Erler & Kalinowski, Inc.
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21 October 2014

**RECEIVED**
*By Alameda County Environmental Health at 9:29 am, Oct 28, 2014*

Mr. Mark Detterman
Senior Hazardous Materials Specialist, PG, CEG
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Subject: RO0000042 / RO0000043
Work Plan For Additional Sub-Slab Vapor Sampling
6601/6603 Shellmound Street, Emeryville, California
(EKI 950074.05)

Dear Mr. Detterman:

On behalf of SAP America ("SAP"), Erler & Kalinowski, Inc. is pleased to submit this *Work Plan For Additional Sub-Slab Vapor Sampling* for the property located at 6601/6603 Shellmound Street (formerly Bay Street), in Emeryville, California. This report is being submitted to you as discussed in a conference call with you on 7 February 2014, with modifications discussed with you later that day, and on 11 February 2014, via email.

We would appreciate it if you would copy the individuals listed below on correspondence regarding this site.

Please do not hesitate to call if you have any questions regarding this document.

Very truly yours,

ERLER & KALINOWSKI, INC.

Michelle K. King, Ph.D.
President

Jeff R. Shaw, P.G.
Project Geologist


cc: Dwain Christensen, SAP America
Julie Treinen, Griffin Capital Corporation

15 October 2014

Mr. Mark Detterman
Senior Hazardous Materials Specialist, PG, CEG
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502

Subject: RO0000042/RO0000043
Work Plan For Additional Sub-Slab Vapor Sampling
6601/6603 Shellmound Street
Emeryville, CA

Dear Mr. Detterman,

I am a legally authorized representative of SAP America and I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document are true and correct to the best of my knowledge.

If you have any questions, please contact me at 650-320-3074.

Regards,

SAP America

Dwain Christensen
SAP - Director of Facilities – Bay Area Region

**ATTACHMENT**

Attachment A: Work Plan For Additional Sub-Slab Vapor Sampling, 6601/6603 Shellmound Street, Emeryville, CA

Erler & Kalinowski, Inc.

# Work Plan for Additional Sub-Slab Vapor Sampling

**6601/6603 Shellmound Street**
**Emeryville, California**

*Prepared for:*

**SAP America**
**3410 Hillview Avenue**
**Palo Alto, California 94304**

*Prepared by:*

Erler & Kalinowski, Inc.
**1870 Ogden Drive**
**Burlingame, California 94010**
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**21 October 2014**

**EKI 950074.05**

Consulting engineers and scientists

# WORK PLAN FOR
# ADDITIONAL SUB-SLAB VAPOR SAMPLING

## 6601/6603 Shellmound Street and 1650 65th Street
## Emeryville, California

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# 1 INTRODUCTION

On behalf of SAP America ("SAP"), successor to Sybase, Inc. ("Sybase"), Erler & Kalinowski, Inc. ("EKI") is pleased to submit this *Work Plan for Additional Sub-Slab Vapor Sampling* ("Work Plan") associated with underground storage tanks formerly located in driveway between 6601 and 6603 Shellmound Street, Emeryville, California ("Site") and the adjacent property on the southern portion of the driveway, at 1650 65th Street (Figure 1).

Sybase sold the Site in 1998. Griffin Capital Management ("Griffin") is the representative of the current owners of both the 1650 65th Street and 6601-6603 Shellmound Street properties. The 6601 / 6603 Shellmound Street property, and the eastern portion of the 1650 65th Street property are currently occupied by Ex'pression College for Digital Arts ("Expression"). The western part of the 1650 65th Street property is occupied by a facility of the U.S. Government General Services Administration. Historically, the Site was part of the former Emeryville municipal landfill. Both the 6601 / 6603 Shellmound Street and 1650 65th Street buildings are single-story slab-on-grade construction.

This Work Plan has been prepared as requested by the Alameda County Environmental Health department ("ACEH") during a meeting with EKI and SAP on 23 January 2014 and a follow-up email from Mark Detterman of ACEH on 3 February 2014. In order for ACEH to consider closure of the former tanks at the Site in accordance with the California State Water Resources Control Board ("SWRCB") Low-Threat Underground Storage Tank Case Closure Policy ("Low-Threat Closure Policy"), ACEH requested the following four items from SAP:

1. A review and evaluation of existing soil and groundwater data, to determine if additional sampling is required to demonstrate that naphthalene concentrations in the subsurface are below levels of concern in the Low-Threat Closure Policy;
2. Calculation of benzo(a)pyrene ("BaP") equivalent concentrations in two depth ranges (0 to 5 feet below ground surface ("ft bgs") for residential and commercial land use, and 0 to 10 ft bgs for utility workers), using existing soil analytical data;
3. Tabulation and submittal of compiled historical depth-to-groundwater data, to facilitate evaluation of the water level in the wells with respect to their screened and sandpack intervals; and
4. A third sub-slab vapor sampling event within the 1650 65th Street building, to evaluate variability in benzene concentrations observed in the existing sub-slab vapor data.

As part of the planning process for additional investigations, EKI performed the historical naphthalene data review described in Item 1, the results of which are attached in Attachment A and summarized below.

## 2 BACKGROUND

Three underground storage tanks ("USTs") were formerly located at the Subject Property, which was previously owned by Sybase, Inc. ("Sybase"), SAP's predecessor. Historically, the Subject Property was part of the former Emeryville municipal landfill.

In 1997, on behalf of Sybase, EKI submitted a UST closure request to the Alameda County Department of Environmental Health ("ACEH"). On 23 June 1998, ACEH issued a letter indicating that a case closure summary was being prepared for the Subject Property USTs, and that the summary would be submitted to the San Francisco Bay Regional Water Quality Control Board ("RWQCB") for concurrence with ACEH's recommendation for no further action. EKI understands that a final closure letter was never issued.

In late 2008, ACEH requested that Sybase perform additional soil and groundwater investigation activities at the Subject Property. EKI performed the investigation and submitted a report in May 2010 on behalf of Sybase to ACEH, entitled *Site Investigation and Closure Request Report*.

In 2011, ACEH requested that Sybase upload documentation to the State Water Resources Control Board Geotracker website, and perform additional investigation, including sampling of sub-slab vapor and groundwater from monitoring wells on the adjacent 1650 65$^{th}$ Street property. EKI complied with ACEH's request, submitting data and a workplan for additional investigation on behalf of Sybase. ACEH approved the workplan in November 2011. EKI performed the additional investigation and presented the data in draft tables and figures to ACEH in February of 2012.

In April 2012, ACEH requested additional sub-slab vapor sampling in the 1650 65$^{th}$ Street building, which Sybase performed in May 2012, submitting a final report and request for site closure under the LTCP on 5 July 2012.

ACEH did not formally respond to Sybase/SAP's July 2012 submittal; rather, ACEH evaluated the Subject Property under the LTCP and published a "Path to Closure" on Geotracker on 13 December 2013. On 23 January 2014, EKI and SAP met with ACEH to discuss the case, during which ACEH requested (a) this work plan for additional investigation, and (b) a tabular summary of Site conditions, exposure pathways, and data gaps (Table 1).

## 3 REVIEW OF EXISTING NAPHTHALENE DATA

ACEH has requested that EKI review existing soil and groundwater data from the Subject Property and the 1650 65$^{th}$ Street property to determine whether naphthalene in soil or groundwater is likely to exceed appropriate screening levels and present a potential vapor intrusion threat.

As detailed in Attachment A, naphthalene was not detected in soil and groundwater samples collected by EKI as part of investigations conducted in 1996 and 2010 (EKI, 1996; EKI, 2010).

In total, thirteen soil samples and five groundwater samples were collected and submitted to off-Site laboratories for semi-volatile organic compound analysis using EPA Method 8270C.

Analytical reporting limits for naphthalene in soil ranged from 0.040 mg/kg to 25 mg/kg, with a mean of 2.57 mg/kg, and a median of 0.083 mg/kg (Table A-1). Reporting limits for all samples except one (SB4-5, collected in 1996) were below the "no significant risk" level of 9.7 mg/kg for residential (unrestricted) land use (SWRCB, 2012).[1]

Groundwater analytical reporting limits for naphthalene ranged from 9.4 micrograms per liter ("ug/L") to 10,000 ug/L, with a mean of 2,025 ug/L and a median of 9.9 ug/L (Table A-2). Reporting limits for all grab groundwater samples except one (SB-6, collected in 1996) were below the 2013 residential groundwater Environmental Screening Level ("ESL") of 160 ug/L for naphthalene published by the California Regional Water Quality Control Board, San Francisco Bay Region ("RWQCB")[2].

Comparison of the existing soil and groundwater analytical data, in which naphthalene was not detected in any of the samples, to the appropriate screening criteria indicates that additional sampling for naphthalene is unnecessary. Thus, no additional sampling or analysis for naphthalene is planned at the Subject Property.

## 4 PROPOSED FIELD SAMPLING

This sampling event was requested by ACEH to evaluate variability in benzene concentrations observed in the sub-slab vapor analytical data from the 1650 65th Street property. Sub-slab sampling and analysis previously conducted by EKI at the Site in December 2011 and May 2012 indicated BTEX compounds were not detected in soil vapor beneath the building slab for 6601 / 6603 Shellmound Street. Because chemicals of concern were consistently not detected at this address, sub-slab vapor sampling is not proposed for the 6601 / 6603 Shellmound property.

Sub-slab vapor samples will be collected from existing sub-slab vapor probes ("SSVPs") installed in the building slab at the 1650 65th Street building (Figure 2). Samples will be analyzed using EPA Method TO-15 for fuel-related volatile organic compounds ("VOCs") including benzene, toluene, ethyl benzene, and xylenes ("BTEX"); and EPA Method TO-3 for the leak-check compound 1,1,1,2-tetrafluoroethane ("TeFA"). This sampling event will not include the major gases (e.g., methane and oxygen) because the prior sampling rounds consistently showed that aerobic conditions are present under the building slab at 1650 65th Street. If the existing SSVPs are not usable or accessible, EKI will replace them with new SSVPs in the same or adjacent locations, as practicable.

[1] SWRCB, 2012, *Table 1 - Concentrations of Petroleum Constituents in Soil That Will Have No Significant Risk of Adversely Affecting Human Health.*

[2] RWQCB, 2013, *Table E-1 - Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion*.

EKI will summarize the new analytical data and calculations requested by ACEH in a brief memorandum, and submit it to ACEH for review and response.

### 4.1 Preparation

SAP will negotiate with Griffin for access to the Subject Property and the adjacent 1650 65th Street Property. EKI will coordinate with Griffin, Ex'pression, and PES (consultant to Griffin) regarding scheduling of the work, determination of known utility locations, and scheduling a site walk, as part of planning for sub-slab vapor sampling.

The SSVPs used for the May 2012 sub-slab vapor sampling event were plugged and left in-place after sampling, but their current condition and accessibility is not known. EKI anticipates that any new SSVP locations, if required, will be approximately the same (ideally located within a few inches) as those used in the previous sub-slab vapor sampling events.

Existing SSVPs at 1650 65th Street will be inspected, and if any are blocked, damaged, or otherwise unsuitable for sampling, EKI will propose new SSVP locations with the agreement of all parties, in light of subgrade utility locations, current building uses, and site facilities. EKI will request that Griffin and Ex'pression confirm the presence or absence of buried utilities at any new SSVP locations, and EKI will retain a private utility locating company to clear proposed new SSVP locations for buried utilities prior to any drilling, if new SSVPs are required. EKI will review utility drawings for the 1650 65th Street property, if provided to EKI by Griffin or Ex'pression. No drilling permit will be needed, thus one will not be obtained from the Alameda County.

Additional tasks performed in preparation for sampling will include identification and coordination with a State of California-certified laboratory to perform the needed chemical analyses, preparation of an addendum to the site-specific Health & Safety Plan for EKI field personnel, and negotiation of any necessary subcontracts.

### 4.2 Replacement of Unusable Sub-Slab Vapor Probes (if needed)

In case any SSVPs must be moved or re-installed, they will be constructed in general accordance with the following current guidance documents:

- *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance),* California Environmental Protection Agency, Department of Toxic Substances Control, October 2011 (DTSC, 2011), and
- *Advisory, Active Soil Gas Investigations,* California Environmental Protection Agency, Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, San Francisco Regional Water Quality Control Board, April 2012 (Cal-EPA, 2012).

If any existing SSVPs are damaged or otherwise unusable, each will be destroyed by threading a rod into the unit and jacking it out of the floor. The resulting hole will be patched with pre-mixed expansion cement to finished grade.

For each new or replacement SSVP, a small diameter (¾ inch to 1 inch) pilot hole will be drilled approximately two inches into the concrete slab with an electric rotary hammer. Within the pilot hole, a smaller diameter hole (⅜ to ¾ inch) then will be drilled through the bottom of the concrete slab and 3 to 4 inches into the baserock below, to allow insertion of a pre-assembled SSVP.

Each SSVP will consist of an approximately six-inch long section of ¼ inch outside-diameter 316 stainless-steel tubing, with a threaded female Swagelok-type fitting at the top, sealed using a threaded ¼ inch plug wrapped in fluorinated-polymer (i.e., Teflon®) sealing tape. An assembled SSVP will be inserted into the hole, and the annular space will be backfilled with #2/16 or #3 graded prewashed silica sand, filled to approximately one inch above the lower end of the SSVP, followed by approximately 1 inch of dry medium granular bentonite, filled from the top of sandpack to approximately 1/2 inch above the base of the concrete slab. The SSVP will be completed at the surface with pre-mixed anchoring (expansion) cement to finished grade. At least two hours will be allowed to elapse between SSVP construction and sampling, in order to allow sufficient time for the grout to cure. A schematic of a typical SSVP installation is shown on Figure 3.

### 4.3 Vapor Sampling

Sub-slab soil vapor samples will be collected from the two SSVPs located at 1650 65th Street, in general accordance with Cal-EPA guidance for soil vapor sampling, as described below. An outdoor time-weighted ambient air sample also will be collected, to provide data regarding background air conditions, including possible effects of the Interstate-80 freeway located immediately west of the Site.

A leak detection protocol will be included as a quality control check for field sampling system leaks. The leak detection protocol involves (a) creating an enclosed space ("sampling shroud") around the above-ground sampling assembly and all of its connections, (b) injecting the volatile tracer gas TeFA into this space during the time that the SSVPs are being actively sampled, and (c) sampling this space independently of the SSVP, using a separate leak-detection ("shroud") canister. The leak detection protocol is intended to assist detection of ambient air leakage into the vapor sample through valves or seals in the sampling train or cracks in the concrete floor, and to provide a quantitative means of estimating the effect of leakage, if it occurs, on the analytical results for the sample.

Sub-slab vapor samples and leak-check samples will be collected in 1-liter SUMMA® canisters that are batch-certified clean by the California-certified analytical laboratory that supplied them. The ambient-air time-weighted average sample will be collected in a 6-liter SUMMA® canister. For field Quality Assurance/Quality Control ("QA/QC") purposes, a duplicate vapor sample will

be collected sequentially from one of the SSVPs. After collection, sample canisters will be transported to the laboratory under appropriate chain-of-custody procedures.

Pertinent details such as initial and final canister vacuum, start and stop time, approximate ambient temperature, and other conditions will be recorded in field notes during sampling. Each canister will be labeled with a unique sample identification number, sampling start time, and the sampling date. Chain-of-custody records will be initiated to document sample handling and delivery to the analytical laboratory. The canisters then will be returned to the laboratory for analysis via courier or commercial carrier.

## 5 ANALYSIS

Sub-slab vapor and ambient-air sample canisters will be analyzed using EPA Method TO-15 for benzene, toluene, ethylbenzene, xylenes, and TeFA. Leak-check (i.e., tracer) sample canisters will be analyzed by EPA Method TO-3 for TeFA.

## 6 REPORTING

Results of the vapor sampling investigation will be presented in an investigation summary report. The report will summarize field protocols, observations, and analytical results and evaluate the results of the investigation. The report will include a figure depicting final SSVP locations and pertinent sampling results. Sampling results will also be provided in summary tables and on included copies of final analytical laboratory reports from the certified laboratory.

The report will also include (1) the calculation of BaP equivalents with an assessment of those data and (2) a tabulation of water levels as requested by ACEH.

The report will be uploaded electronically to the GeoTracker and ACEH websites. The analytical data will be submitted in electronic format to the Geotracker system, but the locational data for the SSVP samples will not be submitted to Geotracker, as the sampling locations are temporary (they are not regular monitoring points) and they will not be surveyed.

## 7 REFERENCES

Cal-EPA, 2012, *Advisory, Active Soil Gas Investigations.* California Environmental Protection Agency, Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, San Francisco Regional Water Quality Control Board, April 2012.

EKI, 1996, *Results of Soil and Groundwater Investigations at 6601 and 6603 Shellmound Street, Emeryville, California.* Erler & Kalinowski, Inc., 23 August 1996.

EKI, 2010, *Site Investigation and Closure Request Report, 6601/6603 Shellmound Street, Emeryville, California.* Erler & Kalinowski, Inc., 14 May 2010.

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

RWQCB, 2013, *Environmental Screening Levels.* California Regional Water Quality Control Board, San Francisco Bay Region, December 2013 Update.

SWRCB, 2012, *Low-Threat Underground Storage Tank Case Closure Policy.* California State Water Resources Control Board, adopted 1 May 2012.

# Table 1 - Summary of Site Conditions, Exposure Pathways, and Data Gaps
# 6601/6603 Shellmound Street, Emeryville, California

(EKI 950074.05)

| CSM Element | Description | Data Gap | Proposed Investigation | Rationale | Analytical Methods |
|---|---|---|---|---|---|
| Background and Occurrence of Chemicals of Concern | - The Site includes the properties at 6601/6603 Shellmound Street in Emeryville, California.<br><br>- In 1989, three diesel & gasoline underground storage tanks ("USTs") were removed from the 6601/6603 Shellmound Street property by overexcavation to approximately 16 feet below ground surface.<br><br>- Soil, groundwater, and soil vapor sampling has demonstrated that petroleum hydrocarbons have migrated in the subsurface to the adjacent 1650 65th Street property.<br><br>- Residual petroleum hydrocarbons and associated chemicals remain in soil and groundwater, including benzene, toluene, ethylbenzene, and xylenes ("BTEX"), and polycyclic aromatic hydrocarbons (“PAHs”).<br><br>- Benzene, toluene, and ethylbenzene also have been detected in sub-slab vapor samples.<br><br>- Prior site development and the UST installation, the Site was used as a landfill by the City of Emeryville. | - No data gap exists<br><br>- Lateral and vertical extent of petroleum hydrocarbons in soil and groundwater have been characterized<br><br>- No horizontal or vertical conduits have been identified. | - None needed | - The lateral and vertical extent of petroleum hydrocarbons and related constituents in groundwater has been characterized (EKI, 2012).<br><br>- Residual petroleum hydrocarbons in soil from the former USTs generally are restricted to the saturated zone.<br><br>- VOC and PAH concentrations in soil generally are below Commercial / Industrial Environmental Screening Levels (“ESLs”) published by the California Regional Water Quality Control Board, San Francisco Bay Region (“RWQCB”) and Low Threat Closure Policy ("LTCP") criteria.<br><br>- Although a sheen has been observed in groundwater samples collected near and downgradient of the former tank area (EKI, 2010), the extent of contamination is limited, as shown by groundwater analytical data at locations MW-5, MW-7, GGW-3 and GGW-4 (Figure 2; EKI, 2012).<br><br>- Concentrations of all constituents except benzene have declined to below their respective Commercial / Industrial ESLs.<br><br>- The most recent sampling data (e.g., MW-3) indicate that residual benzene may remain in groundwater (EKI, 2012) at concentrations above the water quality objective for the Santa Clara Valley East Bay Plain groundwater basin (DWR, 2003), i.e., the drinking water Maximum Contaminant Level ("MCL") of 1 microgram per liter ("ug/L") (RWQCB, 2013).<br><br>- The concentration of benzene in downgradient monitoring wells MW-5 and MW-7 has decreased over time to below detection limits (Figure 2; EKI, 2012). | - N/A |
| Exposure Pathways | - Ingestion and direct-contact exposure pathways for soil and groundwater are incomplete for current Site occupants. | - None | - None needed | - The Site is paved and completely developed for commercial use. | - N/A |
| | - Vapor intrusion of VOCs (e.g., BTEX compounds) to indoor air is a potentially-complete exposure pathway both on-Site and at the adjacent 1650 65th Street property. | - Sub-slab vapor sampling was performed in 2011 and 2012.<br><br>- Analytical results were compared to residential and commercial / industrial screening levels for subslab vapor (i.e., concentrations below 20 x respective Indoor Air ESLs; DTSC, 2011)<br><br>- Concentrations of petroleum hydrocarbons and BTEX compounds were below current residential screening levels at the 6601/6603 Shellmound Street property<br><br>- Benzene was present above current residential screening levels in two locations on the 1650 65th Street property in 2011 (and in an ambient air sample collected concurrently), but below residential screening levels in follow-up sampling in 2012<br><br>- Subslab samples collected from all locations in 2011 and 2012 were below commercial / industrial screening levels. | - Re-sample sub-slab vapor for BTEX compounds on the 1650 65th Street property<br><br>- Work plan (EKI, 2014) to be submitted with this summary table to Alameda County Environmental Health ("ACEH"). | - Sampling conducted in 2011 on the 1650 65th Street property indicated the presence of benzene in sub-slab vapor at concentrations above residential screening levels (calculated according to current DTSC guidance by multiplying Indoor Air Residential ESLs by an attenuation factor of 20).<br><br>- Follow-up sampling at the same locations conducted in 2012 indicated that no analytes were above residential screening levels.<br><br>- An additional round of sampling and analysis of soil vapor will provide a basis (at least three data points) to judge whether the benzene concentrations in vapor below the slab meet unrestricted use (residential) criteria. | - EPA TO-15 for BTEX |

# Table 1 - Summary of Site Conditions, Exposure Pathways, and Data Gaps
# 6601/6603 Shellmound Street, Emeryville, California

(EKI 950074.05)

| CSM Element | Description | Data Gap | Proposed Investigation | Rationale | Analytical Methods |
|---|---|---|---|---|---|
| Exposure Pathways (continued) | - Vapor intrusion of napthalene from soil to indoor or outdoor air (SWRCB, 2012) is a potentially-complete exposure pathway both on-Site and at the adjacent 1650 65th Street property. | - Soil sampling was performed in 1996 and 2010, and analytical results were obtained for naphthalene in soil.<br><br>- Naphthalene data had not been evaluated based on the potential for vapor intrusion to indoor or outdoor air.<br><br>- A screening evaluation of naphthalene concentrations was performed, and is included in the *Work Plan for Additional Sub-Slab Vapor Sampling, 6601/6603 Shellmound Street and 1650 65th Street, Emeryville, California,* submitted to ACEH with this summary table. | - No further investigation needed<br><br>- Site analytical data for naphthalene in soil was compiled and compared to screening levels in Table 1 of SWRCB (2012).<br><br>- Additional details are available in EKI (2014). | - Criteria listed in Table 1 of SWRCB (2012) are described as "Concentrations of Petroleum Constituents in Soil That Will Have No Significant Risk of Adversely Affecting Human Health".<br><br>- Naphthalene was not detected in any soil or groundwater samples collected by EKI in either 1996 or 2010 (EKI, 2014).<br><br>- Analytical reporting limits for naphthalene were compared to soil naphthalene screening levels from Table 1 of SWRCB (2012), and residential groundwater ESLs for naphthalene (RWQCB, 2013).<br><br>- Reporting limits for soil were below screening levels (9.7 mg/kg) in all soil samples but SB4-5 (collected in 1996), which had a reporting limit of 25 mg/kg.<br><br>- Reporting limits for groundwater were below screening levels (160 ug/L) in all groundwater samples but SB6 (collected in 1996), which had a reporting limit of 100,000 ug/L. | - N/A |
| | - Direct contact with PAHs in Site soil during excavation may be a potentially complete exposure pathway for future construction or utility workers.<br><br>- Direct contact with other Site chemicals are below screening levels from Table 1 of SWRCB (2012). | - PAH concentrations have not been expressed as benzo(a)pyrene ("BaP") equivalents in shallow soil (< 5 ft bgs) or in deeper soil (0 to 10 ft bgs); | - Review and summarize existing Site analytical data for PAHs in soil, calculate BaP equivalent concentrations<br><br>- Compare BaP equivalent PAH data to threshold values from Table 1 of SWRCB (2012) | - Soil analytical data for petroleum hydrocarbons and related constituents (including naphthalene and PAHs) have been obtained in the immediate vicinity of the former USTs.<br><br>- Sampling and analysis for PAHs is only necessary where soil is affected by either waste oil or Bunker C fuel (SWRCB, 2012). There is no indication that storage or use of waste oil or Bunker C fuel occured at the Site.<br><br>- Nonetheless, these data may be compared to criteria published in the Low-Threat Case Closure Policy (SWRCB, 2012) to determine whether or not the existing concentrations at the Site present a low-threat risk to human health and the environment. | - N/A |

**References:**


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

DWR, 2003, *California's Groundwater, Bulletin118, Update 2003.* California Department of Water Resources, October 2003.

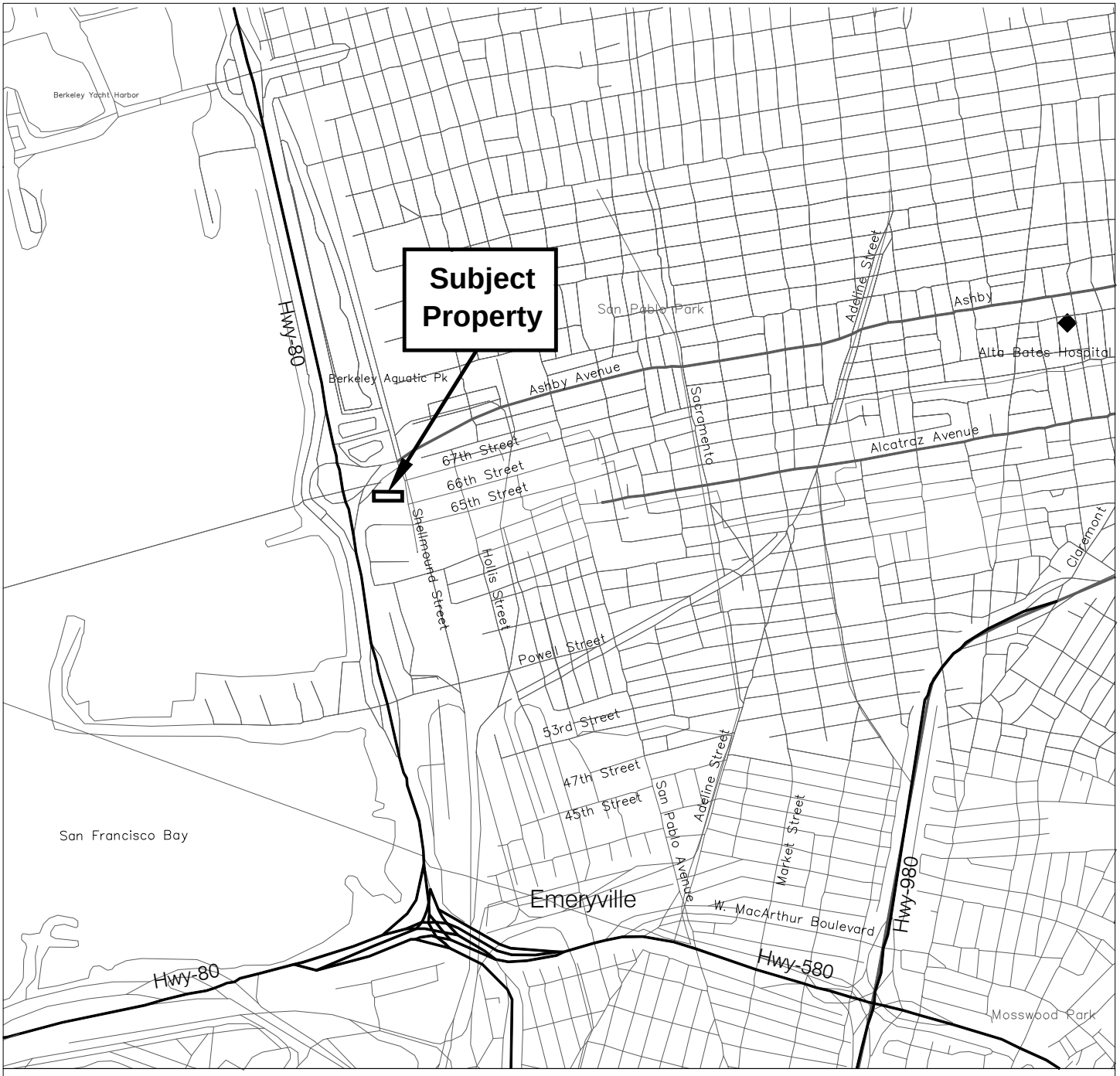
EKI, 2010, *Site Investigation and Closure Request Report, 6601/6603 Shellmound Street, Emeryville, California.* Report prepared by Erler & Kalinowski, Inc., 14 May 2010.

EKI, 2012, *Report of Additional Site Investigation and 2012 Request for Site Closure, 6601/6603 Shellmound Street, Emeryville, California.* Report prepared by Erler & Kalinowski, Inc., 5 July 2012.

EKI, 2014, *Work Plan for Additional Sub-Slab Vapor Sampling, 6601/6603 Shellmound Street, Emeryville, California.* Work plan prepared by Erler & Kalinowski, Inc., 13 June 2014.

RWQCB, 2013, *Environmental Screening Levels.* California Regional Water Quality Control Board, San Francisco Bay Region, December 2013 Update.

SWRCB, 2012, *Low-Threat Underground Storage Tank Case Closure Policy.* California State Water Resources Control Board, adopted 1 May 2012.




Notes:

1. All locations are approximate.

0 2500 5000

(Approximate Scale in Feet)

N

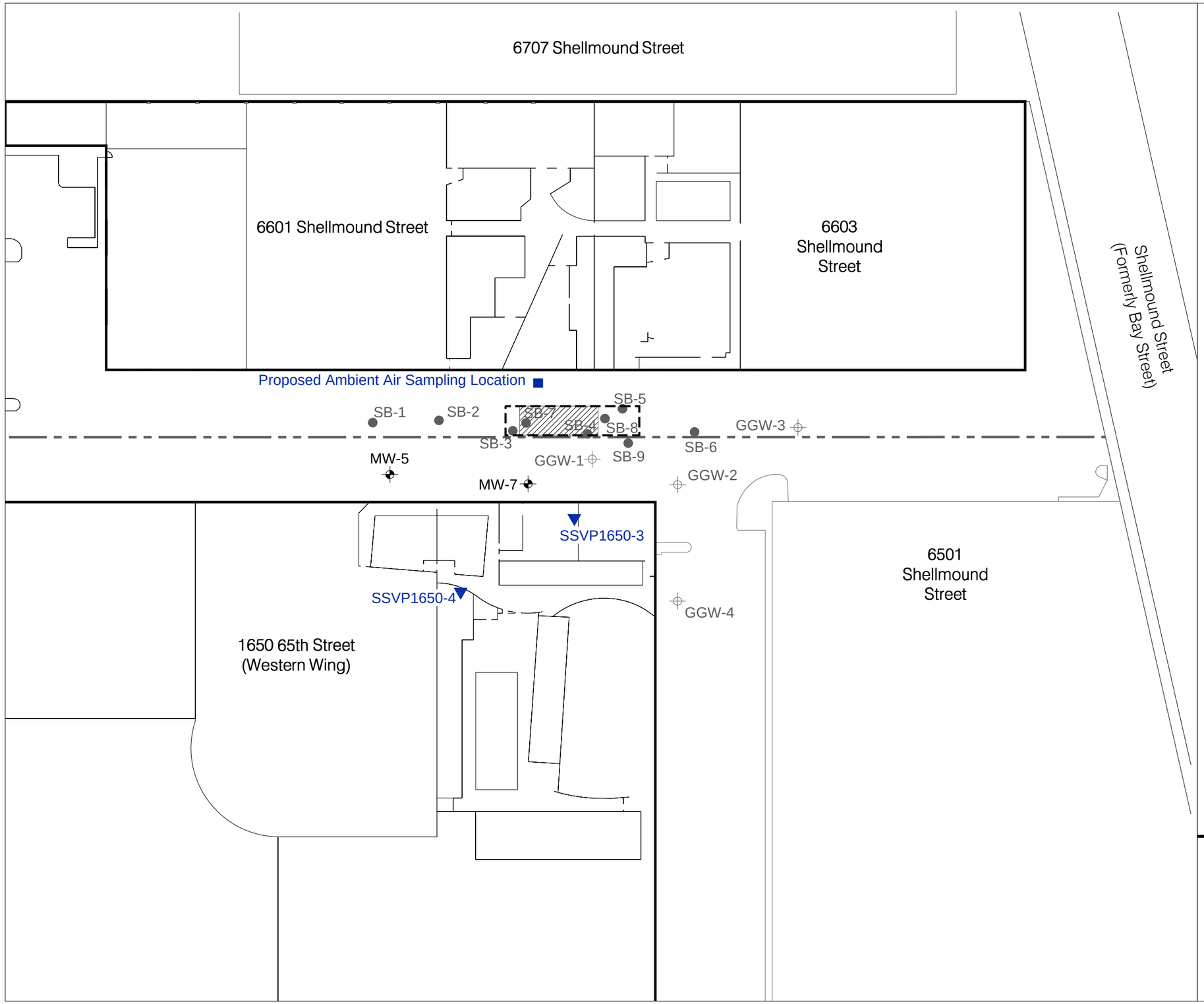
**Erler & Kalinowski, Inc.**

Site Location Map

6601/6603 Shellmound Street
Emeryville, CA

June 2014
EKI 950074.05

Figure 1




N

0 50 100

(Approximate Scale in Feet)

Legend:

- Property Boundary
- Approximate Tank Area
- Approximate Excavation Area (as depicted in Dubovsky and Petite, 1990)
- Off-Site Monitoring Well Location
- Grab Groundwater Sampling Location (2010)
- Soil Borehole Location (1996, 2010)
- Subslab Vapor Probe Location
- Ambient Air Sampling Location

Notes:

1. All locations are approximate.
2. Basemap source: Digitized from Alta Land Survey Title Map (undated); interior layout from maps provided by on-site tenant.
3. Only major interior walls near proposed sample locations are presented. Not all interior walls are shown.

**Erler & Kalinowski, Inc.**

Proposed Sampling Locations

6601/6603 Shellmound Street
Emeryville, CA
June 2014
EKI 950074.05

Figure 2

# ATTACHMENT A

## Naphthalene Analytical Data from Previous Site Investigations

# TABLE A-1
## Soil Sample Analytical Results for Naphthalene
6601/6603 Shellmound St., Emeryville, California

| Location | Sample ID | Sample Date | Depth (ft bgs) | Naphthalene (mg/kg) (a) |
|---|---|---|---|---|
| SB-3 | SB3-5 | 6/15/1996 | 4.5-5 | <5.0 |
| SB-4 | SB4-5 | 6/15/1996 | 4.5-5 | <25 |
| SB-7 | SB-7-5-5.5 | 4/9/2010 | 5-5.5 | <0.092 |
| | SB-7-8-8.5 | 4/9/2010 | 8-8.5 | <1.9 |
| | SB-7-13-13.5 | 4/9/2010 | 13-13.5 | <0.080 |
| | SB-7-20.5-21 | 4/9/2010 | 20.5-21 | <0.078 |
| SB-8 | SB-8-4.5-5 | 4/9/2010 | 4.5-5 | <0.075 |
| | SB-8-13-13.5 | 4/9/2010 | 13-13.5 | <0.080 |
| | SB-8-17.5-18 | 4/9/2010 | 17.5-18 | <0.083 |
| SB-9 | SB-9-5-5.5 | 4/9/2010 | 5-5.5 | <0.076 |
| | SB-9-9-9.5 | 4/9/2010 | 9-9.5 | <0.77 |
| | SB-9-12.5-13 | 4/9/2010 | 12.5-13 | <0.04 |
| | SB-9-19-19.5 | 4/9/2010 | 19-19.5 | <0.086 |
| ***No significant risk (0-5 feet bgs) (b)*** | | | | ***9.7*** |
| ***No significant risk (5-10 feet bgs) (b)*** | | | | ***9.7*** |
| ***2013 RWQCB Residential Shallow Soil ESL (c)*** | | | | ***1.2*** |

**Abbreviations:**

< - compound not detected at or above indicated laboratory reporting limit

ESL: Environmental Screening Level (RWQCB, December 2013)

ft bgs - feet below ground surface

mg/kg - milligrams per kilogram

RWQCB: California Regional Water Quality Control Board, San Francisco Bay Region

SWRCB: State Water Resources Control Board

**Notes:**

(a) Samples collected in 2010 were analyzed by Curtis & Tompkins, Ltd., of Berkeley, California using method SW8270C. Sample collected in 1996 was analyzed by Sequoia Analytical of Redwood City, California using EPA 8100.

(b) SWRCB Low-Threat Underground Storage Tank Case Closure Policy - Table 1.

(c) Residential shallow soil ESLs are from RWQCB (December 2013) - Summary Table A.

References

RWQCB, 2013. *Update to Environmental Screening Levels,* California Regional Water Quality Control Board, San Francisco Bay Region, 23 December 2013.

SWRCB, 2012. *Low-Threat Underground Storage Tank Case Closure Policy; Table 1- Concentrations of Petroleum Constituents in Soil That Will Have No Significant Risk of Adversely Affecting Human Health.* California State Water Resources Control Board, 1 May 2012.

# TABLE A-2
## Water Sample Analytical Results for Naphthalene
6601/6603 Shellmound St., Emeryville, California

| Sample ID | Sample Date | Naphthalene (ug/L) (a) |
|---|---|---|
| SB-6 | 6/15/1996 | <100,000 |
| GGW-1 | 3/6/2010 | <98 |
| GGW-2 | 3/6/2010 | <9.9 |
| GGW-3 | 3/6/2010 | <9.4 |
| GGW-4 | 4/9/2010 | <9.9 |
| ***2013 RWQCB Residential Groundwater ESL (b)*** | | ***160*** |

**Abbreviations:**

< - compound not detected at or above indicated laboratory reporting limit

ESL: Environmental Screening Level (RWQCB, December 2013)

feet bgs - feet below ground surface

mg/kg - milligrams per kilogram

RWQCB: California Regional Water Quality Control Board, San Francisco Bay Region

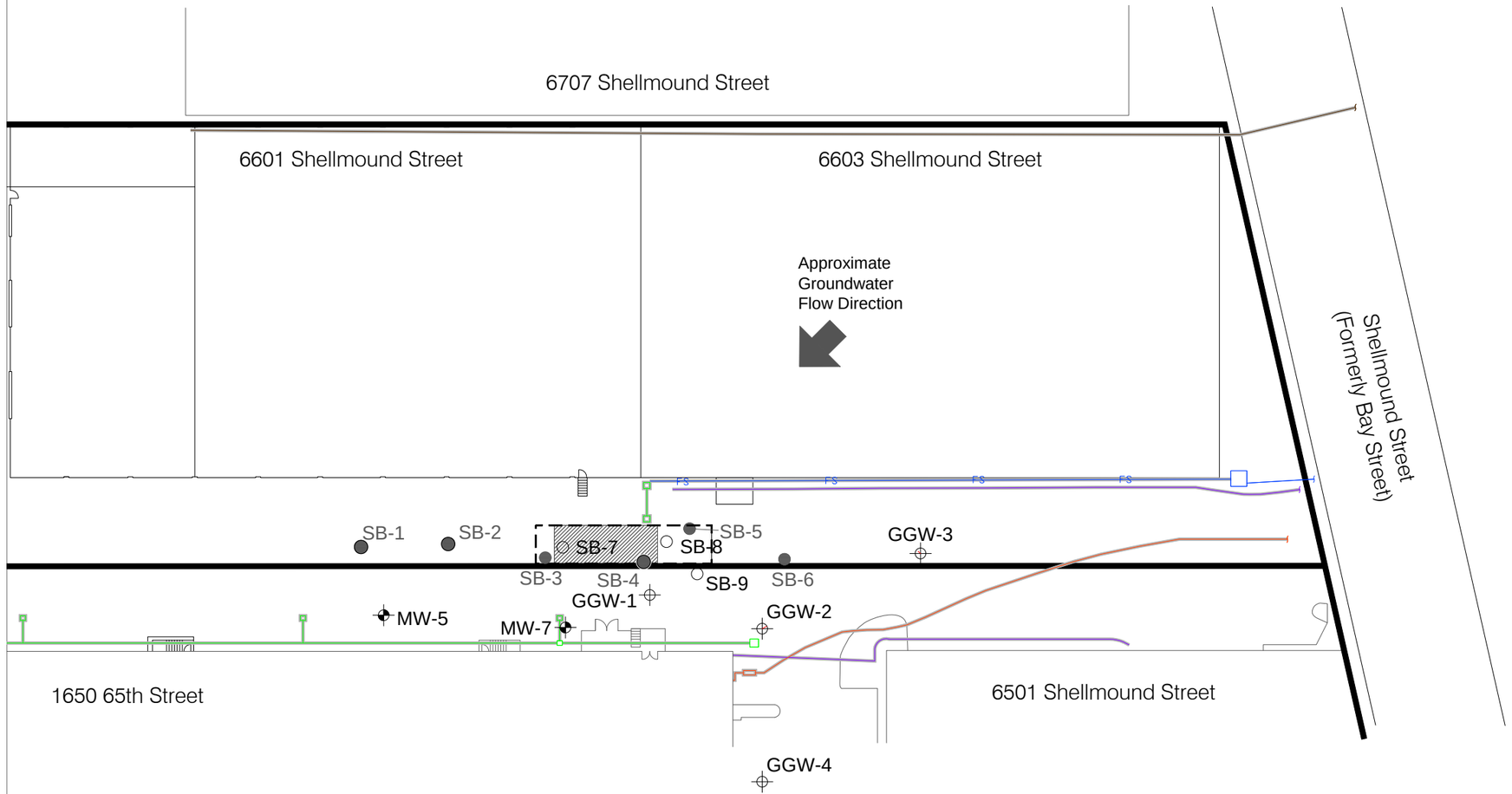
**Notes:**

(a) Samples collected on 2010 were analyzed by Curtis & Tompkins, Ltd., of Berkeley, California using method SW8270C. Sample collected on 1996 was analyzed by Sequoia Analytical of Sacramento, California using EPA 8100.

(b) Residential groundwater ESLs are from RWQCB (December 2013) - Table E-1: Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion (volatile chemicals only).

References

RWQCB, 2013. *Update to Environmental Screening Levels,* California Regional Water Quality Control Board, San Francisco Bay Region, Memorandum dated 23 December 2013.




N

0 50 100

(Approximate Scale in Feet)

Legend:

- Property Boundary
- Approximate Location of Former Underground Storage Tank
- Approximate Excavation Area (Dubovsky and Petite, 1990)
- Off-Site Monitoring Well Location
- Soil Borehole Location (1996)
- Soil Borehole Location (2010)
- Grab Groundwater Sampling Location (2010)
- SD — Storm Drain Line
- FS — Fire Service Line
- S — Sanitary Sewer Line
- E — Electrical Line
- G — Gas Line

Abbreviations:

| | | |
|---|---|---|
| ft bgs | = | feet below ground surface |
| mg/kg | = | milligrams per kilogram |
| MTBE | = | Methyl Tertiary Butyl Ether |
| TEPH | = | Total Extractable Petroleum Hydrocarbons |
| TPPH | = | Total Purgeable Petroleum Hydrocarbons |

Notes:

1. All locations are approximate.
2. Basemap source: Digitized from Alta Land Survey Title Map (undated).
3. Posted soil data are from 9 April 2010 sampling event.

**Erler & Kalinowski, Inc.**

# Soil and Groundwater Sampling Locations

6601/6603 Shellmound Street
Emeryville, CA
June 2014
EKI 950074.05

Figure A1