management activities related to the landscaping improvements.

2.2 PREVIOUS ENVIRONMENTAL STUDIES

2.2.1 Initial Environmental Studies and Characterization

In the late 1980's and early 1990's, Levine-Fricke performed several environmental investigations for the "Yerba Buena East Bay Bridge" property, which consisted of the contiguous properties bound by Beach Street to the west, San Pablo Avenue to the east, 40th Street to the north, and Highway 580 and Yerba Buena Avenue to the south (Properties); the Site was located in the eastern portion of these Properties. These prior studies identified that the prior Site activities impacted the soil quality beneath the Site. Laboratory analysis detected elevated levels of petroleum hydrocarbons (diesel-range petroleum hydrocarbons [TPHd] and oil-range petroleum hydrocarbons [TPHo]) in soil samples from the Site. The sample

distribution indicated that the TPH-affected soils appeared to be widespread in the shallow soil across the Site.

In 1991, Levine-Fricke prepared a *Site Remedial Plan* that proposed to contain the TPH-impacted soil under building foundations or low-permeability asphalt paving. This scope was later revised in the *Containment Plan for Total Petroleum Hydrocarbon-Affected Soils* (Levine-Fricke, 1992). This containment plan was subsequently approved by the California Regional Water Quality Control Board (Water Board) on in a letter dated June 24, 1992.

In 1993, the TPH-affected soil was excavated and placed in locations that were later capped by the building pads or the asphalt-paved parking area or vehicular drive. Based on cross-sections presented in the *Soil Management Plan* (Levine-Fricke, 1994), up to approximately 7 feet of TPH-impacted soil was placed beneath the building pads or asphalt. Following fill placement, the Site was equally divided into 20 grid cells and two soil samples were collected from each grid cell from the upper approximate 3 feet of soil. Laboratory analyses of the fill samples detected up to 260 milligrams per kilogram (mg/kg) of TPHd, up to 4,400 mg/kg TPHo, and up to 18,000 mg/kg of total oil and grease (TOG). The ranges of concentrations detected are included in Table 1.

2.2.2 1994 Soil Management Plan

Levine-Fricke prepared a *Soil Management Plan* (SMP) (Levine-Fricke, 1994) that provided protocols for the on-going management of the TPH-impacted soil capped on-Site. These protocols included:

- Documentation of the on-Site containment of the TPH-affected soils: Levine-Fricke collected soil samples to document the concentrations of the contained TPH-affected soils at the Site. As documented in Section 2.2.1, laboratory analyses detected up to 260 mg/kg TPHd, 4,400 mg/kg TPHo and 18,000 mg/kg TOG (Table 1).

- Measures to maintain the pavement cap over the contained soils: The SMP required the paved areas overlying the TPH-impacted fill to be inspected for cracks twice a year. Any cracks identified are required to be filled so as to prevent the water infiltration and/or runoff, and to reduce the potential for human contact with the soil.

- Protocols for the appropriate management of the contained soils during required excavations: Any TPH-impacted soil that requires excavation will be placed on and covered with plastic sheeting. If possible, the TPH-impacted soil should be placed in its original excavation, re-compacted, and capped with a low permeability asphalt or concrete. Any TPH-impacted fill that cannot be used is required to be transported off-Site for proper disposal.

- Implementation of a ground water monitoring program to monitor shallow ground water quality beneath areas where the affected soil was contained: A quarterly ground water monitoring program was implemented and continued through 2002.

As noted in the SMP, the purpose of these measures was to reduce the potential for rainfall/irrigation infiltration and/or runoff, contact with people that regularly use the Site for commercial purpose, and construction/utility workers that may encounter the soil during required subsurface work.

In addition, a deed notice was recorded with Alameda County that acknowledged the placement of the TPH-impacted fill beneath the Site.

2.3 2015 SOIL MANAGEMENT PLAN ADDENDUM AND IMPLEMENTATION

In 2014, Federal Realty proposed improvements to the on-Site buildings and landscaping along the front of the building. The landscaping improvements consisted of the removal of the existing landscaping, excavation of the underlying soil, installation of Silva Cells to aid in tree planting and subsequent growth, backfilling of the excavation, and the planting of new landscaping. Since the work activities would penetrate the cap and encounter TPH-impacted soil, Cornerstone was contracted to provide guidance for handling the impacted soil in accordance to the SMP.

On December 23, 2014, Cornerstone directed a subsurface investigation to determine the depth and quality of the fill material within the proposed landscaping improvement area. Ten exploratory borings (EB-1 through EB-10) were advanced to depths of approximately 10 feet using a direct-push drill rig. The approximate boring locations are shown on Figures 2 and 3.

Fill materials consisting of varying amounts of gravel, sand, and clay were observed to depths between approximately 4 and 6 feet. The underlying native soil observed in these borings primarily consisted of a lean clay. Ground water was not encountered in the borings. The soil samples were also screened using an organic vapor meter (OVM); no significant OVM readings were measured.

Samples collected detected up to 1,900 mg/kg TPHd and 6,400 mg/kg TPHo in the fill material beneath the Site. These TPH concentration are consistent with those previously documented on-Site. The TPH concentrations detected sharply decreased to non-detect or below their respective residential Environmental Screening Levels (ESLs, Water Board, 2016) in the native material beneath the fill. No volatile organic compounds (VOCs) were detected except for one low-level detection of acetone, which may be due to laboratory cross-contamination since no on-Site source exists. The initial trench soil characterization results are presented in Table 1.

Based on the TPH detections and observation of fill depths, Cornerstone prepared a *Soil Management Plan Addendum* dated February 2, 2015 that presented an excavation plan proposing the excavation of fill material from the upper approximately 4½ to 6½ feet within the trench, depending on the observed fill depth and TPH concentrations. The SMP Addendum proposed the collection of verification samples to document the complete removal of the overlying TPH-impacted soil.

Between May and September, 2015, Federal Realty's contractor excavated the soil within the landscaped areas to the depths specified in the SMP Addendum. Cornerstone collected verification soil samples from the base of the excavation once these depths were achieved. The samples were analyzed for TPHd and TPHo and results were compared to their respective residential ESLs. Complete removal was considered when the TPHd and TPHo concentrations were below 100 mg/kg each, which was the residential ESL at the time of the excavation activities. Additional excavation was performed when the detected concentration of either compound exceeded 100 mg/kg. The final verification sample results indicate that all TPH-impacted soil from within the trenches was successfully removed. The excavated soil was stockpiled separately and then transported off site for disposal. After fill removal, the excavations were lined with an impermeable 6 mil liner to prevent cross-contamination with the adjacent TPH-impacted fill material along the trench walls. After placement, the contractor

backfilled the trenches with clean imported soil, installing the Silva Cells at the locations specified in the design plans. The verification sample results are presented in Table 1, and the locations of the verification samples are shown on Figure 3. The soil excavation and removal activities are documented in Cornerstone's *Soil Management Plan Implementation Report* dated October 19, 2015.

2.4 UNDERGROUND STORAGE TANK REMOVAL

During trench excavation activities, an approximately 2,000-gallon underground storage tank (UST) of unknown contents was discovered. The tank was observed to be of steel construction, and an oil product was observed within the tank. Federal Realty contracted Pacific States Environmental Contractors (PSEC) to remove the tank. On September 1, 2015, PSEC removed the UST under the oversight of the ACDEH and Alameda County Fire Department inspectors. After removal, the UST was observed to be in good condition, with no holes observed within the tank. The UST was transported off-Site for disposal.

Cornerstone collected confirmation soil samples from the UST excavation sidewalls and base under the oversight and direction of the ACDEH. The confirmation soil sample results indicated that the UST did not appear to have significantly impacted the adjacent soils. The detected TPHd, TPHo, and TPHg concentrations in confirmation samples collected from the UST excavation sidewalls and base were below their respective commercial ESLs. The detected TPHd and TPHo concentrations were similar to those detected in the TPH-impacted fill material on-Site. The detected concentrations of ethylbenzene and naphthalene were below their respective Low Threat Closure Policy Criteria concentrations based on a residential exposure scenario for soil between depths of 0 and 5 feet, which is the most conservative comparison (Water Board, 2012). The remaining volatile organic compounds (VOCs) were detected at concentrations below their respective ESLs.

No ground water was observed within the UST excavation. On September 8, 2015, the ACDEH indicated no further action was required and the contractor could backfill the UST excavation. The UST excavation verification sample results and the results from the soil sample collected from the excavated material are included in Table 4. The UST removal activities were documented in the September 2015 *Underground Storage Tank Removal Report* (Cornerstone, 2015).

In a letter dated April 21, 2016, the ACDEH indicated that the Site did not meet all requirements of the Water Board's Low Threat Closure Policy (LTCP). The ACDEH requested this report and additional data so that the Site could be reconsidered under the LTCP.

SECTION 3: FOCUSED SITE CONCEPTUAL MODEL

A tabular Site Conceptual Model (SCM) is presented in Table 2, and a graphical representation is presented in Figure 5. The SCM and components used to develop the SCM are discussed below.

3.1 HISTORICAL SITE USE

Historically, the Site was used for industrial purposes that consisted of railroad car repair and maintenance, automotive storage and repair, a trucking business, railroad freight depot and passenger station, and general storage yards. As discussed below, many Site investigations have been performed to evaluate the environmental impacts of these historical site uses. In the

1990s, the Site was redeveloped into the East Bay Bridge Center, which is currently present and consists of retail stores. In 2014 to 2015, Federal Realty performed improvements to the Site that consisted of interior improvements to portions of the building, exterior improvements to the façade, and landscaping improvements along the front drive aisle and walkways.

3.2 CURRENT SITE AND VICINITY CHARACTERISTICS

Currently, the Site consists of a shopping center, an adjacent asphalt-paved parking area, and landscaped areas. The Site vicinity consists of mixed commercial and residential uses.

3.3 GEOLOGY AND HYDROGEOLOGY

Based on our exploratory borings advanced on-Site, the subsurface conditions consist of fill materials to a maximum observed depth of approximately 6 feet. Material beneath the fill consists of stiff to very stiff lean clay with little sand. Ground water was not observed in our borings advanced to depths of approximately 10 feet, or within the UST pit that was excavated to a depth of approximately 12 feet. Based on geotechnical borings advanced by Cornerstone in 2014 near the former UST location, ground water is anticipated to occur at a depth of approximately 15 feet. The ground water flow is expected to be towards the west, towards the San Francisco Bay, which is approximately 3,700 feet west of the Site.

3.4 PROPERTY-WIDE ENVIRONMENTAL CONDITIONS

The Site is a part of the Yerba Buena – East Bay Bridge Center site that, as discussed in Section 2, was closed by the Water Board and is managed under a SMP. This Site has documented TPH-impacted fill material beneath the asphalt-paved parking areas and building pads. The capped fill material was observed within the tank pit excavation and within the trenches excavated for the landscaping improvements. Confirmation soil samples collected from the UST tank pit excavation sidewalls detected similar TPH concentrations to those documented in this capped fill material (Table 1). Based on these data, the TPH concentrations detected in the in-place samples collected from the UST excavation sidewalls and base likely represent the fill material placed on Site under the Yerba Buena – East Bay Bridge Center project.

3.5 ENGINEERING AND INSTITUTIONAL CONTROLS

The TPH-impacted fill beneath the Site are managed by the 1994 SMP and the 2015 SMP Addendum. Both of these documents require the on-going monitoring and maintenance of the cap to ensure integrity, and provide protocols to potential construction workers that may encounter the fill during subsurface work. These controls are in place to prevent the direct contact of the soil by persons at the property, to provide procedures for soil management if subsurface work is required, and to prevent stormwater contact with the fill material. As such, the SMP and SMP Addendum create incomplete pathways in the SCM that prevents exposures to residential, commercial, and construction/trench workers.

3.6 PRIMARY SOURCE

The primary source is the UST that was removed on September 1, 2015. The UST was a single-walled steel tank that contained an oily liquid. The former use of this UST is not known. The UST was observed to be in good condition with no holes observed upon removal.

3.7 CONTAMINANTS OF POTENTIAL CONCERN

Based on the confirmations soil samples collected from the UST excavation sidewalls and base, the contaminants of potential concern (COPC) are TPHd and TPHo. The concentrations of these compounds detected in the excavation sidewall and base samples are consistent with those detected in the fill material capped on-Site. As such, these detected concentrations within the UST excavation likely represent this capped fill material.

The VOCs ethylbenzene, xylenes, 1,2,4-trimethylbenzene (1,2,4-TMB), 1,3,5-TMB, 4-isopropryltoluene, naphthalene, and n-propylbenzene were also detected in the tank sidewall and/or base samples. The detected concentrations of ethylbenzene and naphthalene were below their respective Low Threat Closure Criteria concentrations based on a residential exposure scenario for soil between depths of 0 and 5 feet, which is the most conservative comparison (Water Board, 2012). The remaining VOCs were detected at concentrations below their respective residential ESLs. Therefore, these detected VOCs are not considered COPCs.

3.8 EXTENT OF ENVIRONMENTAL IMPACTS

3.8.1 Soil

The SMP documented TPH-impacted fill lies beneath the asphalt-paved parking area and building pads. Levine-Fricke documented concentrations of up to 260 mg/kg TPHd and 3,400 mg/kg TPHo in the fill material. In samples collected in 2015, Cornerstone documented concentrations of up to 1,900 TPHd and 6,400 TPHo in the fill material. The fill material reportedly extends laterally across the entire site, and the fill thicknesses have been observed to depths of up to approximately 6 feet.

Samples collected from the tank contents detected TPHd at a concentration 440,000 mg/kg and TPHo at a concentration of 200,000 mg/kg. The highest concentration detected in the confirmation samples collected from the UST excavation were 350 mg/kg TPHd and 280 mg/kg TPHd, which are within range of those detected in the fill samples. Higher concentrations would be expected in the confirmation samples if a significant release occurred. The detections in the confirmation soil samples likely represent the quality of the capped fill material rather than soil impacted from the UST. Based on these detections, the extent of impacts, if any, appears to be restricted to the soil adjacent to the UST, which was removed and transported off-Site for disposal during UST removal activities.

3.8.2 Ground Water

Ground water was not observed during the UST excavation. For soil samples collected from the UST excavation sidewall and base, the detected concentrations were all below their respective residential ESLs based on leaching to ground water and/or their LTCP criteria. In addition, the native material observed beneath the UST and in the other borings on-Site consisted of a stiff to very stiff lean clay, which would help inhibit the vertical migration any COPC to ground water. Based on the analytical data and observed geology, ground water is not likely an impacted medium from the UST.

3.8.3 Soil Vapor

VOC compounds in soil can volatilize and produce soil vapor that can migrate into structures. The concentrations of VOC compounds in samples collected from the UST sidewalls and base were below their respective residential ESLs and/or LTCP criteria, and are not expected to produce significant soil vapor concentrations. In addition, our geotechnical borings advanced within the buildings observed that the building pad consists of an approximately 6½ inch concrete slab that overlays a vapor/moisture barrier. This pad construction will further inhibit the vertical migration of vapors, if present.

The COPC identified are TPHd and TPHo. These COPC are not considered compounds that readily produce soil vapor. Based on the low VOC concentrations, the building construction, and the COPCs identified, soil vapor is not likely an impacted medium from the UST.

3.9 TRANSPORT MECHANISMS

3.9.1 Direct Contact with Soil

Direct contact with soil is considered an incomplete pathway due to the controls established by the SMP and SMP Addendum.

3.9.2 Volatilization

Volatilization is considered an incomplete pathway due to the nature of contamination (TPHd and TPHo) and the building pad construction.

3.9.3 Leaching into Ground Water

Leaching into ground water is considered an incomplete pathway due to the low COPC and VOC concentrations detected in in-place samples collected from the UST excavation sidewalls and base. Ground water was also not observed within the UST pit excavation. The native stiff to very stiff lean clays also provide a barrier to the vertical migration of contaminants.

3.10 POTENTIAL RECEPTORS

3.10.1 On and Off-Site Receptors

The Site was previously used for industrial purposes and, more recently, was re-developed for commercial purposes. The Site will continue to be used for commercial purposes. As such, no residential receptors were identified in the SCM.

On-Site construction/utility workers are potential receptors. However, the SMP and SMP addendum provides protocols that limit the exposure of these workers to the impacted fill. In addition, the SMP and SMP Addendum provide procedures to ensure the cap remains in place and is replaced if subsurface work is required.

The former UST was located approximately 500 feet from the nearest off-Site receptor. Based on the viscous nature of the product observed within the tank (oil), the geology beneath the Site (stiff lean clay), and this distance to the nearest off-Site receptor, off-Site receptors are not likely to be impacted from this UST.

3.10.2 Ecological

The nearest surface water body is located approximately 3,700 feet east of the Site (San Francisco Bay). Based on this distance, this surface water body is not likely to be impacted by the UST.

The SMP and SMP Addendum both provide procedures for ensuring this cap remains in place and provides procedures for inspection and repairs. The cap inhibits contact with stormwater that could either percolate to the ground water or produce runoff. Based on the presence of this cap and the nearest surface water body, no ecological receptors were identified in the SCM.

3.11 EXPOSURE PATHWAY EVALUATION

Based on this evaluation, there are no potential pathways for exposure. The SMP and SMP Addendum provide protocols for ensuring the cap remains in place to reduce the potential for human contact, and to provide procedures for future subsurface work (construction/trench work) that will prevent exposure during work and ensure the cap is replaced at the conclusion of work.

All other pathways are considered incomplete due to the SMP, SMP Addendum, and/or the detected COPCs and their concentrations.

SECTION 4: LOW-THREAT UST CASE CLOSURE POLICY EVALUATION

4.1 GENERAL CRITERIA

Is the unauthorized release located within the service area of a public water system?

- Yes, the Site is serviced by the East Bay Municipal Utility District (EBMUD).

Does the unauthorized release consist only of petroleum?

- Yes, the product within the former UST was observed to be a heavy oily liquid. A sample of the UST contents detected concentrations of TPHd (440,000 mg/kg) and TPHo (200,000 mg/kg).

Has the unauthorized (primary) release from the UST system been stopped?

- Yes, the UST has been removed. The tank was also observed to be intact with no holes.

Has free product been removed to the maximum extent possible?

- Free product has not been encountered.

Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?

- Yes, a conceptual model is presented in this report.

Has secondary source been removed to the extent practicable?

- Yes, approximately 12 tons of soil were removed during the UST removal. This soil was transported off-Site for disposal. No additional excavation was performed based on the TPHd, TPHo, VOC, and polyaromatic hydrocarbon (PAH) concentrations detected in the confirmation samples from the UST excavation.

Has soil or ground water been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?

- Yes, MTBE was not detected in the confirmation soil samples or in the stockpile sample.

Does nuisance as defined by Water Code section 13050 exist at the site?

- No. The confirmation soil samples did not detect concentrations that exceed the odor/nuisance ESLs. Further, the Site remains capped that prevents direct contact with the underlying fill material.

Are there unique attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?

- No; any risk is significantly reduced due to the presence of the cap above the fill material.

4.2 MEDIA-SPECIFIC CRITERIA

4.2.1 Ground Water Specific Criteria

Ground water impacts are not expected from the former UST due to the absence of ground water within the UST excavation, the low concentrations of COPC detected at the base of the excavation, the good condition of the UST when removed, and the presence of stiff to very stiff lean clays beneath the UST.

This Site also lies within the Yerba-Buena East Bay Bridge Center. As discussed, this property has TPH-impacted fill placed beneath hardscapes. In addition, this property has documented ground water impacts that were previously remediated to the satisfaction of the Water Board, and a no further action letter was issued on June 6, 2002.

Ground water sampling was performed at the Yerba-Buena East Bridge Center property from approximately 1994 to 2001. One well, MW-6, was located approximately 120 feet west-southwest and in the down-gradient direction. TPHd was detected in samples collected from this well at concentrations ranging between non-detect to 100 µg/L. TPHd was recently (August 2001) detected at a concentration of 62 µg/L at this well. TPHo analyses reportedly has not been performed. These data indicate that petroleum hydrocarbons do not appear to have significantly leached from the soil to the underlying ground water.

Ground water grab samples have not been collected near the former UST. To document ground water quality, the collection of a ground water grab sample is included in the below work plan.

4.2.2 Petroleum Vapor Intrusion to Indoor Air Criteria

Soil vapor impacts and intrusion to indoor air are not expected due to the nature of contaminants (TPHd and TPHo) and their low concentrations detected in the confirmation samples collected from the UST excavation sidewalls and base. Further, the construction of the building pads (slab and vapor/moisture barrier) will further inhibit the migration of soil vapor, if present. However, soil vapor samples have not been collected from the soil adjacent to the UST. To document soil vapor quality, the collection of a soil vapor sample is included in the work plan below.

4.2.3 Direct Contact and Outdoor Air Exposure Criteria

Direct contact and outdoor air exposure criteria are not expected to occur due to the presence of the cap and the requirement for the long-term management of this cap through the SMP and SMP Addendum.

SECTION 5: DATA GAP ANALYSIS

Based on the SCM and the data collected to date, the detected TPHd and TPHo concentrations in confirmation soil samples collected from the UST excavation were within range of those detected in other areas of the Site. The TPH-affected soil is likely related to the fill material placed during site development activities in the 1990s, and not associated with the former UST.

Soil vapor and ground water impacts related to the former UST are not likely due to the COPC present, the presence of stiff to very stiff lean clay, and the presence of the cap. Further, no ground water was observed within the UST excavation and the UST was observed to be of good condition with no holes observed. To document ground water and soil vapor quality, the collection of soil vapor and ground water grab samples are included in the work plan below. However, detections in these samples are likely related to the TPH-affected fill placed near the former UST and across the Yerba Buena East Bay Bridge Center site.

SECTION 6: DATA GAP WORK PLAN

Cornerstone will oversee the advancement of one exploratory boring for the purposes of collecting soil, soil vapor, and ground water samples. The purpose of these samples is to provide additional data to the ACDEH to facilitate case closure.

6.1 PRE-FIELD ACTIVITIES

Utility Clearance and Permitting

Prior to performing field work, we will mark our boring location at least two working days prior to beginning our explorations as required by law, and notify the regional utility notification center – Underground Service Alert (USA), so that public and private utilities can be identified and marked at the ground surface.

A permit from the Alameda County Department of Public Works will be obtained to complete the boring.

6.2 SOIL SAMPLE COLLECTION

Our field geologist or engineer will direct a subsurface investigation, continuously log in general accordance with the Unified Soil Classification System (ASTM D-2487), and sample one exploratory boring to a depth of up approximately 20 feet. The borings will be advanced using limited access direct push technology equipped with a Dual Wall Sampling System. The Dual Wall Sampling System will help prevent cross contamination between sampling intervals. The Dual Wall Sampler is comprised of two main components: an exterior steel casing and an inner sample barrel. The outer casing has a 2-inch outer diameter (OD) and a 1.5-inch inner diameter (ID). The sample barrel is 5 feet in length with a 1.375-inch outside diameter (OD) and a 1-inch inner diameter (ID). The Dual Wall sample barrel is loaded with a 5-foot acetate liner and installed inside the outer casing. The outer drive casing and inner sample barrel are then hydraulically pushed to a depth of approximately 5 feet. As these tools are advanced, the inner sampling barrel collects the soil core sample. This sampler is then retrieved while the outer casing remains in place, protecting the integrity of the hole. A new sampler is lowered into place and advanced another 5 feet to collect the next soil sample. This process continues until the desired depth has been reached. The boring advanced for the collection of a ground water sample will be advanced approximately 5 feet into the first water yielding zone. The boring will be tremie grouted upon completion.

Soil samples will be collected at depths of approximately 7 to 8 feet and 14 to 15 feet. The deeper sample will be collected approximately 1 foot above ground water, which is estimated to occur at a depth of approximately 15 feet. The samples will be collected in acetate liners and three 5-gram Core N' One capsules. The sample containers will be labeled, and placed into an ice-chilled cooler for transportation to a state-certified laboratory. Chain of custody documentation will be maintained for the samples.

The collected samples will be analyzed for total petroleum hydrocarbons in the diesel range (TPHd) and motor oil range (TPHo) with a silica gel cleanup (EPA Test Method 8015M); benzene, toluene, ethylbenzene, and total xylenes (BTEX), five fuel oxygenates, naphthalene (EPA Test Method 8260B); and total petroleum hydrocarbons in the gasoline range (TPHg) (EPA Test Method 8260B).

6.3 GROUND WATER SAMPLE COLLECTION

One ground water grab sample will be collected from the exploratory boring. The exploratory boring will be advanced approximately 5 feet below the upper ground water surface, and a section of slotted polyvinyl chloride (PVC) slotted pipe will be lowered into the boring to facilitate sample collection. Ground-water grab samples will be collected using a peristaltic pump and "clean" polyethylene tubing. Ground water grab sample will be collected in appropriate laboratory-supplied containers, labeled, and placed into an ice-chilled cooler for transportation to a state-certified laboratory. The sample will be analyzed for TPHd, TPHo, BTEX, five fuel oxygenates, naphthalene, and TPHg using the EPA Test Methods summarized above.

6.4 SOIL VAPOR SAMPLE COLLECTION

One soil vapor sample will be collected from a temporary soil vapor probe installed to a depth of approximately 6½ feet. The soil vapor probe will consist a stainless steel expendable vapor tip and screen affixed to stainless steel tubing. The probe will be installed according to the October 2015 document entitled, "Advisory – Active Soil Gas Investigations", prepared by the DTSC and the California Regional Water Quality Control Board (Los Angeles and San Francisco Regions).

The vapor probe will be allowed to equilibrate for a period of at least 2 hours in accordance with DTSC guidance. After equilibration, our field personnel will perform a vacuum test, purge, and then sample the soil vapor probe. Isopropyl alcohol will be utilized as a leak detection compound during sampling by applying 5 to 10 drops to cotton gauze and placing the moistened gauze near the borehole. The soil vapor sample will be collected in a laboratory-provided summa canister. The collected sample will be analyzed for BTEX, five fuel oxygenates, and naphthalene (EPA Test Method TO-15A); TPHg (EPA Test Method TO-3); and fixed gasses (methane, oxygen, and carbon dioxide) (ASTM-D1946).

To confirm the isopropyl alcohol atmosphere, one confirmation Tedlar bag sample will be collected from the shroud atmosphere through the sampling port of the PID. This sample will be analyzed for isopropyl alcohol (2-propanol) and the results will be compared to those detected in the soil vapor sample.

6.5 SAMPLE STORAGE AND SAMPLE TRANSPORT

The ground water grab and soil vapor samples will be collected in laboratory-provided containers (preserved where appropriate). The soil samples will be collected in acetate liner and capped. The soil and ground water grab samples will be placed in an ice chilled cooler for transport to the laboratory. Chains of custody will be maintained for all samples.

6.6 QUALITY ASSURANCE / QUALITY CONTROL

Quality assurance / Quality control (QA/QC) will consist field measures (trip blank [ground water sample] and soil vapor shroud sample [isopropyl alcohol] and measures performed by the laboratory, (i.e., laboratory method blanks, matrix spike/matrix spike duplicate, and laboratory control samples). All QA/QC measures will be evaluated to determine the precision and accuracy of the laboratory analyses.

6.7 REPOR PREPARATION

We will prepare a *Soil, Soil Vapor, and Ground Water Quality Evaluation and Request for Case Closure Report* summarizing the results obtained from the sample collected. Our report will include summary tables, figures, boring log, analytical reports, and a summary of the sampling procedures used to collect the samples.

SECTION 7: SCHEDULE

Our field activities are anticipated to be completed within four weeks of receiving approval of this work plan. The *Soil, Soil Vapor, and Ground Water Quality Evaluation and Request for Case Closure Report* will be submitted within 60 days of approval of this work plan (per the ACDEH letter dated April 21, 2016).

SECTION 8: LIMITATIONS

Cornerstone prepared this Data Gap Investigation Work Plan and Focused Conceptual Model to support Federal Realty Investment Trust in obtaining case closure for the above reference UST. Cornerstone makes no warranty, expressed or implied, except that our services have been

performed in accordance with the environmental principles generally accepted at this time and location.

SECTION 9: REFERENCES

Alameda County Department of Environmental Health, April 21, 2016. Letter Re: *Request for Site Investigation Work Plan; Fuel Leak Case No. RO0003210 and GeoTracker Global ID T10000008563; 3839 Emery Street; Emeryville, CA 94608.*

Alameda County Department of Environmental Health. Email dated September 8, 2015 re: Approval to backfill excavation.

California Regional Water Quality Control Board, 2012. *Low-Threat Underground Storage Tank Case Closure Policy*.

Cornerstone Earth Group, 2015. *Soil Management Plan Addendum; East Bay Bridge Center*.

Cornerstone Earth Group, 2015. *Soil Management Plan Implementation Report; East Bay Bridge Center*.

Cornerstone Earth Group, 2015. *Underground Storage Tank Removal; East Bay Bridge Center*.

Levine-Fricke, 1992. *Containment Plan for Total Petroleum Hydrocarbon-Affected Soils; Yerba Buena Project Site, Emeryville and Oakland, California.*

Levine-Fricke, 1994. *Soils Management Plan for Petroleum Hydrocarbon-Affected Soils Yerba Buena/East Baybridge Center, Emeryville and Oakland, California.*

CORNERSTONE EARTH GROUP

TABLES

CORNERSTONE EARTH GROUP

Table 1. Summary of Initial Landscaping Trench Samples, Trench Verification Samples, UST Verification Samples, UST Soil Stockpile Samples, and Documented Petroleum Hydrocarbons in Capped Soil

(Concentrations in mg/kg)

Sample Location	Sample ID	Date	Depth (feet)	TPHd	TPHo	TPHg	Acetone	Ethylbenzene	m,p-Xylene	o-xylene	MTBE	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	4-Isopropyltoluene	Naphthalene	n-Propylbenzene	sec-Butylbenzene
Initial Trench Soil Characterization Samples																	
EB-1	EB-1 (4.5-5)	12/23/2014	4½-5	**1,900**	**6,400**	<0.23	0.089	<0.0045	<0.0091	<0.0091	<0.0045	<0.0045	<0.0045	<0.0045	<0.0091	<0.0045	<0.0045
	EB-1 (6-6.5)	12/23/2014	6-6½	170	350	<0.23	<0.047	<0.0047	<0.0094	<0.0094	<0.0047	<0.0047	<0.0047	<0.0047	<0.0094	<0.0047	<0.0047
	EB-1 (8-8.5)	12/23/2014	8-8½	55	110	---	---	---	---	---	---	---	---	---	---	---	---
	EB-1 (9.5-10)	12/23/2014	9½-10	13	<50	---	---	---	---	---	---	---	---	---	---	---	---
EB-2	EB-2 (3.5-4)	12/23/2014	3½-4	63	330	<0.25	0.053	<0.0049	<0.0098	<0.0098	<0.0049	<0.0049	<0.0049	<0.0049	<0.0098	<0.0049	<0.0049
	EB-2 (4-4.5)	12/23/2014	4-4½	1.7	<50	---	---	---	---	---	---	---	---	---	---	---	---
EB-3	EB-3 (4-4.5)	12/23/2014	4-4½	**1,300**	4,800	<0.23	<0.047	<0.0047	<0.0094	<0.0094	<0.0047	<0.0047	<0.0047	<0.0047	<0.0094	<0.0047	<0.0047
	EB-3 (4.5-5)	12/23/2014	4½-5	14	<50	---	---	---	---	---	---	---	---	---	---	---	---
EB-4	EB-4 (4-4.5)	12/23/2014	4-4½	**1,500**	3,700	<0.28	<0.056	<0.0056	<0.011	<0.011	<0.0056	<0.0056	<0.0056	<0.0056	<0.011	<0.0056	<0.0056
	EB-4 (4.5-5)	12/23/2014	4½-5	**900**	2,300	---	---	---	---	---	---	---	---	---	---	---	---
	EB-4 (6-6.5)	12/23/2014	6-6½	<1.0	<50	---	---	---	---	---	---	---	---	---	---	---	---
	EB-4 (8-8.5)	12/23/2014	8-8½	<1.0	<50	---	---	---	---	---	---	---	---	---	---	---	---
	EB-4 (9.5-10)	12/23/2014	9½-10	<0.99	<50	---	---	---	---	---	---	---	---	---	---	---	---
EB-5	EB-5 (3.5-4)	12/23/2014	3½-4	24	130	<0.26	<0.052	<0.0052	<0.01	<0.01	<0.0052	<0.0052	<0.0052	<0.0052	<0.01	<0.0052	<0.0052
	EB-5 (4.5-5)	12/23/2014	4½-5	<1.0	<50	---	---	---	---	---	---	---	---	---	---	---	---
EB-6	EB-6 (4-4.5)	12/23/2014	4-4½	170	310	<0.25	<0.05	<0.005	<0.0099	<0.0099	<0.005	<0.005	<0.005	<0.005	<0.0099	<0.005	<0.005
	EB-6 (6-6.5)	12/23/2014	6-6½	<1.0	<50	---	---	---	---	---	---	---	---	---	---	---	---
EB-7	EB-7 (4-4.5)	12/23/2014	4-4½	110	450	<0.22	<0.043	<0.0043	<0.0086	<0.0086	<0.0043	<0.0043	<0.0043	<0.0043	<0.0086	<0.0043	<0.0043
	EB-7 (4.5-5)	12/23/2014	4½-5	130	500	---	---	---	---	---	---	---	---	---	---	---	---
	EB-7 (6-6.5)	12/23/2014	6-6½	<1.0	<50	---	---	---	---	---	---	---	---	---	---	---	---
	EB-7 (8-8.5)	12/23/2014	8-8½	<1.0	<50	---	---	---	---	---	---	---	---	---	---	---	---
	EB-7 (9.5-10)	12/23/2014	9½-10	<0.99	<50	---	---	---	---	---	---	---	---	---	---	---	---
EB-8	EB-8 (4-4.5)	12/23/2014	4-4½	150	540	<0.25	<0.05	<0.005	<0.01	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
	EB-8 (5.5-6)	12/23/2014	5½-6	<0.98	<49	---	---	---	---	---	---	---	---	---	---	---	---
EB-9	EB-9 (4-4.5)	12/23/2014	4-4½	51	190	<0.21	<0.042	<0.0042	<0.0083	<0.0083	<0.0042	<0.0042	<0.0042	<0.0042	<0.0083	<0.0042	<0.0042
	EB-9 (4.5-5)	12/23/2014	4½-5	180	730	---	---	---	---	---	---	---	---	---	---	---	---
	EB-9 (6-6.5)	12/23/2014	6-6½	1.2	<49	---	---	---	---	---	---	---	---	---	---	---	---
	EB-9 (8-8.5)	12/23/2014	8-8½	<0.99	<50	---	---	---	---	---	---	---	---	---	---	---	---
	EB-9 (9.5-10)	12/23/2014	9½-10	<1.0	<50	---	---	---	---	---	---	---	---	---	---	---	---
EB-10	EB-10 (4-4.5)	12/23/2014	4-4½	33	180	<0.24	<0.049	<0.0049	<0.0097	<0.0097	<0.0049	<0.0049	<0.0049	<0.0049	<0.0097	<0.0049	<0.0049
	EB-10 (4.5-5)	12/23/2014	4½-5	97	370	---	---	---	---	---	---	---	---	---	---	---	---
	EB-10 (6-6.5)	12/23/2014	6-6½	**640**	1,300	---	---	---	---	---	---	---	---	---	---	---	---
	EB-10 (8-8.5)	12/23/2014	8-8½	2.5	<50	---	---	---	---	---	---	---	---	---	---	---	---
	EB-10 (9.5-10)	12/23/2014	9½-10	<0.99	<50	---	---	---	---	---	---	---	---	---	---	---	---
Landscaping Trench Excavation Verification Samples																	
VS-1	VS-1 (5-6)	5/14/2015	5-6	1.1	<49	---	---	---	---	---	---	---	---	---	---	---	---
VS-2	VS-2 (5-6)	5/14/2015	5-6	<0.99	<50	---	---	---	---	---	---	---	---	---	---	---	---
VS-3	VS-3	6/12/2015	6½-7½	<1.0	<50	---	---	---	---	---	---	---	---	---	---	---	---
VS-4	VS-4(5-6)	6/18/2015	5-6	2.4	<50	---	---	---	---	---	---	---	---	---	---	---	---
VS-5	VS-5(5-6)	6/29/2015	5-6	490	1,500	---	---	---	---	---	---	---	---	---	---	---	---
VS-6	VS-6(6 1/2 - 7 1/2)	9/1/2015	6½-7½	1.3	13	---	---	---	---	---	---	---	---	---	---	---	---

CORNERSTONE EARTH GROUP

Table 1. Summary of Initial Landscaping Trench Samples, Trench Verification Samples, UST Verification Samples, UST Soil Stockpile Samples, and Documented Petroleum Hydrocarbons in Capped Soil

(Concentrations in mg/kg)

Sample Location	Sample ID	Date	Depth (feet)	TPHd	TPHo	TPHg	Acetone	Ethylbenzene	m,p-Xylene	o-xylene	MTBE	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	4-Isopropyltoluene	Naphthalene	n-Propylbenzene	sec-Butylbenzene
UST Excavation Verification Samples																	
TANK-1	Bottom - South	9/1/2015	12	50	83	3.5	<0.036	<0.0060	0.011	0.0096	<0.0060	0.034	0.0076	<0.0060	0.12	<0.0060	<0.0060
TANK-2	Bottom - Center	9/1/2015	12	350	280	1.2	<0.041	0.0073	0.016	0.021	<0.0068	0.11	0.018	0.014	0.26	0.010	<0.0068
TANK-3	Sidewall - West	9/1/2015	8	<1.0	<5.0	<0.23	<0.034	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.0057	<0.006	<0.0057	<0.0057
TANK-4	Sidewall - East	9/1/2015	8	160	110	<0.22	<0.032	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.006	<0.0054	<0.0054
TANK-5	Bottom - North	9/1/2015	12	9.6	8.3	<0.26	<0.035	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.0059	<0.006	<0.0059	<0.0059
UST Excavation Soil Stockpile Samples																	
COMPOSITE-1	Soil Stockpile	9/1/2015	n/a - stockpile	**3,200**	3,400	---	---	---	---	---	---	---	---	---	---	---	---
SP-3	Soil Stockpile	9/1/2015	n/a - stockpile	---	---	1.7	<0.041	0.0092	0.012	0.026	<0.0069	0.16	0.016	0.020	5.2	0.016	0.0080
Documented Range of Petroleum Hydrocarbon Concentrations in Capped Soil [1]				ND-260	36-4,400	---	---	---	---	---	---	---	---	---	---	---	---
Low Threat Closure Criteria (Residential, 0 to 5 feet) [2]				NE	NE	NE	NE	21	NE	NE	NE	NE	NE	NE	9.7	NE	NE
Residential ESL[3]				230 (570)[4]	5,100	100	0.5	1.4 [5]	2.3	2.3	0.023	NE	NE	NE	0.033 [5]	NE	NE
Commercial ESL[3]				570 [4]	5,100	500	0.5	1.4 [5]	2.3	2.3	0.023	NE	NE	NE	0.033 [5]	NE	NE

1 Soil Management Plan, Levine and Fricke, 1994. Volatile Organic Compound (VOC) ranges were not presented in this plan since petroleum hydrocarbons were identified as the primary contaminant.

2 Concentration of Petroleum Constituents in Soil that will have No Significant Risk of Adversely Affecting Human Health, Low Threat Closure Criteria, Residential 0 to 5 feet exposure scenario (most conservative), Water Board, 2012

3 Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region – January 2016

4 The TPHd ESL is based on direct exposure. The ESL for TPHd based on leaching to a ground water source is 570 mg/kg.

5 Detected concentrations of mnphthalene and ethylbenzene are compared to their respective Low Threat Closure Policy Criteria

< Not detected at or above laboratory reporting limit

NE Not Established

--- Not Analyzed

BOLD Concentration exceeds Low-Threat Closure Policy Criteria. If not established, Bold concentrations exceeds Commercial ESL.

Indicates soil removed during excavation

CORNERSTONE EARTH GROUP

Table 2. Site Conceptual Model

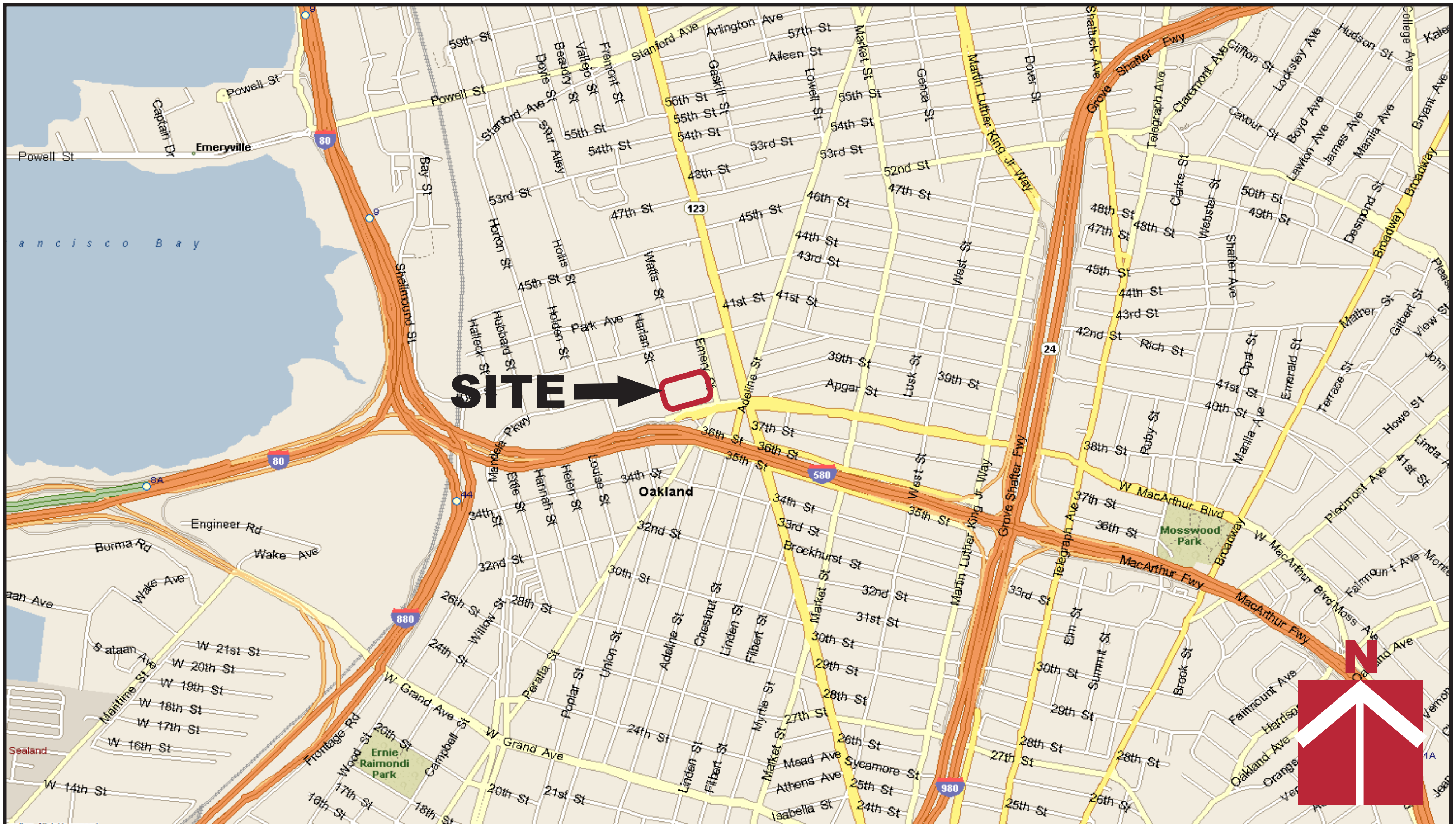
SCM Element	SCM Sub-Element	Description	Potential Data Gap(s)	How to Address
Geology and Hydrogeology	Regional	Regional geology consists of alluvial material within the Site vicinity that transitions to rocks from the Fransiscan Complex to the east, which corresponds to an increase in topography.	None	N/A
	Site	Fill material to depths of approximately 6 feet; Native material consisting of stiff to very stiff lean clay; Ground water occurs at a depth of approximately 15 feet with flow to the west	None	N/A
Nearby Release Sites	Yerba Buena East Bay Bridge Center	The Site is within and adjacent to the Yerba Buena East Bay Bridge Center. Up to 6 feet of TPH-impacted fill material was placed on this site as part of development activities in 1993. The fill material was capped with an asphalt-paved parking area and building pads. The cap is maintained under the SMP and SMP Addendum.	None	N/A
On-Site Source	Underground Storage Tank	One approximately 2,000-gallon UST was removed from the Site on September 1, 2016. The UST was observed to be in good condition with no holes observed.	None	N/A
Contaminants of Concern	COPC	TPHd and TPHo are the COPC identified. The concentrations of these COPC detected in confirmation soil samples collected from the UST excavation are within range of those documented within the fill material. As such, the presence of these COPC likely are due to the fill material and not the UST.	None	N/A
Transport Mechanisms	Direct Contact with Soil	Incomplete pathway; The SMP and SMP Addendum require the cap remains intact that contains the underlying fill material, and provides protocols for the management of the cap and underlying fill material (if excavated).	None	N/A
	Volatilization	This is not considered a complete pathway since the COPC are not volatile.	Lack of Soil Vapor Data Near UST	Collect one soil vapor sample for targeted VOCs and methane
	Leaching to Ground Water	This is not considered a complete pathway due to the low COPC concentrations detected in confirmation soil samples collected from the UST excavation base, the absence of ground water within the excavation, the intact condition of the UST when removed, and the presence of stiff to very still clay in native soil beneath the UST. Previously, ground water samples were collected by Levine-Fricke at a nearby well (MW-6; approximately 120 feet down-gradient from the UST). In ground water samples collected between 1994 and 2001, TPHd was detected at concentrations ranging between non-detect and 100 µg/kg. TPHd was most recently detected at a concentration of 62 µg/kg (August 2001). TPHo analyses reportedly was not performed. These data indicate the TPH impacted soil is not significantly leaching to the underlying ground water. However, no ground water samples have been collected beneath the UST.	Lack of Ground Water Near UST	Collect one ground water grab sample adjacent to the former UST.
Potential Receptors	Residential	Incompete pathway given the Site has established commercial usage.	None	N/A
	Commercial Site Occupant	Incomplete pathway due to the cap maintenance protocols presented in the SMP and SMP Addenedum	None	N/A
	Construction/Trench Worker	Incomplete pathway due to the cap maintenance protocols presented in the SMP and SMP Addenedum	None	N/A

Table 3. Potential Data Gaps and Proposed Investigation

Potential Data Gap(s)	Proposed Investigation
Lack of Ground Water Data Near UST	Advance 1 exploratory boring to approximately 20 feet adjacent to the former UST location and collect 1 ground water grab sample. Sample will be analyzed for TPHd, TPHo, TPHg, BTEX, fuel oxygenates, and naphthalene
Lack of Soil Vapor Data Near UST	Construct 1 temporary soil vapor probe at a depth of approximately 6½ feet and collect 1 soil vapor sample. Sample will be analyzed for TPHg, BTEX, fuel oxygenates, naphthalene, and fixed gasses (methane, oxygen, and carbon dioxide).

CORNERSTONE EARTH GROUP

FIGURES



CORNERSTONE EARTH GROUP

Vicinity Map	Project Number 371-5-4
East Bay Bridge Project 3839 Emery Street Emeryville, CA	Figure Number Figure 1
	Date May 2016 / Drawn By RRN

Approximate Site Boundary and area of petroleum affected soils placed beneath building pads and/or paved areas

40th Street

Mandela Parkway

Holis Street

Emery Street

San Pablo Avenue

MacArthur Boulevard

CITY OF EMERYVILLE

CITY OF OAKLAND

EB-1 (6.0)

EB-2 (4,0)

EB-3 (4.5)

EB-4 (4.5)

EB-5 (4,5)

EB-6 (6,0)

EB-7 (4.5)

EB-8 (5.5)

EB-9 (4,5)

EB-10 (4,5)

Planned landscape improvements (See Figure 3)

Approximate location of UST (See Figure 4)

Legend

EB-1 (6.0) Approximate location of soil boring (SB) and approximate depth of fill material in feet

0 150 300

APPROXIMATE SCALE (FEET)

Base by Field Paoli Architects, "Site Plan - A 0.4", dated 10/16/2014

Project Number 371-5-4

Figure Number Figure 2

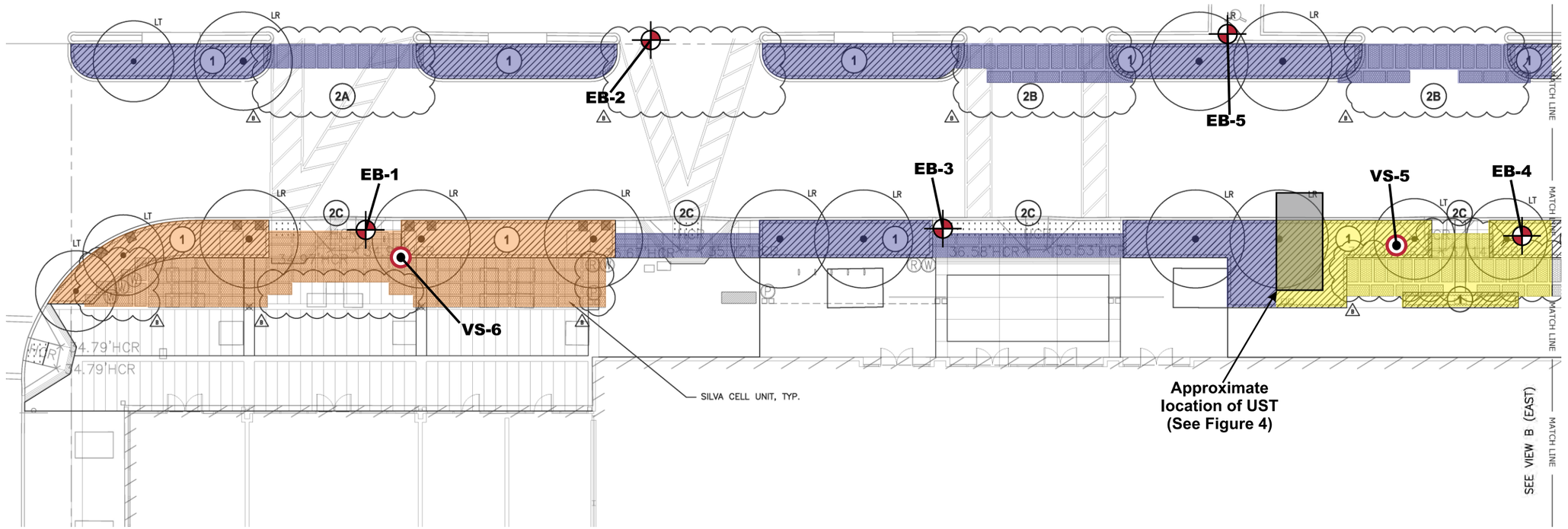
Drawn By RRN

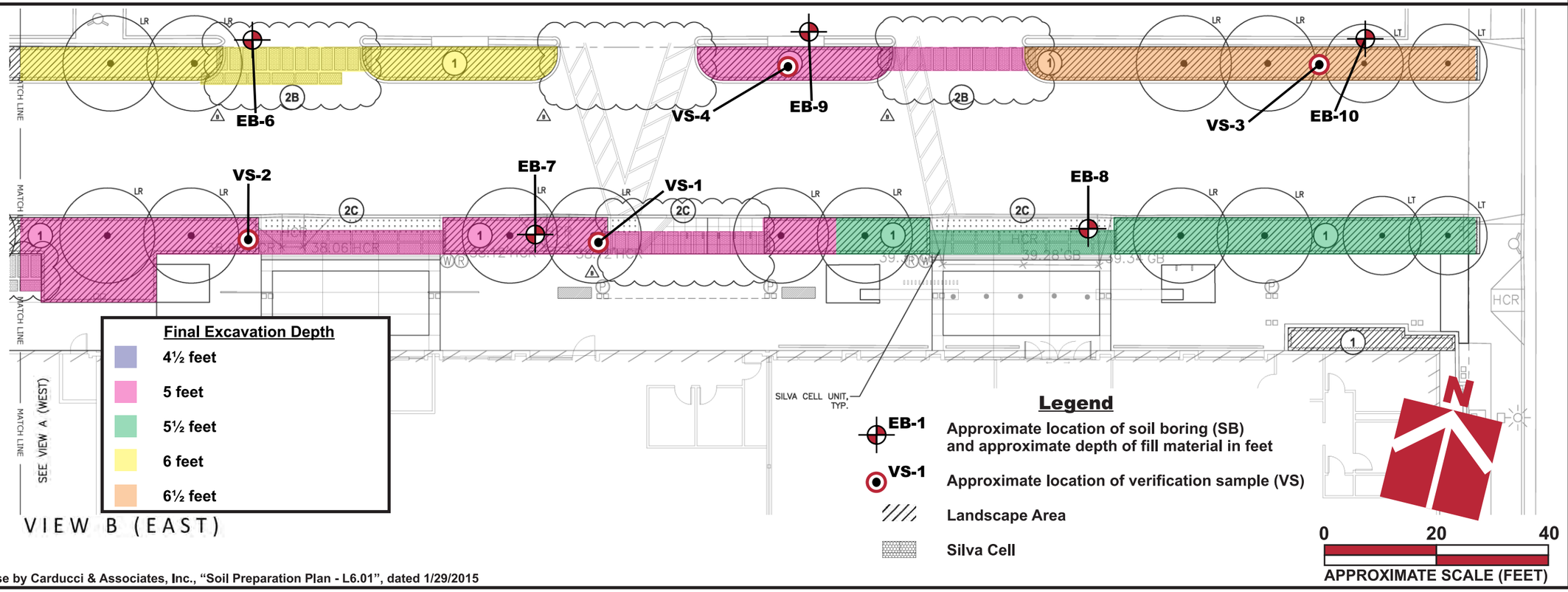
Date May 2016

Site Plan

East Bay Bridge Project
3839 Emery Street
Emeryville, CA

CORNERSTONE EARTH GROUP





Base by Carducci & Associates, Inc., "Soil Preparation Plan - L6.01", dated 1/29/2015

Project Number 371-5-4

Figure Number Figure 3

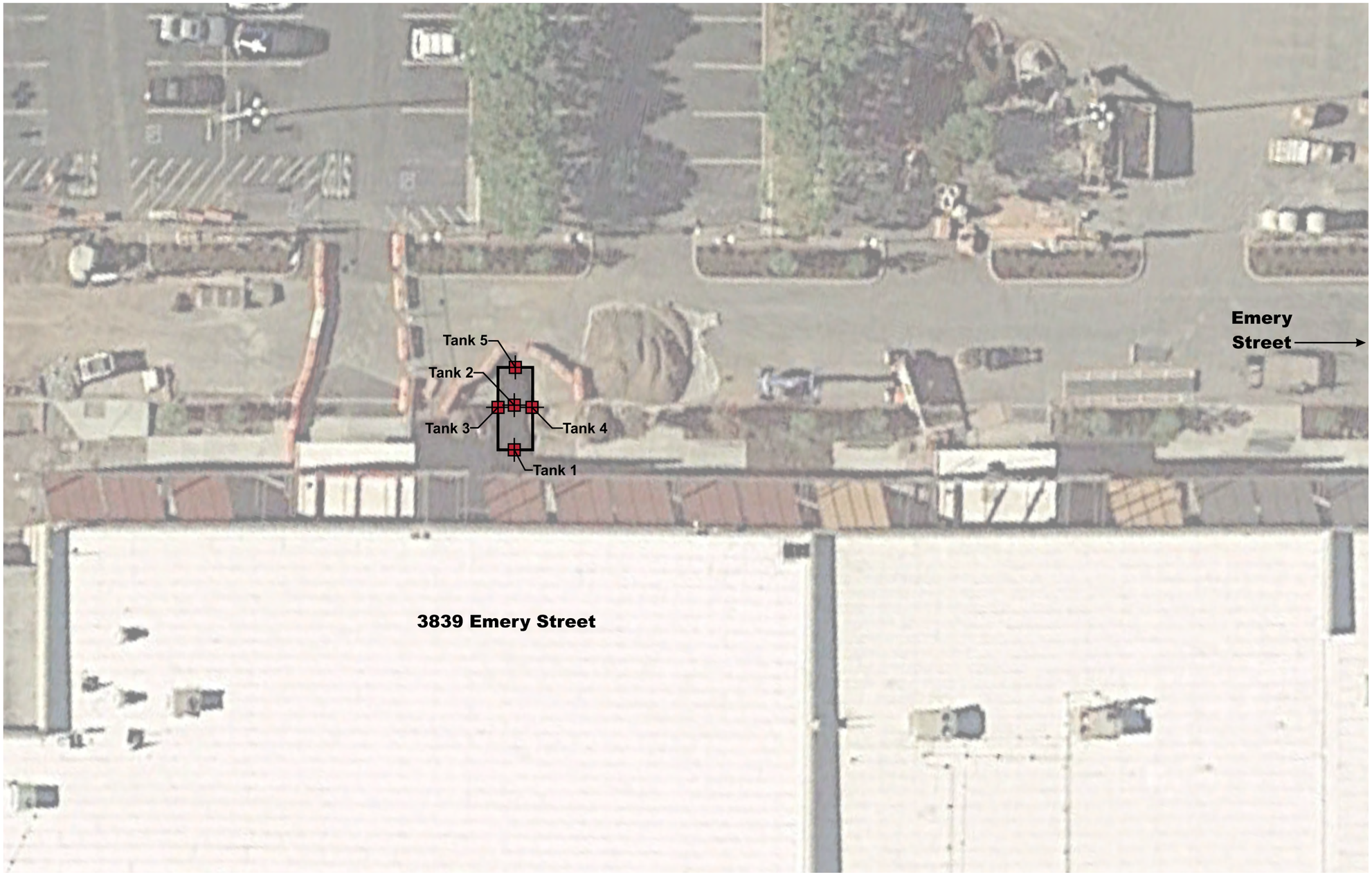
Drawn By RRN

Date June 2016

Soil Sampling Locations and Final Excavation Depths

East Bay Bridge Project
3839 Emery Street
Emeryville, CA

CORNERSTONE EARTH GROUP



Legend

- Approximate location of UST excavation verification sample
- Approximate location of UST excavation

N

0 20 40

APPROXIMATE SCALE (FEET)

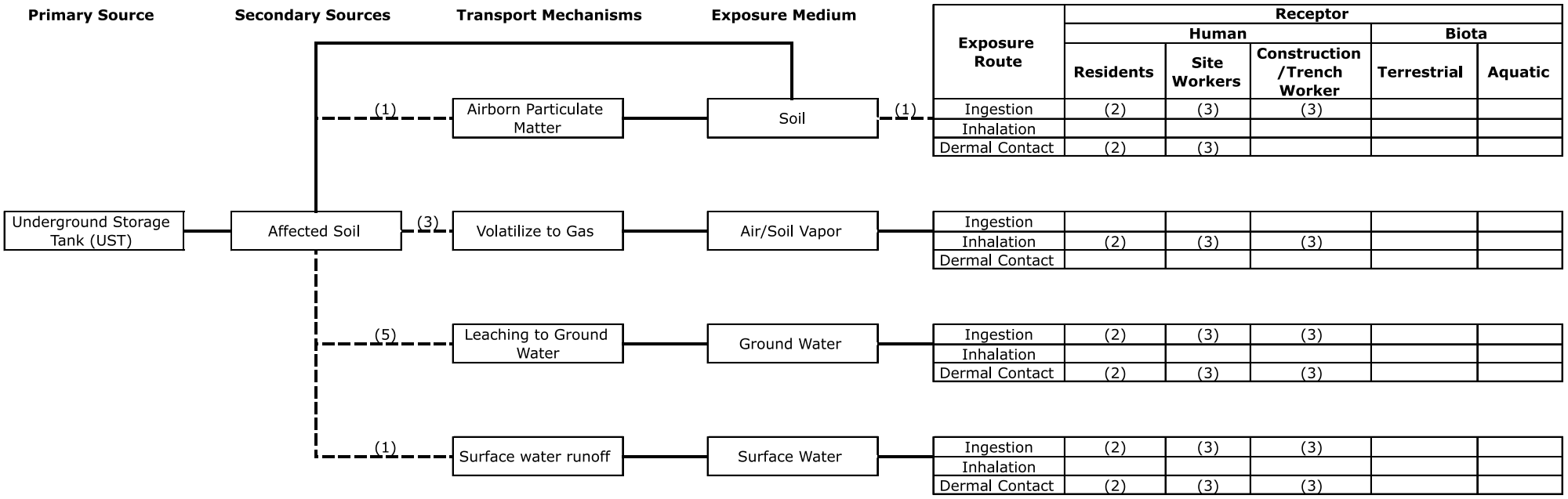
Base by Google Earth, dated 9/7/2015

UST and Verification Sample Location

East Bay Bridge Project
3839 Emery Street
Emeryville, CA

Project Number	Figure Number	Date	Drawn By
371-5-4	Figure 4	May 2016	RRN

CORNERSTONE EARTH GROUP



Exposure Route	Receptor				
	Human			Biota	
	Residents	Site Workers	Construction /Trench Worker	Terrestrial	Aquatic
Ingestion	(2)	(3)	(3)		
Inhalation					
Dermal Contact	(2)	(3)			
Ingestion					
Inhalation	(2)	(3)	(3)		
Dermal Contact					
Ingestion	(2)	(3)	(3)		
Inhalation					
Dermal Contact	(2)	(3)	(3)		
Ingestion	(2)	(3)	(3)		
Inhalation					
Dermal Contact	(2)	(3)	(3)		

Notes:
(1) - Pathway incomplete due to controls implemented (cap) in the Soil Management Plan and Soil Management Plan Addendum.
(2) - Incomplete pathway - The Site has established commercial usage.
(3) - Incomplete pathway - Soil Management Plan and Soil Management Plan Addendum provide measures to prevent ingestion, inhalation, and dermal contact with soil to Site Workers and Construction/Trench Workers.
(4) - Pathway likely incomplete due to nature of impacts (oil-range petroleum hydrocarbons).
(5) - Pathway likely incomplete due to the absence of significant concentrations of COCs beneath the UST.

CORNERSTONE EARTH GROUP

Site Conceptual Model

East Bay Bridge Project
3839 Emery Street
Emeryville, CA

Project Number	Date	Figure Number
371-5-4	June 2016	Figure 5