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CLEANUP ACTION PLAN

Property:
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Prepared for:
Lennar Multifamily Communities, LLC
1325 Fourth Avenue, Suite 1700
Seattle, Washington

Report Date:
June 16, 2014

Cleanup Action Plan

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SKS Shell Property
a.k.a. Alaska Street Texaco
3901 Southwest Alaska Street
Seattle, Washington 98116

Project No.: 0914-004

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SoundEarth Strategies

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µg/L	micrograms per liter
ARAR	applicable or relevant and appropriate requirement
ARCADIS	ARCADIS U.S. Inc.
AS	air sparging
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CAP	Cleanup Action Plan
CFR	Code of Federal Regulations
COC	chemical of concern
CSM	conceptual site model
CULs	cleanup levels
DRPH	diesel-range petroleum hydrocarbons
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FS	feasibility study
gpm	gallons per minute
GRPH	gasoline-range petroleum hydrocarbons
HASP	Health and Safety Plan
Huling property	former Huling Chevrolet garage and auto body shop
Kennedy property	Kennedy funeral home
Lennar MFC	Lennar Multifamily Communities, LLC
MTCA	Washington State Model Toxics Control Act
NAVD88	North American Vertical Datum 1988

ACRONYMS AND ABBREVIATIONS (CONTINUED)

ORPH	oil-range petroleum hydrocarbons
PCBs	polychlorinated biphenyls
PCS	petroleum-contaminated soil
PVC	polyvinyl chloride
RAO	remedial action objective
RCW	Revised Code of Washington
RI	remedial investigation
RI/FS Report	Remedial Investigation/Feasibility Study Report
ROW	right-of-way
SAP	Sampling and Analysis Plan
SKS Shell Property	3901 Southwest Alaska Street, Seattle, Washington (also known as Alaska Street Texaco)
the Site	soil and groundwater contaminated with gasoline-, diesel-, and oil-range petroleum hydrocarbons, benzene, toluene, ethylbenzene, and/or total xylenes beneath the Property as well as beneath portions of the north-adjoining Southwest Alaska Street and the east-adjoining Fauntleroy Way Southwest rights-of-way.
SoundEarth	SoundEarth Strategies, Inc.
SPU	Seattle Public Utilities
SVE	soil vapor extraction
TESC	temporary erosion and sediment control
TSDF	treatment, storage, and disposal facility
UCL_{95}	upper confidence limit
USGS	U.S. Geological Survey
UST	underground storage tank
VCP	Voluntary Cleanup Program

ACRONYMS AND ABBREVIATIONS (CONTINUED)

VOC	volatile organic compound
WAC	Washington Administrative Code

EXECUTIVE SUMMARY

SoundEarth Strategies, Inc. has prepared this Cleanup Action Plan for the SKS Shell Property located at 3901 Southwest Alaska Street in Seattle, Washington (the SKS Shell Property), on behalf of Lennar Multifamily Communities, LLC. The SKS Shell Property is currently enrolled in the Washington State Department of Ecology's Voluntary Cleanup Program (Voluntary Cleanup Program Project No. NW2715) and is also known by its former name, Alaska Street Texaco.

The Site is being cleaned up under a Prospective Purchaser Consent Decree lodged on July 29, 2013. The removal of petroleum-contaminated soil and groundwater at the Site (defined below) is to be integrated with the development of a five-story mixed-use building, including excavation for two levels of underground parking. SoundEarth Strategies, Inc. performed a remedial investigation sufficient to define the extent of contamination and characterize the Site for the purpose of developing and evaluating the cleanup action alternatives summarized in the Draft Remedial Investigation/Feasibility Study Report prepared by SoundEarth Strategies, Inc., dated April 24, 2013 and detailed in this Cleanup Action Plan. This Cleanup Action Plan was developed to meet the general requirements of a cleanup action plan as defined by the Washington State Model Toxics Control Act Regulation in Part 380 of Chapter 340 of Title 173 of the Washington Administrative Code.

The SKS Shell Property is a 0.14-acre parcel (Parcel #6126600495) that is part of an assemblage of six parcels in the West Seattle Triangle urban neighborhood (the Project Property), that will be redeveloped as a residential and retail development. The other properties in the Project Property include the former Huling Chevrolet garage and auto body shop (Huling property) and the Kennedy funeral home (Kennedy property). The SKS Shell Property is located on the northeast corner of the development site. The topography of the area slopes to the east and north, with an elevation of approximately 270 feet at the northeast corner above mean sea level (North American Vertical Datum 1988). Puget Sound is located approximately 0.9 miles to the west, and Elliot Bay is located approximately 1.3 miles to the northeast of the Project Property.

The SKS Shell Property was initially developed in 1934 with the construction of a Gilmore Red Lion gasoline station. It continued to operate as a gasoline station until July 2013. Land use in the vicinity of the Project Property has been primarily commercial since the early 1900s.

The Site is defined by the full lateral and vertical extent of contamination that has resulted from releases of gasoline and diesel at the SKS Shell Property.

Soil and groundwater beneath the SKS Shell Property contains concentrations of gasoline-range petroleum hydrocarbons; diesel-range petroleum hydrocarbons; benzene, toluene, ethylbenzene, and xylenes at concentrations exceeding the applicable cleanup levels. Petroleum contamination extends partially into the Fauntleroy Way Southwest and Southwest Alaska Street R immediately adjacent to the SKS Shell Property.

Subsurface soil beneath the Site consists primarily of near-surface anthropogenic fill soil overlying Vashon-age recessional outwash and lacustrine deposits. Groundwater was encountered within the recessional outwash deposits during Site explorations. This water-bearing zone was encountered at depths ranging from approximately 22.35 feet to 27.80 feet below ground surface and appeared to extend beyond the maximum depth explored of 55 feet below ground surface.

EXECUTIVE SUMMARY (CONTINUED)

Based on the results of the remedial investigation and completion of a conceptual site model, a feasibility study was conducted to develop and evaluate cleanup action alternatives that would facilitate selection of a final cleanup action for the Site in accordance with Part 350(8) of Chapter 340 of Title 173 of the Washington Administrative Code.

The three following cleanup action alternatives were developed through screening all applicable remedial technologies for the Site conditions and the development scenario for the SKS Shell Property, and then each alternative was evaluated in the course of the feasibility study:

- Cleanup Action Alternative 1, Excavation of Soil with Right-of-Way Dewatering and Chemical Oxidation.
- Cleanup Action Alternative 2, Excavation of Soil with Biosparging of Groundwater.
- Cleanup Action Alternative 3, Excavation of Soil with Air Sparge and Soil Vapor Extraction.

Based on the results of the feasibility study, Cleanup Action Alternative 1, Excavation of Soil with Right-of-Way Dewatering, and Chemical Oxidation, is the preferred alternative for the Site. This alternative was selected because it ranks comparatively high in environmental benefit and is both technically feasible and cost effective. Cleanup Action Alternative 1 satisfies requirements of the Washington State Model Toxics Control Act and significantly reduces risk from contamination to the maximum extent practicable by removal of the source via excavation, source removal/dewatering, and a chemical oxidation injection to address residual soil and groundwater contamination beneath the rights-of-way.

This Cleanup Action Plan has been prepared based on the results of the Feasibility Study Report and presents the methods proposed to remediate the contaminated soil and groundwater beneath the Site. As part of the redevelopment, the SKS Shell Property would be excavated from lot-line to lot-line. The depth of the remedial excavation area is approximately 25 to 30 feet at the SKS Shell Property. Approximately 13,000 tons of petroleum-contaminated soil would be excavated and disposed off Site. The remedial excavation would be conducted as part of the larger redevelopment excavation.

The dewatering system is comprised of vertical dewatering wells installed on the northeast portion of the Site on approximate 15-foot centers to an approximate depth of 40 feet. The dewatering system would operate for the duration of excavation activities (or approximately 3 to 4 months) and would remove approximately 3 pore volumes, or 50,000 gallons.

After the final grades are achieved and before installing the building foundation, a vapor and water membrane would be applied to the vertical shoring wall and gravel sub-base, then a protective liner would be laid on top of the membrane, and then the concrete foundation and walls would be poured.

The dewatering wells would then be used for injection of a chemical oxidant to directly oxidize chemicals of concern and provide an oxygen source to stimulate aerobic biodegradation of the residual petroleum hydrocarbons in the right-of-way. Performance and confirmational groundwater monitoring would be conducted at the proposed compliance points following the completion of the remediation activities. Groundwater monitoring would continue for 2 years, followed by additional injections of chemical oxidation compounds, if necessary. Additional groundwater monitoring would be conducted to show compliant groundwater samples have been collected, at which time Lennar Multifamily

Communities, LLC will request a Certificate of Completion for the SKS Shell Property. Upon receipt of these documents, the wells would be decommissioned.

This executive summary is presented solely for introductory purposes, and the information contained in this section should be used only in conjunction with the full text of this report. A complete description of the project, Site conditions, investigation results, cleanup action objectives, implementation of the selected cleanup action, and associated compliance monitoring is contained in this report.

1.0 INTRODUCTION

SoundEarth Strategies, Inc. (SoundEarth) has prepared this Cleanup Action Plan (CAP) for the SKS Shell Property located at 3910 Southwest Alaska Street in Seattle, Washington (the SKS Shell Property). The general location of the SKS Shell Property is shown on Figure 1. The parcels that make up the larger redevelopment are shown on Figure 2. This CAP was prepared for the Prospective Purchaser Consent Decree between Lennar Multifamily Communities, LLC (Lennar MFC) and the Washington State Department of Ecology (Ecology).

This CAP was developed to meet the requirements of a cleanup action plan, as defined by the Washington State Model Toxics Control Act (MTCA) Regulation in Part 380 of Chapter 340 of Title 173 of the Washington Administrative Code (WAC 173-340-380). In accordance with Parts 120 and 350 of Chapter 340 of Title 173 of the WAC (WAC 173-340-120(4)(a) and 173-340-350(6)), Lennar MFI has performed a remedial investigation (RI) sufficient to define the extent of contamination and characterize the Site (defined below) for the purpose of developing and evaluating cleanup action alternatives summarized in the Draft Remedial Investigation/Feasibility Study Report (RI/FS Report) prepared by SoundEarth (2013b) and detailed in this CAP.

The Site is defined by the full lateral and vertical extent of contamination exceeding applicable cleanup levels (CULs) that has resulted from releases of petroleum hydrocarbons at the SKS Shell Property. Based on the information gathered to date, the Site includes soil and groundwater contaminated with gasoline- and diesel-range petroleum hydrocarbons (GRPH and DRPH, respectively); and benzene, toluene, ethylbenzene, and total xylenes (BTEX); beneath the SKS Shell Property and beneath limited portions of the north-adjoining Southwest Alaska Street right-of-way (ROW) and the east-adjoining Fauntleroy Way Southwest ROW (Figure 2).

The Site was accepted into Ecology's Voluntary Cleanup Program (VCP) on April 22, 2013 (VCP Project No. NW2715). The Site is also known by Ecology as Alaska Street Texaco. The Prospective Purchaser Consent Decree was lodged on July 29, 2013.

1.1 DOCUMENT PURPOSE AND OBJECTIVES

The purpose of this CAP is to satisfy the specific requirements of MTCA in accordance with the WAC 173-340-380, 173-340-400, and 173-340-410. This CAP presents historical information regarding the source and extent of impacts beneath the Site and outlines the proposed plan to address the impacts that remain beneath the Site.

This CAP has been organized into the following sections:

- **Section 2.0, Background.** This section discusses the Site location and description, the geologic and hydrogeologic setting of the Site, previous investigations, the distribution of contaminated soil and groundwater, the chemicals of concern (COC) based on the investigations conducted at the Site, the media of concern, and the Site definition.
- **Section 3.0, Technical Elements.** This section presents the remedial action objectives, applicable or relevant and appropriate requirements, COCs, media of concern, points of compliance, and the development of cleanup standards.

- **Section 4.0, Selected Cleanup Action.** This section describes the selected cleanup action (including rational for selection) and presents the cleanup action objectives.
- **Section 5.0, Cleanup Action Implementation Plan.** This section describes the components of the cleanup action, including the cleanup action implementation documents, construction activities, and anticipated schedule for implementing the cleanup action for the SKS Shell Property. This section also summarizes the anticipated schedule for the cleanup action and restoration time frame.
- **Section 6.0, Compliance Monitoring.** This section describes the protection, performance, and confirmational monitoring that will be conducted as part of the cleanup action.
- **Section 7.0, Expected Restoration Timeline.** This section describes the expected time frame for the elements of the selected cleanup action.
- **Section 8.0, Documentation Requirements.** This section describes the documentation to be provided as part of the cleanup action and includes a discussion of document management, waste disposal tracking information, and compliance reports.
- **Section 9.0, Bibliography.** This section lists references used in the preparation of this CAP.
- **Section 10.0, Limitations.** This section discusses document limitations.

2.0 BACKGROUND

This section provides a description of the Site features and location; a summary of historical Site use; and a description of the local geology, hydrology, and land use pertaining to the Site. Historical documentation referenced in this section is provided in Appendix A.

2.1 SITE LOCATION AND DESCRIPTION

The Site is defined by the extent of contamination caused by the releases of hazardous substances at the SKS Shell Property, as discussed in Section 1.0 above. The SKS Shell Property and adjoining properties, including the ROW, affected by the release(s) from the SKS Shell Property are described in Sections 2.1.1 and 2.1.2 and presented on Figure 2.

2.1.1 SKS Shell Property

The SKS Shell Property is located on a 0.14-acre parcel (King County parcel no. 6126600495) within the West Seattle Triangle urban neighborhood. The SKS Shell Property has been occupied by a gasoline station since 1934 and is surrounded by commercial businesses and parking lots. The SKS Shell Property and the petroleum-impacted adjoining ROWs are described in the following sections and are presented on Figure 2.

Potable water and sewer service are provided to the SKS Shell Property by Seattle Public Utilities. Puget Sound Energy provides natural gas and Seattle City Light provides electricity to the SKS Shell Property. Solid waste disposal and recycling services are provided by Waste Management.

2.1.2 Fauntleroy Way Southwest and Southwest Alaska Street Rights-of-Way

According to City of Seattle's Arterial Classifications Zoning Map, the Fauntleroy Way Southwest ROW is zoned as a principal arterial and the Southwest Alaska Street ROW is zoned as an arterial

street. The Fauntleroy Way Southwest ROW is comprised of six through lanes and the Southwest Alaska Street ROW is comprised of four through lanes.

A 15-inch-diameter concrete sewer line and 6-foot City of Seattle electrical utilidor are located beneath the Southwest Alaska Street ROW. A 15-inch-diameter concrete sewer line and a water line are located beneath the Fauntleroy Way Southwest ROW.

2.2 LAND USE HISTORY OF THE SITE

The historical uses of the SKS Shell Property and adjoining development properties are summarized below. Figure 3 presents current and historical features for the Property and surrounding area.

2.2.1 SKS Shell Property

This SKS Shell Property was developed as a gasoline station and an automotive repair facility in 1934. Successive oil companies retailing gasoline products at the SKS Shell Property include Gilmore Red Lion in the 1930s, Mobil Oil in the 1940s, Texaco in the 1950s, Atlantic Richfield in the 1960s, Arco from 1975 to 1995, Texaco from approximately 1998 to 2004, and Shell from 2004 to the present.

In 1950, the original 1934 gasoline fueling equipment was removed and two 4,000-gallon underground storage tank (UST) were installed. The pump island and service station office were removed in 1961 and replaced with a new and relocated pump island. An additional 8,000-gallon UST was installed in 1974. The 1950-vintage USTs were removed in 1984 and replaced with one 10,000-gallon UST and two 12,000-gallon USTs. The 1984-vintage USTs are still active. Over time, both leaded and unleaded gasoline, and diesel fuel have been used and stored in various USTs at the SKS Shell Property.

In July 2013, the gasoline station closed and remaining fuel was removed from the USTs. The four USTs and associated piping and dispensers were removed in December 2013. The USTs appeared to be in good condition, with no holes or other obvious indications of a recent release observed. SoundEarth prepared and submitted a UST removal report to Ecology in January 2014 (2014). No excavation of petroleum-impacted soil was conducted at that time. However, approximately 172 tons of petroleum-impacted auger cuttings drilled from the adjacent Fauntleroy Way Southwest ROW were transported and disposed of off site. The augers were required for installation of a shoring system for the UST excavation as well as the future development excavation. Shoring installation also required the decommissioning of monitoring well MW-2.

2.2.2 Adjoining Development Properties

Huling Chevrolet. In 1929, the Huling property was undeveloped except for a small residential structure near the southwest corner. Historical street grading profiles indicate that approximately 9 feet of fill was placed on the south end of the property near Southwest Edmunds Street (PanGEO 2012).

A real estate office was constructed on the northern portion of the property in 1950. The office was initially heated by a stove and was converted to electric heat by 1967. Between 1959 and 1961, the office was moved to the northwestern portion of the property. A one-story, wood-framed, stove-heated coffee shop was constructed on the northern portion of the property in 1953. The coffee shop operated on the property until at least 1980. A one-story, masonry-

framed repair garage was constructed on the northeastern portion of the property in 1959. Heat was provided by a suspended electric heater. All three buildings were demolished in 1983.

The existing automotive dealership and service garage building were constructed on the southern half of the property in 1952. The dealership and service facility was occupied by Westside Ford from the early 1950s to the early 1970s, Jim Houston Ford in the late 1970s, Goodyear Tire and Hart Chevrolet in the 1980s, and Huling Chevrolet from 1989 to 2008. The facilities have been vacant since 2008. An additional automotive repair building was constructed to the north of the dealership building in 1983. This building was demolished by 1990. The existing retail building on the northern portion of the property was constructed between 1990 and 1995 and used as a used car sales office, and later as a produce stand.

The service garage equipment included 14 underground hydraulic hoists (one was removed in the 1990s) and a trench drain outlet leading to an oil-water separator. Three USTs were removed by Lee Morse Contractors in September 1989. The removed USTs included a 2,500-gallon UST used for gasoline storage, a 1,000-gallon UST used for heating oil storage, and a 500-gallon UST used for waste oil storage.

Kennedy Funeral Home. A funeral home has operated on the Kennedy property since 1941. The existing building was initially heated by a stove and was later converted to an oil-burning furnace. The building has been occupied by the Howden-Kennedy Funeral Home since at least 1966. Embalming took place on the property until approximately January 2012. An operational heating oil UST of unknown capacity is located on the southern portion of the property.

2.3 FUTURE LAND USE

The planned development project will include the construction of two separate mixed-use, commercial/residential buildings with subgrade parking that will extend lot-line to lot-line on the SKS Shell Property and adjoining properties to the south and west. The two buildings will contain ground floor retail spaces, each with five floors of apartment units above. Two levels of below-grade parking are planned across the entire development property with a capacity of 534 parking spaces. The lowest level of parking will have a top of slab elevation of 248 feet, with an excavation base at approximately 247 feet. The excavation will employ a combination of soldier pile and soil nail shoring systems. The development will include the undergrounding of current overhead utilities along the Fauntleroy Way Southwest and Southwest Alaska Street sidewalks.

SoundEarth reviewed available online permit information for the SKS Shell Property, which indicated that the Seattle Department of Planning and Development issued the following permits for the project:

- City of Seattle Department of Land Use and Development SEPA Determination of Non-Significance issued February 12, 2012, with conditions on large truck period of entry and noise impact time limits.
- City of Seattle Department of Land Use and Development Land Use Permit issued August 28,2013, with an expiration date of 3/2/2015.
- City of Seattle Department of Land Use and Development Construction Permit issued October 10, 2013, with an expiration date of May 6, 2015.

SoundEarth is unaware of any future land use plans for the adjoining properties or ROWs.

2.4 ENVIRONMENTAL SETTING

This section provides a summary of the environmental setting of the Site.

2.4.1 Meteorology

Climate in the Seattle area is generally mild and experiences moderate seasonal fluctuations in temperature. Average temperatures range from the 60s in the summer to the 40s in the winter. The warmest month of the year is August, which has an average maximum temperature of 74.90 degrees Fahrenheit (°F), while the coldest month of the year is January, which has an average minimum temperature of 36.00°F.

The annual average rainfall in the Seattle area is 38.25 inches, with the wettest month of the year December, when the area receives an average rainfall total of 6.06 inches (IDcide 2012).

2.4.2 Topography

The Site and vicinity lie within the Puget Trough or Lowland portion of the Pacific Border Physiographic Province (U.S. Geological Survey [USGS] 1983). The Puget Lowland is a broad, low-lying region situated between the Cascade Range to the east and the Olympic Mountains and Willapa Hills to the west. In the north, the San Juan Islands form the division between the Puget Lowland and the Strait of Georgia in British Columbia. The province is characterized by roughly north-south-oriented valleys and ridges, with the ridges that locally form an upland plain at elevations of up to about 500 feet above sea level. The moderately to steeply sloped ridges are separated by swales, which are often occupied by wetlands, streams, and lakes. The physiographic nature of the Puget Lowland was prominently formed by the last retreat of the Vashon Stade of the Fraser Glaciation, which is estimated to have occurred between 14,000 and 18,000 years before present (Waitt Jr. and Thorson 1983).

The Site is located on a relatively flat topography at elevations ranging between 270 feet (northeast corner) and 273 feet above sea level (northwest and southwest corners) and gently slopes toward the northeast (Dowl HKM 2012). The Puget Sound waterway is located approximately 1 mile to the west of the Site (USGS 1983).

2.4.3 Groundwater Use

According to the Ecology Water Well Logs database (Ecology 2012), no water supply wells are present within approximately 2 miles of the Site.

Seattle Public Utilities (SPU) provides the potable water supply to the City of Seattle. SPU's main source of water is derived from surface water reservoirs located within the Cedar and South Fork Tolt River watersheds. According to King County's Interactive Map for the County's Groundwater Program, there are no designated aquifer recharge or wellhead protection areas within several miles of the Site.

2.5 GEOLOGIC AND HYDROGEOLOGIC SETTING

This section summarizes the regional geology and hydrogeology in the Site vicinity, and the geologic and hydrogeologic conditions encountered beneath the Site.

2.5.1 Regional Geology and Hydrogeology

According to the Geologic Map of Seattle, the surficial geology in the vicinity of the Site consists of deposits corresponding to the Vashon Stade of the Fraser Glaciation and pre-Fraser glacial and interglacial periods. In the immediate Site vicinity, surficial deposits have been mapped as Vashon-age recessional outwash and lacustrine deposits (Troost et al. 2005).

The youngest pre-Fraser deposits in the Seattle area, known as the Olympia beds, were deposited during the last interglacial period, approximately 18,000 to 70,000 years ago. The Olympia beds consist of very dense, fine to medium, clean to silty sands and intermittent gravel channel deposits, interbedded with hard silts and peats (Troost and Booth 2008; Galster and Laprade 1991). Organic matter and localized iron-oxide horizons are common. The Olympia beds have known thicknesses of up to 80 feet. Beneath the Olympia beds are various older deposits of glacial and nonglacial origin. In general, deposits from older interglacial and glacial periods are similar to deposits from the most recent glacial cycle, due to similar topographic and climactic conditions (Troost and Booth 2008).

The Vashon ice-contact deposits in the vicinity of the Site are generally discontinuous, highly variable in thickness and lateral extent, and consist of loose to very dense, intermixed glacial till and glacial outwash deposits. The till typically consists of sandy silts with gravel. The outwash consists of sands and gravels, with variable amounts of silt (Troost et al. 2005).

The Vashon recessional outwash deposits are generally discontinuous in the Site vicinity, and consist of loose to very dense, layered sands and gravels, which are generally well-sorted (poorly graded). Layers of silty sands and silts are less common. The Vashon recessional lacustrine deposits consist of layered silts and clays, which range in plasticity from low to high, and that may contain localized intervals of sand or peat. The recessional lacustrine deposits may grade into recessional outwash deposits (Troost et al. 2005).

The glacial and non-glacial deposits beneath the Seattle area comprise the unconsolidated Puget Sound aquifer system, which can extend from ground surface to depths of more than 3,000 feet. Coarse-grained units within this sequence generally function as aquifers, and alternate at various scales with fine-grained units which function as aquitards (Vaccaro et al. 1998). Above local or regional water table aquifers, discontinuous perched groundwater may be present in coarse-grained intervals seated above fine-grained intervals. Below the regional water table, the alternating pattern of coarse and fine-grained units results in a series of confined aquifers. Regional groundwater flow is generally from topographic highs toward major surface water bodies such as Puget Sound and Lake Union. Vertical hydraulic gradients are typically upward near the major surface water bodies, and downward inland (Floyd Snider McCarthy Team 2003; Vaccaro et al. 1998).

2.5.2 Site Geology

Based on the results of the investigations summarized in later sections of this report, subsurface soil beneath the Site consists primarily of near surface anthropogenic fill overlying Vashon-age recessional outwash and lacustrine deposits.

The locations of the borings and wells advanced during explorations at the Site are shown in Figure 4. Cross sections depicting subsurface soil characteristics and geologic units encountered in the explorations are presented in Figures 5 through 7. Detailed boring logs with well construction details are provided in Appendix B of the RI/FS Report (SoundEarth 2013b).

Anthropogenic Fill

Utility corridors and the USTs associated with the SKS Shell service station may include select gravel backfill bedding materials not encountered in the soil borings.

Vashon Recessional Outwash and Lacustrine Deposits (Qvr and Qvrl)

Vashon-age recessional outwash and/or lacustrine type deposits were encountered in all of the borings throughout the Site. In general, these deposits consisted of medium-dense to dense silty sand to sandy silt with variable gravel and sand-rich and silt-rich horizons. These deposits extended to the full depth explored in all of the Site borings (up to 55 feet below ground surface [bgs]).

2.5.3 Site Hydrology

A consistent water-bearing zone was encountered within the recessional outwash deposits during Site explorations. This shallow water-bearing zone was encountered at depths ranging from approximately 23 to 25 feet bgs, extending to depth of at least 55 feet bgs, and corresponding to elevations of 247 to 245 feet North American Vertical Datum 1988 (NAVD 88).

Figure 8 presents the groundwater contour map for the shallow water-bearing zone based on groundwater levels measured on November 7, 2012. Groundwater in the shallow water-bearing zone beneath the Site flows toward the northeast, with a shift toward the north at the intersection of Southwest Alaska Street and Fauntleroy Way Southwest. This direction is similar to the northeast direction calculated by G-Logics, Inc. in June 2011. Additional groundwater flow direction measurements are planned for July 2013 prior to cleanup. The hydraulic gradient for the water-bearing zone is approximately 0.03 feet/foot near the intersection of Fauntleroy Way Southwest and Southwest Alaska Street. The large dewatered excavation located across Southwest Alaska Street and immediately to the north of the SKS Shell Property is approximately 30 to 35 feet below grade, and this excavation may influence groundwater flow directions and hydraulic gradients downgradient of the Site.

Aquifer testing was conducted by SoundEarth on the SKS Shell Property, as discussed in detail in the RI/FS Report (SoundEarth 2013b). The results of the aquifer test analysis indicate a hydraulic conductivity of 5.82×10^{-1} feet per day or 2.05×10^{-4} centimeters per second. The range of the hydraulic conductivity values estimated from the aquifer test analysis corresponds to the physical characteristics of the silty sand and sandy silt comprising the shallow water-bearing zone beneath the SKS Shell Property.

2.6 PREVIOUS INVESTIGATIONS

This section summarizes the results of the previous investigations conducted at the SKS Shell Property, as well as the adjoining, upgradient properties to the south (former Huling Chevrolet) and west (Kennedy property). The locations of soil borings, groundwater monitoring wells, and other SKS Shell Property features are shown on Figure 4. The soil and groundwater analytical results are shown on Figures 9 and 10 and in Tables 1 and 2. A summary of the monitoring well IDs, installation dates, depths advanced and well completion details is presented in Table 3.

For evaluation purposes, those contaminant concentrations that exceed their respective MTCA Method A CULs for soil and groundwater are presented in bold red font on Figures 9 and 10 and in Tables 1 and 2. The remainder of this report includes references to MTCA CULs; and these references refer to the 2001 MTCA Method A CULs for soil and groundwater.

2.6.1 SKS Shell Property

Previous subsurface investigations indicated that soil beneath the Shell SKS Property is contaminated with GRPH, DRPH, and BTEX exceeding the applicable soil CULs at depths generally ranging between 12 and 25 feet bgs. Petroleum-contaminated soil (PCS) is located beneath the northern and eastern two-thirds of the SKS Shell Property. However, the lateral (to the north and northeast) and vertical extents of contaminated soil were not fully characterized during these investigations.

Groundwater samples collected from monitoring wells located around the perimeter of the USTs and pump islands (wells MW-1 through MW-3 and GLMW-1 through GLMW-3) contain concentrations of GRPH, DRPH, and BTEX that exceeded the applicable groundwater CULs. Separate-phase hydrocarbon has been intermittently observed in wells MW-1, MW-3, GLMW-2, and DW-2. Based on these historic groundwater results and the general groundwater flow direction for the SKS Shell Property, the contaminant plume likely extends at depth beneath the Fauntleroy Way Southwest and Southwest Alaska Street ROWs.

2.6.2 Adjoining Huling Property

Subsurface investigations conducted at the Huling property identified soil containing concentrations of GRPH, oil-range petroleum hydrocarbons (ORPH), benzene, and polychlorinated biphenyls (PCB) exceeding the applicable CULs in the service garage at depths ranging between 7.5 and 12.5 feet bgs. However, the lateral extent of contaminated soil was not characterized during these investigations.

The initial groundwater sample collected from monitoring well MW-1 in 1997 contained a concentration of ORPH exceeding the applicable groundwater CUL. Monitoring wells MW-1 through MW-3 contained concentrations of DRPH below the applicable groundwater CUL. Concentrations of GRPH, BTEX, volatile organic compounds (VOC), ORPH, and PCBs were not detected above the laboratory reporting limits in groundwater beneath the Huling property.

Potential impacts to soil and groundwater beneath the floor and trench drains, and also the automotive painting and chemical storage areas located inside the Huling body shop building; the sewer line located adjacent to north of the body shop; the automotive repair shop formerly located on the north portion of the Huling property; and the 1,000-gallon heating oil UST formerly located on the Huling property were inadequately assessed or not evaluated during previous subsurface investigations.

2.6.3 Other Adjoining Properties

Subsurface investigations conducted by ARCADIS U.S. Inc. (ARCADIS) on the northeast-adjacent BP Arco property at 4580 Fauntleroy Way Southwest identified free-phase product and elevated concentrations of GRPH and BTEX in groundwater beneath the property, indicating that this property has been impacted by their own petroleum release ARCADIS 2010a).

A subsurface investigation conducted by LSI Adapt Inc. in 2005 on the north-adjacent former gasoline station property at 3922 Southwest Alaska Street indicated that no concentrations of GRPH, DRPH, or BTEX were present in groundwater beneath that property (LSI 2005).

2.7 REMEDIAL INVESTIGATION

SoundEarth conducted the most recent supplementary RI field work at the Site and on the adjoining Huling and Kennedy properties between August and December 2012. The objectives of the RI field program for the SKS Shell Property included the following:

- Evaluate and bound the extent of soil and groundwater contamination identified beneath the northern, northeastern, and western portions of the SKS Shell Property.
- Collect sufficient data to conduct a feasibility study (FS) and ultimately develop a cleanup action plan for the Site.

As indicated above, soil boring and monitoring well locations were selected to address the data gaps identified during previous investigations as reported. The following sections summarize the results of the RI field program. The locations of soil borings, groundwater monitoring wells and other SKS Shell Site features are shown on Figure 4. The soil and groundwater analytical results are shown on Figures 9 and 10 and in Tables 1 and 2. A summary of the monitoring well IDs, installation dates, depths advanced, and well completion details is presented in Table 3 (includes wells installed at the adjoining Huling and Kennedy properties).

The drilling and well installation activities conducted as part of this RI were performed between August and December 2012. Drilling activities were conducted under the supervision of a SoundEarth geologist. Soil borings (SMW04 and MW101 through MW106) were advanced at the Site to maximum depths ranging from 30 to 55 feet bgs. The borings were advanced by Boretec Inc. using a hollow-stem auger drill rig.

Monitoring wells SMW04 and MW101 through MW106 were constructed of 2-inch-diameter blank polyvinyl chloride (PVC) casing and flush-threaded to 0.010-inch slotted well screen. The bottom of each of the wells was fitted with a threaded PVC bottom cap, and the top of each well was fitted with a locking compression-fit well cap. The annulus of the monitoring wells was filled with #10/20 silica sand to a minimum height of 1 foot above the top of the screened interval. A bentonite seal with a minimum thickness of 1 foot was installed above the sand pack. The wells were completed at the surface with a flush-mounted, traffic-rated well box set in concrete.

A shallow water-bearing zone was encountered within the recessional outwash deposits during Site explorations. This shallow water-bearing zone was encountered at depths ranging from approximately 22.35 feet to 27.80 feet bgs and extending to a maximum depth of 55 feet bgs. All monitoring wells installed during the RI were screened within the shallow water-bearing zone between approximately 20 and 30 feet bgs. Monitoring wells installed at the Site were constructed with 10 feet of screen set at approximately 5 feet above the water table (as observed during drilling).

The monitoring wells were developed with the use of a Grundfos submersible pump. Monitoring well development consisted of surging and purging the wells until a minimum of five well volumes was removed and the groundwater no longer appeared turbid. Turbidity was measured visually by field personnel conducting development activities.

Groundwater samples were collected from monitoring wells in accordance with the U.S. Environmental Protection Agency's (EPA) *Low Flow (Minimal Drawdown) Ground-Water Sampling Procedures* (April 1996) at least 24 hours following well development. Before sampling, depth to groundwater

measurements were collected from the wells relative to the top of well casings to an accuracy of 0.01 feet using an electronic water meter. Purging and sampling of each well was performed using a bladder pump and dedicated polyethylene tubing. During purging, water quality parameters that were monitored and recorded included temperature, pH, specific conductivity, dissolved oxygen, turbidity, and oxidation-reduction potential. Each well was purged until, at a minimum, pH, specific conductivity, and turbidity or dissolved oxygen stabilized. Samples were placed directly into clean, laboratory-prepared containers. After collection, groundwater samples were labeled with a unique sample ID, placed on ice in a cooler, and delivered to Friedman & Bruya, Inc. under standard chain-of-custody protocols for laboratory analysis.

In November 2012, Dowl HKM surveyed the horizontal and vertical monitoring well locations and top of casing and monument elevations for the purposes of calculating groundwater flow gradient and direction. Monitoring wells MW105 and MW106 were installed on the Site at a later date and were not included in the survey. Elevations were surveyed relative to NAVD88 using City of Seattle Benchmark SNV-5244 as the source benchmark.

2.7.1 SKS Shell Property

The results of the remedial investigation conducted by SoundEarth indicate that PCS beneath the SKS Shell Property extends vertically to a maximum depth of 25 feet bgs, mostly beneath the northern two-thirds of the SKS Shell Property, as illustrated on Figure 9. The lateral extent of contaminated soil was bound by soil boring SB201 to the north and monitoring well MW105 to the northeast. The southern extent of contamination is likely beneath the SKS Shell building. Soil borings conducted further south on the Huling and alley properties (including SMW03 and MW106) did not encounter petroleum-impacted soils.

Laboratory analytical results for groundwater samples collected from downgradient monitoring wells MW101 through MW103, MW105, and MW-X indicate that the plume extends less than 25 feet northeast of the SKS Shell Property boundary beneath the Fauntleroy Way Southwest ROW, and the plume does not extend beyond the Southwest Alaska Street ROW (Figure 10).

ECC Horizon's review of available records revealed a shortage of 17,000 gallons of fuel from January 2003 to December 2008. However, we were unable to verify ECC Horizon's calculations or examine the documentation reviewed. Moreover, in our experience, calculation of release volumes based on inventory records are often inaccurate and based on rough dip stick measurements or incomplete record keeping. Based on the concentrations identified in soil and groundwater during previous investigations and the current RI/FS, SoundEarth has estimated the residual mass of petroleum contamination in soil and groundwater is 14,897 gallons plus approximately 1 gallon of dissolved GRPH in groundwater for a total of 14,898 gallons of gasoline released to the subsurface. Based on the condition of the most recent tank systems as observed during the 2013 excavation and removal of those tanks, the subsurface petroleum releases beneath the SKS Shell Property are likely from earlier area tank systems.

Data Gaps. The soil and groundwater samples collected from monitoring well SMW04 indicate that the groundwater plume extends to the west beneath the Kennedy property; however, as discussed in Sections 5.0 and 7.0 below, the planned redevelopment of the SKS Shell Property includes excavation of soil to approximately 28 feet bgs in this area of the Site, as well as dewatering and treatment of contaminated groundwater beneath the SKS Shell Property and Kennedy property. After demolition of the funeral home building occurs in September 2013, a

soil boring and well (MW107) will be installed in the area approximately 20 feet to the west of SMW04 to further bound the extent of the SKS Shell plume. The results of soil and groundwater sampling will used to modify the cleanup plan (if necessary).

2.7.2 Adjoining Huling Property

A remedial investigation of the Huling property was conducted by SoundEarth between August and December 2012 (SoundEarth 2013a). A total of 22 soil borings were conducted, with three completed as monitoring wells. The results of the Huling RI indicated that soil beneath the southwestern portion of the Huling property contaminated with GRPH, ORPH, and benzene is limited to a small area near the former 500-gallon waste oil UST (in the Huling service garage located approximately 400 feet from the SKS Shell Property). The vertical extent of soil contamination in this area is approximately 13 feet bgs. Soil contaminated with ORPH is also located in an isolated area in the central portion of the Huling property. The vertical extent of ORPH contamination is approximately 8 feet bgs and was laterally bound by four nearby borings that did not encounter detectable ORPH.

Concentrations of PCBs were not detected in SoundEarth soil samples collected from any borings near the waste oil UST or elsewhere on the Huling property.

Laboratory analytical results for groundwater samples collected from monitoring wells on the Huling property show that groundwater has not been significantly impacted by any releases of COCs to the subsurface soil. A monitoring well (SMW03) installed approximately 25 feet upgradient to the south of the SKS Shell Property contained no detectable VOCs, dissolved metals, GRPH, or ORPH. A concentration of 280 micrograms per liter (µg/L) DRPH was detected in SMW03, below the MTCA cleanup level of 500 µg/L.

2.7.3 Adjoining Kennedy Property

A remedial investigation of the Kennedy property was conducted by SoundEarth between August and December 2012 (SoundEarth 2013a). A total of 11 soil borings were conducted, with two completed as monitoring wells. The two monitoring wells (SMW04 and MW106) were also conducted to assess potential for impacts from the SKS Shell Site to evaluate whether groundwater beneath the Kennedy property was impacted by the release of heating oil to the subsurface.

The results of the remedial investigation indicate that PCS is located beneath the Kennedy property in the area of the operational heating oil UST. The vertical extent of heating oil-impacted soil is approximately 20 feet bgs, and it is laterally bounded to the north by SMW04, to the west by two nearby borings, to the south by a boring located in the alley, and to the east by MW106.

Laboratory analytical results for the groundwater sample collected from monitoring well MW106 show that groundwater has not been impacted by the release of heating oil on the Kennedy property (Figure 7, cross section C-C'). However, a concentration of GRPH exceeding the applicable CUL was detected in monitoring well SMW04, located in the northeast corner of the Kennedy property. Groundwater beneath this area of the Kennedy property has been impacted by the SKS Shell plume (Figure 10).

2.8 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) identifies suspected sources of contamination, affected media, transport mechanisms, contaminant fate, potential receptors, and exposure pathways. A CSM serves as a basis for developing technically feasible cleanup alternatives and for selecting a final cleanup action. A CSM is dynamic and may be refined throughout implementation of a cleanup action as additional information becomes available. Figure 11 provides a visual representation of the information presented below.

This section discusses the components of the CSM developed for the Site, based on completion of the various phases of investigation conducted by SoundEarth and others. Included in the following sections is a discussion of the confirmed and suspected source areas, affected media, COCs, contaminant fate and transport, the preliminary exposure assessment, and the CSM summary.

2.8.1 Confirmed and Suspected Source Areas

Soil beneath the SKS Shell Property is impacted by GRPH, DRPH, and BTEX at depths generally ranging from 12 to 25 feet bgs throughout much of the northern and eastern two-thirds of the SKS Shell Property. As noted in Section 2.2.1, the condition of the USTs removed in December 2013 appeared good, with no significant leaks observed. Therefore, the source of the contamination was likely the previous UST systems (the 1934 or 1950-vintage systems). The exact location of previous tanks was not determined. However, based on the pump and canopy locations from the 1930s through the 1970s (consistently near the northeast corner, as shown in the cover page photograph) the pre-existing USTs were likely within the northern and eastern two-thirds of the SKS Shell Property.

Certain DRPH found on the SKS Shell Property appears to be aged gasoline, likely from before the 1970s. Operators of the gas station during this time frame included Gilmore Red Lion, Mobil Oil, Texaco, and Atlantic Richfield.

An estimate of the vertical extent of subsurface contamination is presented in Figures 5 and 6. Groundwater sampled from monitoring wells at the SKS Shell Property contains concentrations of GRPH, DRPH, and BTEX exceeding applicable MTCA Method A CULs. In addition, separate-phase hydrocarbon has intermittently been detected in several monitoring wells on the SKS Shell Property. Based on the general groundwater flow direction, the contaminant plume has the potential to migrate toward the Fauntleroy Way and Alaska Street intersection. However, the relatively low concentrations of COCs in the groundwater samples collected from downgradient monitoring wells MW105 (or non-detect values for MW101, MW102, and MW103) located in ROWs to the east and northeast of the SKS Shell Property indicate that the contaminated groundwater plume has migrated only into the sidewalk area slightly beyond the SKS Shell Property into Fauntleroy Way (Figure 10).

2.8.2 Chemicals of Concern

Based on the findings from the investigations conducted at the Site, the primary COCs for the Site are GRPH, DRPH, and BTEX.

2.8.3 Media of Concern

Based on results from previous investigations, concentrations of GRPH, DRPH, and BTEX have been confirmed in soil and groundwater at the Site at concentrations that exceed applicable MTCA Method A CULs. The distribution of these contaminants in the affected media has been

investigated sufficiently for definition of the Site under MTCA and subsequent evaluation of remedial alternatives.

2.8.4 Conceptual Site Model Summary

Soil and/or groundwater beneath the Site contain concentrations of GRPH, DRPH, and/or BTEX that exceed applicable MTCA Method A CULs. Contaminants originating at the SKS Shell Property extend slightly into Fauntleroy Way Southwest and Southwest Alaska Street, immediately downgradient of the SKS Shell Property. Soil and groundwater data indicate the soil and groundwater impacts have the same areal extent.

There are two general types of receptors that are potentially at risk from exposure associated with the presence of petroleum hydrocarbons in soil and groundwater at the Site. The receptors include terrestrial wildlife (terrestrial birds and burrowing animals) and humans (commercial, environmental, utility, and construction workers). Because the Site qualifies for a Terrestrial Ecological Evaluation exclusion based on WAC 173-340-7491, mitigating the potential human health risk, if any, associated with exposure to the petroleum hydrocarbons in the affected medium at the Site will be the primary objective of any cleanup action implemented. The potential exposure pathways for soil at the Site include direct contact, inhalation of airborne soil, and inhalation of vapors. The potential exposure pathways for groundwater and the potential receptors include direct contact with contaminated groundwater and inhalation of volatile organics. The primary receptors for these exposure pathways include environmental field personal and construction and utility workers. Currently, the inhalation pathway for vapors may be complete for commercial workers at the Kennedy funeral home and the SKS Shell Property. During redevelopment of the Site, direct contact with soil and groundwater, inhalation of airborne soil, and inhalation of vapors pathways are potentially complete for construction, utility, and environmental workers. At the completion of the redevelopment, engineering and institutional controls will eliminate the direct contact and inhalation pathways at the Site for commercial workers and residents.

3.0 TECHNICAL ELEMENTS

The remedial action objectives (RAO) developed for the Site were used to define the technical elements for the screening evaluation and to select remedial alternatives as part of the feasibility study conducted for the Site and discussed in Section 4.0, below. The technical elements include applicable or relevant and appropriate requirements (ARAR), COCs, media of concern, and cleanup standards.

3.1 REMEDIAL ACTION OBJECTIVES

RAOs are statements of the goals that a remedial alternative should achieve in order to be retained for further consideration as part of the feasibility study. The purpose of establishing RAOs for a site is to provide remedial alternatives that protect human health and the environment (WAC 173-340-350). In addition, RAOs are designated in order to:

- Implement administrative principles for cleanup (WAC 173-340-130).
- Meet the requirements, procedures, and expectations for conducting a feasibility study and developing cleanup action alternatives, as discussed in WAC 173-340-350 through 173-340-370.
- Develop CULs (WAC 173-340-700 through 173-340-760) and remedial alternatives that are protective of human health and the environment.

In particular, RAOs must address the following threshold requirements from WAC 173-340:

- Protect human health and the environment.
- Comply with CULs.
- Comply with applicable state and federal laws.
- Provide for compliance monitoring.

There are two RAOs for this Site. The first RAO consists of bringing the SKS Shell Property into compliance with the applicable soil and groundwater cleanup criteria for each of the COCs. The second RAO is to bring those portions of the Site located outside of the SKS Shell Property boundary into compliance with soil and groundwater cleanup criteria for each of the COCs and obtain a Certificate of Completion for the SKS Shell Property.

3.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Under WAC 173-340-350 and 173-340-710, applicable requirements include regulatory cleanup standards, standards of control, and other environmental requirements, criteria, or limitations established under state or federal law that specifically address a contaminant, remedial action, location, or other circumstances at a site.

MTCA regulations define relevant and appropriate requirements as:

> Those cleanup action standards, standards of control, and other human health and environmental requirements, criteria or limitations established under state and federal law that, while not legally applicable to the hazardous substance, cleanup action, location, or other circumstances at a site, the department determines address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site.

The criteria specified in WAC 173-340-710(4) will be used to determine if a requirement is relevant and appropriate.

Remedial actions conducted under MTCA must comply with the substantive requirements of the ARARs but are exempt from their procedural requirements (WAC 173-340-710[9]). Specifically, this exemption applies to state and local permitting requirements under the Washington State Water Pollution Control Act, Solid Waste Management Act, Hazardous Waste Management Act, Clean Air Act, State Fisheries Code, and Shoreline Management Act.

ARARs were screened to assess their applicability to the Site. The following table summarizes the preliminary ARARs for the Site:

Preliminary ARARs for the Site

Preliminary ARAR	Citation or Source
MTCA	Chapter 70.105 of the Revised Code of Washington (RCW)
MTCA Cleanup Regulation	WAC 173-340

Preliminary ARAR	Citation or Source
Ecology, Toxics Cleanup Program – Guidance To Be Considered	*Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, Review DRAFT, October 2009, Publication No. 09-09-047
State Environmental Policy Act	RCW 43.21C
Washington State Shoreline Management Act	RCW 90.58; WAC 173-18, 173-22, and 173-27
The Clean Water Act	33 United States Code [USC] 1251 et seq.
Comprehensive Environmental Response, Compensation, and Liability Act of 1980	42 USC 9601 et seq. and Part 300 of Title 40 of the Code of Federal Regulations [40 CFR 300]
The Fish and Wildlife Coordination Act	16 USC 661-667e; the Act of March 10, 1934; Ch. 55; 48 Stat. 401
Endangered Species Act	16 USC 1531 et seq.; 50 CFR 17, 225, and 402
Native American Graves Protection and Repatriation Act	25 USC 3001 through 3013; 43 CFR 10 and Washington's Indian Graves and Records Law (RCW 27.44)
Archaeological Resources Protection Act	16 USC 470aa et seq.; 43 CFR 7
Washington Dangerous Waste Regulations	WAC 173-303
Solid Waste Management Act	RCW 70.95; WAC 173-304 and 173-351
Occupational Safety and Health Administration Regulations	29 CFR Parts 1910, 1926
Washington Department of Labor and Industries Regulations	WAC 296
Water Quality Standards for Surface Waters of the State of Washington	RCW 90.48 and 90.54; WAC 173-201A
Water Quality Standards for Ground Water	WAC 173-200
Department of Transportation Hazardous Materials Regulations	40 CFR Parts 100 through 185
Washington State Water Well Construction Act	RCW 18.104; WAC 173-160
City of Seattle regulations, codes, and standards	All applicable or relevant and appropriate regulations, codes, and standards
King County regulations, codes, and standards	All applicable or relevant and appropriate regulations, codes, and standards

3.3 CHEMICALS AND MEDIA OF CONCERN

The COCs for the Site are those compounds that were detected at concentrations exceeding their respective CULs. The depth of the planned excavation for the SKS Shell Property is expected to incorporate all soil that exhibits COC concentrations exceeding applicable cleanup levels. The soil will be

transported off the Site for disposal at an appropriate land disposal site. The media and associated COCs are shown in the table below:

Media of Concern	Chemicals of Concern
Soil	GRPH, DRPH, BTEX
Groundwater	GRPH, DRPH, BTEX

NOTES:
BTEX = benzene, toluene, ethylbenzene, and total xylenes
DRPH = diesel-range petroleum hydrocarbons
GRPH = gazoline-range petroleum hydrocarbons

3.4 CLEANUP STANDARDS

The selected cleanup alternative must comply with the MTCA cleanup regulations specified in WAC 173-340 and with applicable state and federal laws. The CULs selected for those portions of the Site located within the SKS Shell Property boundary and for the greater Site are consistent with the RAOs, which state that the remedial objective is to reduce concentrations of COCs in soil and groundwater beneath the Site to below their applicable groundwater CULs. In addition to mitigating risks to human health and the environment, achieving the RAOs will allow Ecology to issue a certificate of completion for the SKS Shell Property. The associated media-specific CULs for the identified COCs are summarized in the Sections 3.4.1 and 3.4.2 below.

3.4.1 Cleanup Levels

The CULs for the media and COCs are tabulated below, including the source of the cleanup standard. The proposed CUL for impacted soil beneath the SKS Shell Property is the MTCA Method A Standard Formula Value for COCs. The proposed cleanup levels for groundwater at the Site are the MTCA Method A CULs for Unrestricted Land Use for COCs that have a Method A CUL.

Proposed Cleanup Levels for Soil

COC	Cleanup Level (mg/kg)	Source
GRPH	30	MTCA Method A, Unrestricted; WAC 173-340-740(2)(b)(i)
DRPH	2,000	
Benzene	0.03	
Toluene	7	
Ethylbenzene	6	
Total xylenes	9	

NOTES:
COC = chemical of concern
DRPH = diesel-range petroleum hydrocarbons
GRPH = gasoline-range petroleum hydrocarbons
mg/kg = milligrams per kilogram
MTCA = Washington State Model Toxics Control Act
WAC = Washington Administrative Code

Proposed Cleanup Levels for Groundwater

COC	Cleanup Level (µg/L)	Source
GRPH	800	
DRPH	500	
Benzene	5	
Toluene	1,000	MTCA Method A, Table Value; WAC 173-340-720(3)(b)(i)
Ethylbenzene	700	
Total xylenes	1,000	

NOTES:
µg/L = micrograms per liter
COC = chemical of concern
DRPH = diesel-range petroleum hydrocarbons
GRPH = gasoline-range petroleum hydrocarbons
MTCA = Washington State Model Toxics Control Act
WAC = Washington Administrative Code

3.4.2 Points of Compliance

The point of compliance is the location where the enforcement limits that are set in accordance with WAC 173-200-050 will be measured and cannot be exceeded (WAC 173-200-060). Once the CULs have been attained at the defined points of compliance, the impacts present beneath the Site will no longer be considered a threat to human health or the environment.

3.4.2.1 Point of Compliance for Soil

In accordance with WAC 173-340-740 (6) (b-d), the point of compliance for direct contact exposure is throughout the SKS Shell Property from the ground surface to 15 feet bgs, which is a reasonable estimate of the depth of soil that could be excavated and distributed at the soil surface as a result of development activities. All soil containing concentrations of COCs above the MTCA Method A CULs will be over-excavated and removed from the SKS Shell Property.

3.4.2.2 Point of Compliance for Groundwater

In accordance with WAC 173-340-720(8)(a)(b), the point of compliance for groundwater is defined as the uppermost level of the saturated zone extending vertically to the lowest depth that potentially could be impacted by the COCs throughout the Site.

4.0 SELECTED CLEANUP ACTION

This section summarizes the feasible remedial alternatives reviewed during the feasibility study and outlines the components associated with the selected cleanup alternative.

4.1 EVALUATION OF FEASIBLE CLEANUP ALTERNATIVES

Remedial components (technologies) were evaluated with respect to the degree to which they comply with the cleanup requirements set forth in MTCA. According to MTCA, a cleanup alternative must satisfy all of the following threshold criteria as specified in WAC 173-340-360(2):

- Protect human health and the environment.
- Comply with cleanup standards.
- Comply with applicable state and federal laws.
- Provide for compliance monitoring.

These criteria represent the minimum standards for an acceptable cleanup action.

WAC 173 340-360 (2)(b) also requires the cleanup action alternative to:

- Use permanent solutions to the maximum extent practicable.
- Provide for a reasonable restoration time frame.
- Consider public concerns on the proposed cleanup action alternative.

Using the above criteria, several remedial technologies were evaluated and screened for effectiveness, implementability, and relative cost to produce a short list for further inclusion in the development of alternatives. Table 6 of the FS Report (SoundEarth 2013b) summarizes the remedial component screening process. The remedial components that passed the screening process include the following:

- **Excavation and Land Disposal of Contaminated Soil (Source Removal).** For the purposes of this FS, the excavation of contaminated soil from the SKS Shell Property will result in the complete removal of the ongoing source of COCs to the groundwater (Figures 5 through 7). Land disposal is the act of removing contaminated soil from an uncontrolled condition and placing it in a controlled condition where it will produce fewer adverse environmental impacts. A controlled condition generally refers to engineered landfills that feature low permeability liners, witness systems, and leachate collection systems to prevent the disposed soil from leaching into the environment and mitigate future liability associated with the contamination.
- **Dewatering during Excavation (Source Removal).** Dewatering is the process of pumping groundwater collected in sumps, trenches, and wells along the northeast construction excavation perimeter, at the SKS Shell Property, to provide a more thorough cleanup of groundwater during the SKS Shell Property development.
- **Soil Vapor Extraction (SVE).** SVE is the process of inducing a pressure and concentration gradient in the subsurface to cause volatile compounds, such as petroleum hydrocarbons, to desorb from the soil and flow with the vapor stream to a common collection point for discharge or treatment.
- **Air Sparging (AS).** AS involves the injection of oxygen through the contaminated aquifer. The oxygen creates an underground air stripper that removes volatile compounds from saturated soil by volatilizing the contaminants into the unsaturated zone for uptake by a SVE system. Recovered vapor is discharged to the atmosphere and may require pre-treatment before discharge. In addition to the physical removal of volatile compounds, the added oxygen can enhance biodegradation in both saturated and unsaturated soil.
- **Biosparging.** Biosparging is an air or oxygen delivery system that uses lower air flow rates than an AS system. The goal of biosparging is to increase dissolved oxygen in the subsurface and stimulate biodegradation. The volatile compounds are degraded as dissolved phase and vapor phase contaminants slowly move through the biologically active soil.
- **In Situ Chemical Oxidation.** Sodium persulfate has proven to be an effective chemical oxidant for the treatment of GRPH and BTEX in groundwater. A solution of sodium persulfate activated by a 10 percent solution of hydrogen peroxide will be injected into the groundwater to chemically oxidize the COCs and provide an oxygen source to stimulate aerobic biodegradation of COCs.

- **Impermeable Vapor and Water Barrier.** Impermeable vapor barriers are materials that exhibit very low gas flow permeability and that can prevent the intrusion of vapor-phase COCs into the interior of the building. The foundation of the future SKS Shell Property development will include the floor and walls of a two-level, belowground parking garage. An impermeable membrane or liner will be placed along the northeast SKS Shell Property, extending over the majority of the SKS Shell Property, boundary before pouring the concrete foundation and walls to act as a permanent vapor and water barrier to contaminant migration. The liner will mitigate intrusion of both water and vapor; the parking garage and the associated venting system will provide an effective vapor intrusion barrier for the new building.
- **Monitored Natural Attenuation.** Monitored natural attenuation refers to the methods used to evaluate whether natural attenuation processes are effectively remediating a contaminant plume, and if so, at what rate. Contaminants released to the environment in concentrations that pose risks to human health or the environment are subject to natural degradation processes such as volatilization, diffusion, biotic and abiotic reactions, and dilution. These naturally occurring attenuation processes are distinguished from an engineered remedy employed to increase the rate of remediation above the rate observed through these "natural" processes. In many cases, natural attenuation is the most cost-effective means for achieving CULs.

  Monitored natural attenuation is retained as a complimentary remedial component to other engineered remedial components rather than as a stand-alone or sole remedial component. Under MTCA, monitored natural attenuation can be considered an active remedial measure if site conditions conform to the expectations listed in WAC 173-340-370(7), as follows:

  - Source control (including removal and/or treatment of hazardous substances) has been conducted to the maximum extent practicable.
  - Leaving contaminants in place during the restoration time frame does not pose an unacceptable threat to human health or the environment.
  - There is evidence that natural biodegradation or chemical degradation is occurring and will continue to occur at a reasonable rate at the site.
  - Appropriate monitoring requirements are conducted to ensure that the natural attenuation process is taking place and that human health and the environment are protected.

4.2 SELECTED ALTERNATIVE DEVELOPMENT AND DESCRIPTION

The development of cleanup alternatives considered only those remedial components that effectively treat the COCs in the affected media of concern and that are conducive to the future Property development plan. The development plan involves installing two levels of belowground parking and constructing a mixed-use (office/retail) commercial building. The entire Property will be excavated to a depth of 25 to 30 feet bgs. Excavating the entire Property to this depth will remove all soil exhibiting COCs above the respective cleanup levels, thereby eliminating the principal source of groundwater contamination.

Three cleanup alternatives were developed that were comprised of various combinations of the remedial components retained from the component screening step. Common to all alternatives was the excavation and off-site land disposal of soil exceeding the cleanup levels, excavation dewatering, and

ROW dewatering. The alternatives differed only in the type of treatment employed to remediate residual soil and groundwater beneath the ROW.

The three alternatives included the following:

- Cleanup Action Alternative 1, Excavation Soil with ROW Dewatering and Chemical Oxidation.
- Cleanup Action Alternative 2, Excavation of Soil with Biosparging of Groundwater.
- Cleanup Action Alternative 3, Excavation of Soil with Air Sparging and SVE.

The alternatives were evaluated in accordance with the MTCA criteria for protectiveness, permanence, long-term effectiveness, short-term risk management, and implementability. Table 10 from the RI/FS Report shows how each cleanup action alternative was evaluated and ranked for each of the MTCA criteria above (SoundEarth 2013b). All of the cleanup action alternatives provide similar measure of protectiveness for human health and environment as a result of source removal. Cleanup Action Alternative 1 provides the shortest remedial time frame due to the direct oxidation of COCs, is readily implementable, does not involve the installation of subsurface infrastructure, and does not involve long term operation and maintenance costs. A disproportionate cost analysis was also conducted for the alternatives. Cleanup Action Alternative 1 exhibited the lowest cost-to-benefit analysis compared to competing alternatives.

After performing the comparative analysis and ranking of alternatives, Cleanup Action Alternative 1, Excavation of Soil with ROW Dewatering and Chemical Oxidation is the recommended alternative. Figures 12 through 18 provide an illustration of the conceptual implementation of this cleanup action alternative.

Cleanup Action Alternative 1 entails three successive steps: 1) the full source removal excavation within the limits of the SKS Shell Property; 2) dewatering of the immediate vicinity groundwater plume; and 3) chemical oxidation injections to address residual soil and groundwater contamination beneath the ROW. This combination of remedial methods is the recommended alternative because it achieves the RAOs, meets the requirements set forth in WAC 173-340-360(3) and WAC 173-340-370, and is the most favorable with respect to the established evaluation and ranking criteria. Cleanup Action Alternative 1 also exhibits the lowest cost-to-benefit ratio compared to the comparative alternatives. Cleanup Action Alternative 1 includes the following components (elevation and depth are presented in elevations above NAVD88).

4.2.1 Excavation Area

The entire SKS Shell Property will be excavated from lot-line to lot-line, as discussed in greater detail below. The Remedial Excavation Area is defined as the vertical and horizontal limit of soil exhibiting detectable concentrations of COCs within the SKS Shell Property boundary (Figures 5 through 7 and 12). Removal of USTs was conducted before the construction excavation. The removal was conducted in December 2013, in accordance with Ecology's UST regulations, WAC 173-360.

4.2.2 Demolition

Because the remediation activities will be conducted as part of a larger redevelopment project, all buildings on the SKS Shell Property will be demolished before beginning shoring and

excavation. A hazardous materials survey will be conducted before building demolition. Any necessary abatement of hazardous materials will be performed by a qualified contractor.

4.2.3 Shoring

Shoring would be required to protect the safety of personnel working in the excavation and the surrounding infrastructure in ROWs and properties from damage due to slope failure. The shoring would enable the removal of source contaminated soil for SKS Shell Property redevelopment to an approximate elevation of approximately 247 feet above NAVD88 (approximately 23 to 28 feet below grade). Shoring will be installed around the entire perimeter of the redevelopment. Footing drains will be completed along the exterior perimeter of the foundation to collect any groundwater that may come into contact with the structure. Considering the anticipated depth of the shoring and excavation project and the primary water-bearing zone relative to the depth of the excavation (approximately 1 to 2 feet below the final grade), any groundwater collected at the footing drains would likely be limited in volume.

4.2.4 Remedial Excavation Area

Although CULs protective of an unrestricted land use are proposed for soil across the SKS Shell Property, soil containing detectable concentrations of COCs will be excavated in an effort to remove the ongoing source of contamination to groundwater and provide a reasonable restoration time frame. The depth of the Remedial Excavation Area varies across the SKS Shell Property from approximately 25 to 30 feet. The volume of soil within the Remedial Excavation Area would be approximately 13,000 tons. Soil will be excavated within the confines of the shoring as designed by the civil engineer and will be directly loaded into trucks for off-property land disposal at a permitted Subtitle D landfill.

4.2.5 Excavation Trench Dewatering

A dewatering trench will be installed adjacent to the northeast excavation perimeter to remove and treat groundwater encountered during excavation activities and any accumulated surface water during the course of the excavation (Figure 13). Excavation dewatering will facilitate soil removal activities within the shallow water-bearing zone. The groundwater will be pumped to a temporary water storage tank and removed periodically by a vacuum truck service for treatment and disposal.

4.2.6 Right-of-Way Dewatering

To provide a more thorough groundwater cleanup during SKS Shell Property redevelopment, groundwater will be pumped from vertical extraction wells located adjacent to the northeast excavation perimeter on the SKS Shell Property and within the Fauntleroy Way Southwest and Southwest Alaska Street sidewalk (Figures 14 and 16). With an anticipated radius of influence of 15 feet, 3 to 4 months of continual dewatering of this area of the Site is anticipated (corresponding to the time period of excavation). The groundwater will be pumped to a temporary aboveground water storage tank prior to being removed by a vacuum truck service for off-property disposal at a regulated facility.

The dewatering system will remove approximately 3 pore volumes or 50,000 gallons of water during the 3 to 4 month time period and will expedite the remediation of groundwater beneath the ROW by physically removing contaminated groundwater. The dewatering system is just one component of the cleanup action and is not meant to act as a permanent groundwater pump

and treat system. The dewatering system is complimentary to the source removal activities and additional groundwater treatment is planned via in situ chemical oxidation.

4.2.7 In Situ Chemical Oxidation

Once the temporary dewatering system is decommissioned, the next phase of remediation will be initiated by injection of a chemical oxidant. A solution of sodium persulfate activated by hydrogen peroxide will be injected into each of the eight remediation wells and MW104 to address residual soil and groundwater contamination beneath the ROW (Figure 14). Approximately 300 gallons or two batches will be injected into each well. The chemical oxidant will chemically oxidize the COCs and provide an oxygen source to stimulate aerobic biodegration of COCs. A second contingency injection is proposed if COCs in compliance monitoring wells remain above the MTCA Method A cleanup levels after 2 years.

4.2.8 Impermeable Vapor and Water Barrier

The removal of all soil contamination via excavation, the substantial thickness of the proposed foundation, and the belowground structure and venting system will prevent intrusion and/or collection of unsafe levels of COC vapors into the parking garage and above-grade building. In addition, an impermeable vapor and water barrier will extend over most of the SKS Shell Property to act as a permanent vapor and water barrier to contaminant migration (Figures 13 and 14).

4.3 MONITORED NATURAL ATTENUATION OF GROUNDWATER

Monitored natural attenuation is retained as a complimentary remedial component to other engineered remedial components rather than as a stand-alone or sole remedial component. In accordance with WAC 173-340-370, monitored natural attenuation is an appropriate supplement to the active treatment approach for the following reasons: source control (excavation) will be conducted to the maximum extent practicable, and the concentrations and locations of the contaminated groundwater do not pose an unacceptable risk to human health or the environment.

4.4 CLEANUP ACTION OBJECTIVES.

As discussed above, the objectives of the cleanup action for the Site established in consideration of the future use of the SKS Shell Property include the following:

- Excavate on-property soil containing petroleum hydrocarbons and BTEX at concentrations that present a risk to human health and the environment.
- Remove petroleum hydrocarbons and BTEX impacted-groundwater from the adjoining Fauntleroy Way Southwest and Southwest Alaska Street ROWs.
- Provide engineering controls to mitigate any potential vapor intrusion and recontamination of the SKS Shell Property.
- Chemical oxidation of soil and groundwater beneath the Fauntleroy Way Southwest and Southwest Alaska Street ROWs.
- Meet the requirements of a Prospective Purchaser Consent Decree for the SKS Shell Property.

5.0 CLEANUP ACTION IMPLEMENTATION PLAN

This section provides a description of the cleanup action components that would be implemented to remediate soil and groundwater beneath the Site containing concentrations of COCs exceeding the cleanup levels.

5.1 CLEANUP ACTION IMPLEMENTATION DOCUMENTS

A detailed Sampling and Analysis Plan (SAP) and Health and Safety Plan (HASP) were prepared as part of the CAP and are appended to this report. The purpose of the SAP is to ensure that the sample collection, handling, and analysis conducted after completion of the cleanup action will result in data that meet the data quality objectives for the cleanup action at the Site. The SAP includes requirements for sampling activities, including sampling frequency and location, analytical testing, documentation, and quality assurance/quality control for compliance monitoring. The SAP also defines the data quality objectives and standard operating procedures for the cleanup action and details regarding sample collection and analysis, including sample collection procedures, analytical methods, quality assurance/quality control procedures, and data quality reviews (Appendix A).

The purpose of the HASP is to outline the Site-specific health and safety requirements for the cleanup action. The HASP includes guidelines to reduce the potential for injury during implementation of the cleanup action, as well as incident preparedness and response procedures, emergency response and evacuation procedures, local and project emergency contact information, appropriate precautions for potential airborne contaminants and Site hazards, and expected characteristics of the waste generated by the proposed work (Appendix B).

5.2 CONSTRUCTION ACTIVITY SUMMARY, EXCAVATION AND LAND DISPOSAL OF CONTAMINATED SOIL

This section summarizes the construction activities and procedures included in the cleanup action. The excavation contractor will mobilize to the SKS Shell Property and set up operational areas necessary to implement the cleanup action. The limits of the remedial excavation are shown on Figure 16 and Site work will generally proceed as described in the following sections.

5.2.1 Site Preparation and Mobilization

Before initiating construction activities, temporary erosion and sediment control (TESC) measures will be established as part of the larger construction excavation project. Once all TESC measures are implemented in accordance with the construction project plan, construction equipment and supplies will be mobilized to the Site.

A soil boring/monitoring well will be installed on the adjoining Kennedy property to further evaluate the northwestern extent of petroleum impacts (well MW107 shown on Figure 14).

5.2.2 Demolition and Underground Storage Tank Decommissioning

A hazardous materials survey will be completed for all the buildings on the SKS Shell Property before demolition. If abatement measures are necessary, the contractor will perform these activities prior to the demolition of the buildings.

All known USTs on the SKS Shell Property have been decommissioned and a UST site assessment was conducted under the oversight of a Washington State-certified UST site assessor in

accordance with the *Guidance for Site Checks and Site Assessment for Underground Storage Tanks* (Ecology 2003), *Underground Storage Tank Regulations* (WAC 173-360), and *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2011).

5.2.3 Well Decommissioning

Monitoring wells within the footprint of the excavation area will be decommissioned by a licensed well driller or under the supervision of a professional engineer, in accordance with the Ecology Water Well Construction Act (1971), RCW 18.104 (WAC 173-160-460). The wells will be abandoned in place using bentonite clay. A summary of the wells to be decommissioned is provided in Table 4.

5.2.4 Shoring Installation

Shoring will be installed around the entire perimeter of the redevelopment and will consist of a soil nail wall. The shoring design will be incorporated into the future development plans and are not presented in this CAP. Shoring will be installed in 5- to 10-foot increments as the excavation proceeds to facilitate the safe excavation of contaminated soil to the required depth. Placement of vertical dewatering wells will be coordinated with the geotechnical engineer during the shoring wall design.

5.2.5 Shoring and Excavation Sequence

The bulk excavation will begin after the completion of the following items:

- Installing TESC measures.
- Establishing site security and fencing.
- Demolishing existing buildings.
- Preparing ingress and egress pathways.
- Decommissioning monitoring wells within the Remedial Excavation Area.
- Decommissioning and removal of USTs.
- Installing the shoring system.
- Setting up a storage tank to contain groundwater pumped from the vertical extraction well, surface water runoff/infiltration, and construction dewatering for off-Site treatment and disposal.

Approximately 13,000 tons of contaminated soil will be excavated and disposed of at a Subtitle D landfill. SoundEarth will use a soil management grid, which breaks the entire Remedial Excavation Area into 10-foot by 10-foot grid cells, to readily identify and classify each grid cell for proper off-Site disposal. Soil will be visually inspected for staining, sheen, and odor. In addition to physical observations, a photoionization detector will be used to quantitatively measure VOCs in the soil. Samples of PCS will be periodically collected and submitted to a laboratory for analysis of COCs for characterization and documentation purposes. As the excavation proceeds vertically downward, the soil nail wall will be extended in accordance with the shoring wall design. The excavation will be coordinated to first address the contaminated soil along the northeast corner of the SKS Shell Property due to the deeper extent of PCS.

When performance samples show that all of the PCS has been removed from the identified Remedial Excavation Areas, the larger redevelopment excavation and soil screening will resume. The contractor will make an effort to minimize the cross-contamination of clean soil during the excavation of the Remedial Excavation Area by directly loading the contaminated soil, if feasible, and minimizing tracking of soil across the SKS Shell Property, by establishing an exclusion zone and placing Site controls such as tire and truck wash stations at the edge of the exclusion zone; and by limiting the excavation daily to only remove contaminated soil to ensure proper decontamination of equipment before excavating clean soil, if feasible.

5.2.5.1 Contingency Plan to Address Unknown Contamination

The presence of aesthetic impacts and conditions encountered by SKS Shell Property employees and equipment operators during the construction excavation activities at the SKS Shell Property may be indicative of conditions associated with contaminated media. Equipment operators will be instructed to use these criteria to alert the Site superintendent and construction manager of potential issues of previously unidentified contamination at the SKS Shell Property, in accordance with the communication plan (Figure 17). Any of the following occurrences are considered common sense criteria that may require a mitigation or remediation response. These criteria include, but are not limited to:

- Obvious petroleum staining, sheen, or colored hues in soil or standing water.
- The presence of petroleum products or leachate of other chemicals.
- The presence of utility pipe lines with sludge or trapped liquid indicating petroleum or chemical discharge sludge.
- The presence of buried pipes, conduits, tanks, or unexplained metallic objects or debris.
- Materials with a granular texture that suggests industrial origin.
- Vapors causing eye irritation or nose tingling or burning.
- White, chalky compounds or fine particulate soil layers.
- Presence of gasoline- or oil-like vapor or odor.
- Burnt debris or the presence of slag-like material.

Any criteria identified by on-Site personnel will be evaluated and, as appropriate, a sampling plan will be developed to properly characterize and manage the material in accordance with state and federal regulations.

In the event that a previously unidentified UST is encountered during the course of the excavation activities, a UST site assessment will be conducted under the oversight of a Washington State-certified UST site assessor, and the UST will be removed in accordance with the *Guidance for Site Checks and Site Assessment for Underground Storage Tanks* (Ecology 2003), *Underground Storage Tank Regulations* (WAC 173-360), and *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2011). In the event that impacts to soil are observed, performance and confirmational soil samples will be collected and analyzed to ensure that the contaminated soil is removed and properly characterized before disposal.

5.2.6 Excavation Trench Dewatering

The excavation across the SKS Shell Property will extend below the groundwater table in any specific areas where petroleum-impacted soils require over-excavation. In order to facilitate the removal of contamination, groundwater that infiltrates and accumulates at the base of the excavation will be collected in sumps or trenches installed along the northern and eastern perimeter of the SKS Shell Property and pumped to a water storage tank (Figure 13). Because, as discussed above, the final elevation of the excavation is anticipated to be approximately 248 feet above NAVD88, or approximately 1 to 2 feet above the top of the primary water-bearing zone, extensive dewatering is not anticipated. Water that is generated from surface water runoff due to precipitation events and any groundwater encountered during the course of the excavation will be gathered at a low point in the excavation, as determined by the contractor, and pumped into a 6,900-gallon polyethylene aboveground water storage tank that will be stored on the SKS Shell Property. The storage tank will be located in an area that is accessible for a vacuum truck service to remove the contaminated water and transport it for off property treatment and disposal. The water storage tank will be emptied, as needed, and water levels will be monitored by personnel to ensure that an adequate capacity is maintained in the storage tank.

5.2.7 Parking Structure

Construction of the subgrade parking structure will commence after the excavation is completed. Architectural details for the project are not currently available; however, preliminary plans are to construct two levels of below-grade parking. Footing drains will be completed along the exterior perimeter of the foundation to collect any groundwater that may come into contact with the structure. Considering the depth of the excavation (approximately 247 feet above NAVD88) and as the location of the primary water-bearing zone (approximately 246 feet above NAVD88), any groundwater collected at the footing drains is likely to be limited in volume.

The concrete shoring and foundation system will be constructed to act as a barrier to recontamination and vapor intrusion from the groundwater plume within the ROWs. Any vapor intrusion into the subgrade parking structure will be further mitigated by the venting system typically incorporated into such structures to avoid buildup of carbon monoxide and petroleum fumes generated by running vehicle engines.

5.3 CONSTRUCTION ACTIVITY SUMMARY, RIGHT-OF-WAY DEWATERING, CHEMICAL OXIDATION INJECTION, AND BARRIER SYSTEM

Before the start of excavation activities, the temporary ROW dewatering system will be installed and will operate for the duration of the excavation. When the excavation activities are completed, the vapor and water barrier will be installed before the concrete foundation and walls. Once the ROW dewatering system is decommissioned, a chemical oxidation injection will be completed. The following Sections 5.3.1 through 5.3.5 describe the temporary ROW dewatering system design, remediation and monitoring well installation, vapor and water barrier, chemical oxidation injection, and well decommissioning.

5.3.1 Right-of-Way Dewatering System

The ROW dewatering system will be installed before beginning excavation activities and will operate for 3 to 4 months during the course of the excavation. The dewatering system is

comprised of nine extraction wells. The remediation wells are spaced approximately 15 feet apart (Figure 14). Soil samples will be collected at 5-foot depth intervals from four of the wells. Groundwater will also be sampled from four wells to further define the extent of groundwater impacts.

The ROW dewatering system will remove approximately 3 pore volumes for an estimated 50,000 gallons, from the northeast corner of the SKS Shell Property, and Fauntleroy Way Southwest and Southwest Alaska Street ROWs.

Electric submersible pumps will be placed at the bottom of each remediation well to extract groundwater from the formation and pump the water to the 6,900-gallon aboveground water storage tank. The remediation piping and electrical supply for the pumps will all be placed aboveground and will run along the shoring wall to minimize interference with the planned development underground utilities beneath Fauntleroy Way Southwest and Southwest Alaska Street ROWs.

Based on the aquifer test performed on March 19, 2013, the anticipated long-term average extraction rate from each remediation well is 0.5 gallons per minute (gpm) for a total of 4.5 gpm for the combined system. The 15-foot spacing of the remediation wells is based on the anticipated long-term pumping rates that will likely be achieved given the aquifer hydraulic characteristics, while increasing the cumulative drawdown of the shallow water-bearing zone between individual wells during the 3 to 4 months of system operation. The modeled drawdown and range of influence to the dewatering system is presented on Figure 15. Pumping rates in individual wells will be adjusted periodically to maximize the cumulative drawdown and recovery of potentially-contaminated groundwater from the ROW area during site excavation activities. The extracted water will be pumped to a main discharge header and transferred to a water storage tank. The water storage tank will be emptied, as needed, and water levels will be monitored by personnel to ensure that an adequate capacity is maintained in the storage tank.

5.3.2 Remediation Well Installation

The remedial well design and specifications are presented on Figure 18. There will be nine remediation wells advanced beneath the Fauntleroy Way Southwest and Southwest Alaska Street ROWs to a total depth of 40 feet bgs. All wells will be completed by a licensed well driller and comply with the requirements of WAC 173-160, Minimum Standards for Construction and Maintenance of Wells.

Each remediation well will be constructed of 4-inch-diameter blank PVC casing, flush-threaded to a 0.010-inch slotted well screen. The bottom of each of the wells will be fitted with a threaded PVC bottom cap, and the top of each well will be fitted with a PVC reducer bushing and connected to a 1-inch-diameter PVC water discharge line. Each remediation well will connect to a main water discharge header that runs aboveground to the 6,900-gallon water storage tank that will be located near the northwest corner of the development site, approximately 200 feet to the west of the remediation wells.

Each remediation well will be completed with a bentonite seal extending down from the top of casing, which will be the approximate elevation at the base of the excavation. The annulus of the remediation wells will be filled with #10/20 silica sand extending from the bottom of the bentonite seal to total depth. The well completion will be recorded in boring logs, examples of which are provided in Attachment A of the SAP.

Upon completion of drilling and remediation well installation activities, a survey of remediation well locations will be performed and the wells will be developed. The remediation well locations and top of casing elevations will be surveyed by Triad Associates to provide an as-built for the temporary dewatering system well configuration. Elevations will be surveyed relative to NAVD88.

The remediation wells will be developed by SoundEarth field staff with the use of a whale pump or bailer and will consist of surging and purging until a minimum of five well volumes are removed and the groundwater no longer appears turbid. Turbidity will be measured visually by field staff conducting development activities. The installation of the remediation wells and system piping will be completed before the beginning excavation activities. The estimated remedial time frame for groundwater restoration is 5 years following the removal of the source material, ROW dewatering, and chemical oxidation.

SoundEarth will collect soil and groundwater samples from four of the new wells during installation. SoundEarth would then analyze the results for contaminants of concern and to confirm our CSM. These additional data would be tabulated and presented to Ecology for discussion to decide if the site conditions warrant additional monitoring, or additional oxidizer injection in the ROW, including as necessary a contingency for an additional remediation well or wells. The field program for remedial implementation at the site would be modified in accordance with that data discussion and its conclusions.

5.3.3 Installation of the Vapor and Water Barrier

In order to prevent recontamination of on-property soil and groundwater from the impacts that will remain beneath the adjacent Fauntleroy Way Southwest and Southwest Alaska Street ROWs, a spray-on vapor and water membrane will be applied on the interior face of the shoring wall. A protective liner will be laid on top of the membrane before pouring the concrete walls and foundation. The contaminant barrier will limit potential vapor intrusion and the migration of COCs that could leach from off-property soil and groundwater.

5.3.4 Monitoring Well Installation and Development

When the excavation activities are completed and the foundation for the parking structure has been poured, three monitoring wells, MW108 through MW110, will be advanced to a depth of 35 feet bgs along the north and east SKS Shell Property boundaries and on the north side of the adjoining Kennedy property (Figures 14 and 19). The final location of these wells will be negotiated with Ecology following the source removal. Monitoring well design and specifications are presented on Figure 18. All wells will be completed by a licensed well driller and comply with the requirements of WAC 173-160, Minimum Standards for Construction and Maintenance of Wells.

Each monitoring well will be constructed of 2-inch-diameter blank PVC casing, flush-threaded to a 0.010-inch slotted well screen. The bottom of each of the wells will be fitted with a threaded PVC bottom cap, and the top of each well will be fitted with a locking j-plug cap. Each monitoring well will be completed with a bentonite seal extending down from the top of casing, which will be the approximate elevation at the base of the excavation. The annulus of the remediation wells will be filled with #10/20 silica sand extending from the bottom of the bentonite seal to total depth. The well completion will be recorded in boring logs, examples of which are provided in Attachment A of the SAP.

Upon completion of drilling and monitoring well installation activities, a survey of monitoring well locations will be performed and the wells will be developed. The monitoring well locations and top of casing elevations will be surveyed by Triad Associates for the purposes of providing an as-built for the temporary dewatering system well configuration. Elevations will be surveyed relative to NAVD88.

The monitoring wells will be developed by SoundEarth field staff with the use of a whale pump or bailer and will consist of surging and purging until a minimum of five well volumes are removed and the groundwater no longer appears turbid. Turbidity will be measured visually by field staff conducting development activities.

5.3.5 Dewatering System and Remediation Well Decommissioning

Upon completion of the required confirmational monitoring, the compliance monitoring wells and the remediation wells will be decommissioned, in accordance with the Ecology Water Well Construction Act (1971), RCW 18.104 (WAC 173-160-460). The wells will be decommissioned in place using bentonite clay.

6.0 COMPLIANCE MONITORING

There are three types of compliance monitoring identified for remedial cleanup actions performed under MTCA (WAC 173-340-410): protection, performance, and confirmational monitoring. A paraphrased definition for each is presented below (WAC 173-340-410[1]). Additional details regarding procedures for sample collection, handling, and quality assurance procedures are included in the SAP and HASP, which are attached to this report as Appendices A and B, respectively.

- **Protection Monitoring.** To evaluate whether human health and the environment are adequately protected during construction and the operation and maintenance period of an interim action or cleanup action.
- **Performance Monitoring.** To document that the interim action or cleanup action has attained cleanup standards.
- **Confirmational Monitoring.** To evaluate the long-term effectiveness of the interim action or cleanup action once cleanup standards or other performance standards have been attained.

6.1 PROTECTION MONITORING

A HASP has been prepared for the cleanup action that meets the minimum requirements for such a plan identified in federal (29 CFR 1910.120, and 1926) and state regulations (WAC 296). The HASP identifies all known physical, chemical, and biological hazards; hazard monitoring protocols; and administrative and engineering controls required to mitigate the identified hazards (Appendix B).

6.2 PERFORMANCE MONITORING

Performance monitoring includes the collection of soil samples from the sidewalls and floor of the PCS excavation, the collection of soil samples during excavation and removal of any previously unidentified contamination, and the collection of quarterly groundwater samples from the points of compliance.

6.2.1 Soil Performance Monitoring

Performance monitoring for soil will be conducted during remedial excavation activities and will be used to direct advancement of the excavation. Soil samples will be collected directly from the sidewalls and/or bottom of the remedial excavation area using either stainless steel or plastic sampling tools. Soil samples collected at depths of less than 4 feet bgs will be collected manually. Samples collected at depths below 4 feet bgs will be collected with the backhoe bucket unless engineering controls are in place that allow for manual sample collection at depths greater than 4 feet bgs. Non-dedicated sampling equipment will be decontaminated between uses. A detailed scope for monitoring, sampling, and analysis is discussed in the SAP (Appendix A). The analytical results will be used to assess when the points of compliance for soil have been achieved.

6.2.2 Groundwater Performance Monitoring

Upon completion of the excavation, ROW dewatering, and chemical oxidation injection, the Site groundwater will be monitored for approximately 5 years. The existing network of groundwater monitoring wells around the perimeter of the SKS Shell Property and three proposed monitoring wells/compliance points will be sampled quarterly for 5 years to evaluate the reduction of dissolved phase petroleum hydrocarbons in groundwater across the Site. Groundwater conditions will be evaluated 2 years, or 8 quarters, after cleanup action to determine whether a second chemical oxidation injection is required to address residual soil and groundwater contamination beneath the ROWs. The proposed monitoring well construction details and specifications are presented on Figure 18, and the proposed groundwater monitoring well locations/compliance points are shown on Figure 19. Actual depths and screen intervals will be determined based on groundwater conditions observed during drilling.

Groundwater samples will be collected and handled in accordance with the 1996 EPA guidance document, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* at least 24 hours following well development. Groundwater samples will be submitted to the laboratory and analyzed for petroleum hydrocarbons. The analytical results will be used to assess when the points of compliance for groundwater have been achieved. In addition to monitoring for COCs, groundwater samples will be analyzed for the following monitored natural attenuation parameters: pH, dissolved oxygen, oxidation-reduction potential, metals scan (total iron, ferrous iron, calcium, magnesium, dissolved manganese), and anion scan (chloride, sulfate, nitrate included), methane, and total organic carbon.

6.2.3 Waste Profiling

Wastes generated during the remedial activities will require analytical testing before disposal. Generally, the treatment, storage, and disposal facility (TSDF) receiving the waste specifies the minimum number of samples and analyses before accepting wastes from a site. Wastes that will be generated from the remedial action and destined for off-Site disposal include:

- PCS
- Contaminated groundwater from excavation dewatering
- Contaminated personal protective equipment
- Decontamination solutions
- Miscellaneous solid wastes

Each waste stream will be profiled separately, in accordance with the minimum waste analyses requirements of the respective permitted TSDF. Excavated contaminated soil will be subjected to performance monitoring. The Ecology document *Guidance for Remediation of Petroleum Contaminated Soils* (Ecology 1995) suggests that samples of stockpiled excavated soil be collected from locations where field survey methods indicate that contamination is likely to be present and to collect samples and from a depth of 6 to 12 inches beneath the surface of the stockpile.

6.3 CONFIRMATIONAL MONITORING

Confirmational monitoring will begin after the analytical data from the performance monitoring indicates that cleanup objectives have been achieved.

6.3.1 Soil Confirmational Monitoring

Confirmational monitoring for soil will be conducted after completion of the remedial excavation area to assess the concentrations of COCs in subsurface soil, to verify compliance with applicable cleanup standards, and to confirm the long-term effectiveness of the cleanup action. Soil samples will be collected from the bottom and the sidewalls of the remedial excavation area to an approximate depth of 25 to 30 feet bgs on the SKS Shell Property. The locations of the soil samples will be established by field screening, as described in the SAP (Appendix A). At a minimum, a sample will be taken every 10 linear feet of sidewall and every 10-foot by 10-foot section of the remedial excavation area floor and submitted for analysis of GRPH and BTEX. A figure presenting the confirmation sample locations is provided in the SAP (Appendix A).

To confirm that cleanup levels have been achieved, the concentrations of COCs will be compared to their respective cleanup levels and, if applicable, evaluated in accordance with the Ecology document *Statistical Guidance for Ecology Site Managers* (Ecology 1992). As detailed in the guidance, confirming whether the SKS Shell Property is clean is based on a comparison of the 95th percent upper confidence limit on the mean (UCL_{95}) with the defined cleanup level. Each sample will be analyzed for GRPH and BTEX at detection limits low enough to detect compliance with the cleanup levels. The resulting data will then be tested for conformance with distributional assumptions (normal versus lognormal) and the UCL_{95} calculated based on the methods described in Ecology's 1992 guidance document.

If the UCL_{95} for a specific constituent does not exceed the cleanup level, then the SKS Shell Property is considered clean; otherwise, it is still considered contaminated. The SKS Shell Property is considered clean when the UCL_{95} for each COC is less than its respective cleanup level. This statistical approach allows for post-sampling excavation to remove individual sample hot spots that cause exceedance of the cleanup levels and retesting to assess if the recalculated UCL_{95} exceeds the cleanup level.

6.3.2 Groundwater Confirmational Monitoring

It is anticipated that the groundwater quality will be substantially restored by removing the contaminated soil as implemented under the remedial action. To confirm the effectiveness of the cleanup action on groundwater quality, groundwater samples will be collected quarterly from the monitoring well network on and off property for 5 years (Figure 19).

Once Ecology concurs that the 5-year groundwater monitoring program indicates compliant and post-remediation groundwater analytical data are achieved, the groundwater beneath the SKS Shell Property will be considered to be compliant with MTCA.

7.0 EXPECTED RESTORATION TIME FRAME

The removal of source material will significantly increase the groundwater quality beneath the SKS Shell Property. The remedial time frame is based on our experience with numerous remedial excavation and chemical oxidation injection sites. The proposed cleanup action involves source removal, temporary groundwater dewatering system to remove 3 pore volumes, and in situ chemical oxidation of residual contamination beneath the ROW. The existing network of groundwater monitoring wells around the perimeter of the SKS Shell Property and three proposed monitoring wells/compliance points will be sampled quarterly for up to 5 years to evaluate the reduction of dissolved phase petroleum hydrocarbons in groundwater across the Site. Groundwater conditions will be evaluated 2 years, or 8 quarters, after the cleanup action to determine whether a second chemical oxidation injection is required to address residual soil and groundwater contamination beneath the ROWs. It is feasible that the initial injection event will adequately address the residual contamination beneath the ROW and no further injection or monitoring will be required.

8.0 DOCUMENTATION REQUIREMENTS

Documentation of the interim cleanup action is necessary to meet MTCA requirements. The applicable and relevant documentation generated for the interim cleanup action will be submitted to Ecology for review and approval. Copies of the documents will be retained in SoundEarth's files for a minimum of 3 years after completion of the interim cleanup action.

8.1 DOCUMENTATION MANAGEMENT

An established document control system to be implemented during the cleanup action includes the following elements, as appropriate: field report forms, excavation logs, sample summary forms, material import and export summary forms, groundwater purge and sample forms, sample chain-of-custody forms, waste inventory documentation, waste management labels, and sample labels. Disposal manifests for the waste generated during the cleanup action will be maintained and submitted with the project documentation.

8.2 WASTE DISPOSAL TRACKING

Specific documentation requirements will be met for transportation and disposal of the contaminated soil and groundwater during the excavation activities to ensure compliance with state and federal regulations. The waste disposal tracking documentation includes analytical data, waste profiles, waste manifests, and bills of lading.

8.3 COMPLIANCE REPORTS

A cleanup action progress report will be prepared following completion of the excavation activities to demonstrate compliance for soil at the points of compliance defined for the Site. At a minimum, the report will include the following:

- A description of the excavation and construction activities and the installation and operation of the injection system and associated piping.
- Documentation of waste disposal tracking for the excavated soil, generated wastewater, and other associated materials.
- A figure depicting the final limits of the remedial excavation and the soil sample locations, as applicable.
- A summary of compliance monitoring analytical results.
- A description of planned work and deliverables for the confirmational monitoring elements of the cleanup action.

A closure report will be prepared following completion of the final annual groundwater monitoring event. The closure report will include the following:

- A description of the groundwater monitoring activities.
- A summary of the compliance sampling analytical results for groundwater for samples collected during quarterly groundwater monitoring, including summary tables.
- A figure depicting primary Site features and points of compliance/monitoring well locations.
- SoundEarth's conclusions pertaining to the cleanup action following the completion of confirmational groundwater monitoring.

When the compliance reports have been finalized, the reports will be submitted to Ecology for review and approval, and a Certificate of Compliance will be requested for the SKS Shell Property.

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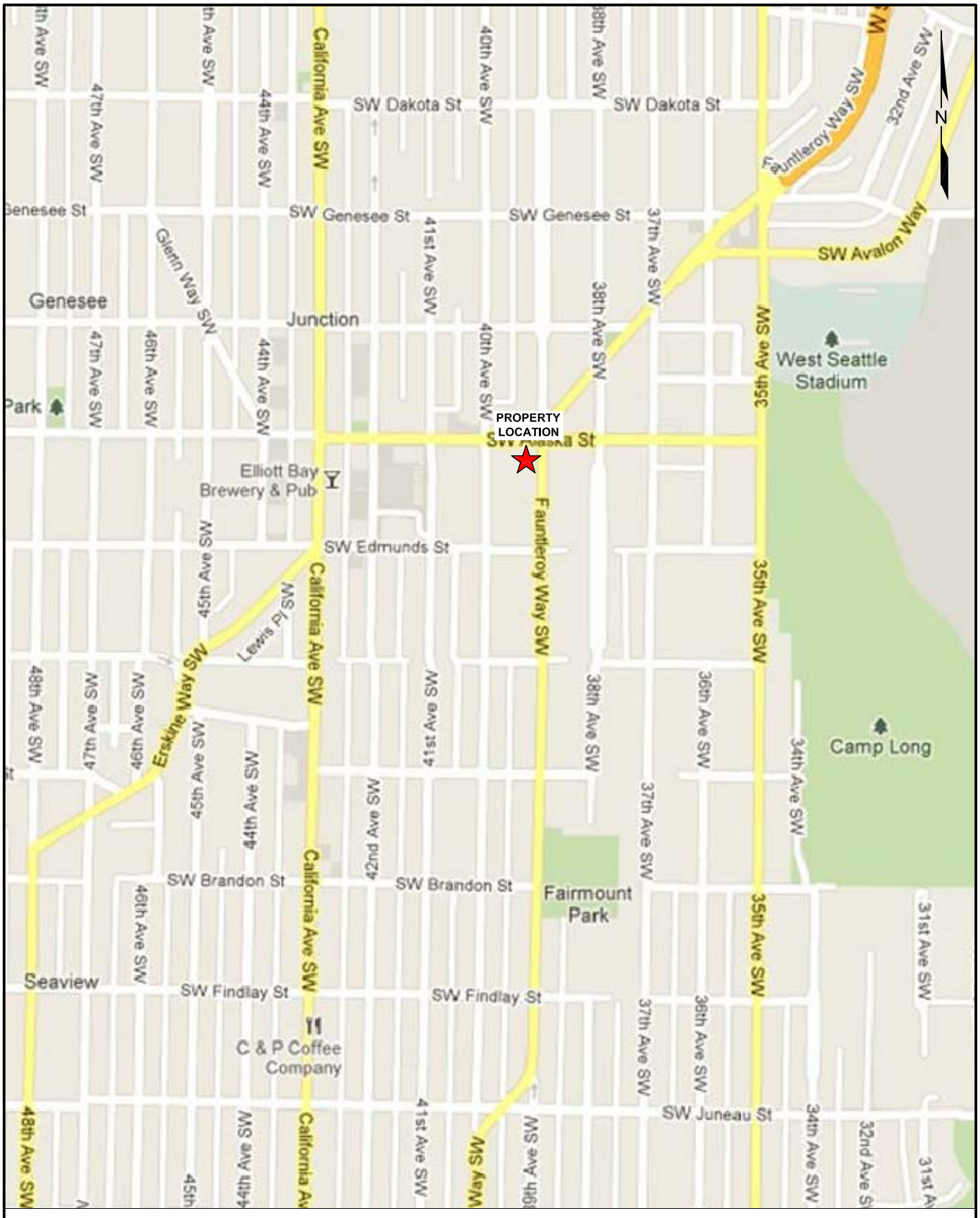
10.0 LIMITATIONS

The services, findings, and conclusions described in this report were prepared for the specific application to this project and were developed in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area. A potential always remains for the presence of unknown, unidentified, or unforeseen subsurface contamination on portions of the Site not sampled. No other warranty, expressed or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. SoundEarth is not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. SoundEarth does not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

FIGURES



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DATE: 11/01/12
DRAWN BY: BLR
CHECKED BY: CER
CAD FILE: 0914-004_VIC

PROJECT NAME: ALASKA ST TEXACO/SKS SHELL
PROJECT NUMBER: 0914-004
STREET ADDRESS: 4724 40TH AVENUE SOUTHWEST
CITY, STATE: SEATTLE, WASHINGTON

FIGURE 1
PROPERTY LOCATION MAP

12/27/2013
P:\0914 LENNAR SHELL\0914-004 RIFSCAP\TECHNICAL\CAD\FIGURE 1\0914-004_VIC_F.DWG
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LEGEND

- PARCEL BOUNDARY
- GROUND SURFACE ELEVATION
- SKS SHELL PROPERTY
- HULING AND KENNEDY PROPERTIES
- 6126600755 PARCEL NUMBER

PARKING LOT

RBB OFFICE BUILDING

VACANT

BANK OF AMERICA

JIFFY LUBE

N

40TH AVENUE SOUTHWEST

BELLA MENTE EARLY LEARNING

SOUTHWEST EDMUNDS STREET

MASONIC LODGE

HULING BODY SHOP

6126600755

OFFICE

KENNEDY

6126600780

6126600465

KENNEDY

6126600485

SOUTHWEST ALASKA STREET

VACANT

PARKING LOT

HULING CHEVROLET GARAG E

SHOWROOM

HULING

6126600555

RETAIL STORE

HOWDEN-KENNEDY FUNERAL HOME

SKS SHELL

SKS SHELL

6126600495

VACANT FORMER GASOLINE SERVICE STATION (30 TO 35-FOOT EXCAVATION)

3922 SOUTHWEST ALASKA STREET

FAUNTLEROY WAY SOUTHWEST

FAUNTELEROY TERRACE CONDOMINIUM

CAPITAL LOANS

PARKING LOT

CONSIGNED FURNITURE

FORMER GASOLINE SERVICE STATION

LES SCHWAB PROPERTY

BP - ARCO PROPERTY (CURRENT SHELL)

4580 FAUNTLEROY WAY SOUTHWEST

280 280 280 275 275 270 270

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DATE: 12/27/12
DRAWN BY: BLR/JQC/NAC
CHECKED BY: CER
CAD FILE: 0914-004_FIG2_SP

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 30 60 120
APPROXIMATE SCALE IN FEET

FIGURE 2
PROJECT AND SITE LOCATION PLAN

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004 FIG2 SP.DWG

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LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- HISTORICAL FEATURES
- H — HYDRAULIC HOIST
- UST — UNDERGROUND STORAGE TANK

SINGLE-FAMILY RESIDENCE 1930s - 1980s

PARKING LOT

SINGLE-FAMILY RESIDENCE 1930s - 1980s

RBB OFFICE BUILDING

SINGLE-FAMILY RESIDENCE 1930s - 1980s

SINGLE-FAMILY RESIDENCE 1909 - 1984 (GAS HEAT)

SINGLE-FAMILY RESIDENCE 1908 - 1970 (STOVE HEAT)

SINGLE-FAMILY RESIDENCE 1920 - 1989 (OIL HEAT)

VACANT

SINGLE-FAMILY RESIDENCE 1921 - 1981 (OIL HEAT)

USED CAR LOT 1960s - 1970s

BANK 1981 - PRESENT

BANK OF AMERICA

PRINTING FACILITY 1928 - 1972

JIFFY LUBE

USED CAR LOT 1950 - 1986

AUTO LUBRICATION 1988 - PRESENT

N

40TH AVENUE SOUTHWEST

BELLA MENTE EARLY LEARNING

VACANT LOT 1930s - 1950s

YWCA 1962 - 1990

SOUTHWEST EDMUNDS STREET

VACANT LOT 1930s - 1940s

MASONIC TEMPLE PARKING LOT 1951 - PRESENT

MASONIC TEMPLE 1951 - PRESENT (OIL HEAT)

MASONIC LODGE

TRENCH DRAIN

PAINT STORAGE

PAINT BOOTH

HULING BODY SHOP

SINGLE-FAMILY RESIDENCE 1917 - 1929

AUTO BODY SHOP 1964 - 2008

WASH AREA

OFFICE

PARKING LOT 1965 - 2005

PORTABLE OFFICE BUILDING 1995 - PRESENT

USED CAR LOT 1936 - 2010

OFFICE 1946 - 1995

OFFICE 1952 - 1969

VACANT

AUTO SALES AND SERVICE 1929 - 1957 (OIL BURNING FURNACE)

GROCERY STORE 1958 - 1972

HANCOCK FABRICS 1976 - 2007

SCHUCKS AUTO SUPPLY 1986 - 2007

SOUTHWEST ALASKA STREET

FORMER 500-GALLON WASTE OIL UST

WASTE OIL AST AND OIL/WATER SEPARATOR

RETAIL STORE

REPAIR GARAGE 1959 - 1983

EXISTING HEATING OIL UST

FUNERAL HOME 1941 - PRESENT

HOWDEN-KENNEDY FUNERAL HOME

FORMER USTs

VACANT

AUTO REPAIR FACILITY AND GASOLINE SERVICE STATION 1936 - 1957

FORMER PUMP ISLAND AND UST

HOIST REMOVED

BOILER ROOM AND OIL/WATER SEPARATOR

DEALERSHIP AND SERVICE GARAGE 1952 - 2008

HULING CHEVROLET GARAG E

SHOWROOM

FORMER 1,000-GALLON HEATING OIL UST

FORMER 2,500-GALLON GASOLINE UST

SALES OFFICE 1983 - 1990

INSURANCE OFFICE 1950s

COFFEE SHOP 1953 -1983

SERVICE STATION 1934 - PRESENT

SKS SHELL

CANOPY PRESENT SINCE 1995

8,000-GALLON UST

1930s-ERA PUMP ISLAND

1960s-1980s-ERA CANOPY AND PUMPS

12000-GALLON USTs

10,000-GALLON UST

LOCATION OF TWO REMOVED 4,000-GALLON USTs

SKS SHELL PROPERTY

FAUNTLEROY WAY SOUTHWEST

VACANT LOT 1930s - 1940s

USED CAR LOT 1953 - 1980

PARKING LOT

FAUNTLEROY TERRACE CONDOMINIUM

CONDOMINIUM 1980 - PRESENT

PARKING LOT 1950s - 1970s

VACANT LOT 1930s - 1940s

CAPITAL LOANS

PLUMBING SHOP 1950 - 1968

AUTO PARTS STORE 1969 - 1986

CAPITOL LOANS 1996 - PRESENT

USED CAR OFFICE 1956 - 1969

SINGLE-FAMILY RESIDENCE 1929 - 1950

PARKING LOT

SINGLE-FAMILY RESIDENCE 1914 - 1968 (OIL HEAT)

SINGLE-FAMILY RESIDENCE 1914 - 1990 (OIL HEAT)

SINGLE-FAMILY RESIDENCE 1929 - 1966

CONSIGNED FURNITURE

AUTOMOTIVE SALES 1959 - 2008 (REPAIR SHOPS CONSTRUCTED 1961 AND 1967)

SINGLE-FAMILY RESIDENCE 1914 - 1959 (OIL HEAT)

WEST SEATTLE PRODUCE

USED CAR SALES 1965 - 2008

GASOLINE SERVICE STATION 1953 - 1961

LES SCHWAB PROPERTY

LOCATION OF 1929-VINTAGE PUMPS

GASOLINE SERVICE STATION 1925 - 1952 (HYDRAULIC HOIST)

GASOLINE SERVICE STATION 1952 - PRESENT

BP - ARCO PROPERTY (CURRENT SHELL)

SOUTHWEST UTILIDORE

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DATE: 12/27/12
DRAWN BY: BLR/JQC/NAC
CHECKED BY: CER
CAD FILE: 0914-004_FIG3_HF

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 30 60 120
APPROXIMATE SCALE IN FEET

FIGURE 3
CURRENT AND HISTORICAL FEATURES

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004 FIG3 HF.DWG

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P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004_FIG4_EL.DWG

SMW01
RETAIL STORE
B-2
EXISTING HEATING OIL UST
SB24
SB16
SB17
SB18
HOWDEN-KENNEDY FUNERAL HOME
B16
SB23
SB15
SB22
SB19
MW106
SMW04
B-4
SB21
SMW03
SKS SHELL
B-3
B-2
SB202
GLMW-3
B-1
MW-3
GLMW-2
B-1
B-2
DW-1
GLMW-1
MW1
DW-2
DW-8
RW01
MW104
B-1
MW-2
B-4
DW-4
SB201
B-5
B-6
MW105
MW103
SOUTHWEST ALASKA STREET
SEATTLE ELECTRIC COMPANY UTILIDORE
B-7/MW-5
FORMER USTs
B-4/MW-3
FORMER GASOLINE SERVICE STATION
B-6/MW-4
FORMER PUMP ISLAND AND UST
B-3/MW-2
A
A'
B
B'
C
C'
MW102
MW101
LES SCHWAB PROPERTY
FORMER GASOLINE SERVICE STATION
MW-X
MW-5
MW-4
BP - ARCO PROPERTY (CURRENT SHELL)
MW-3

LEGEND

- SMW04 — MONITORING WELL
- RW01 — REMEDIATION WELL
- B-15 — SOIL BORING
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SS — SEWER LINE
- W — WATER LINE
- GAS — NATURAL GAS LINE
- UST — UNDERGROUND STORAGE TANK
- C — C' — CROSS SECTION LOCATION

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DATE:	12/27/12
DRAWN BY:	BLR/JQC/NAC
CHECKED BY:	CER
CAD FILE:	0914-004_FIG4_EL

PROJECT NAME:	SKS SHELL PROPERTY
PROJECT NUMBER:	0914-004
STREET ADDRESS:	3901 SOUTHWEST ALASKA STREET
CITY, STATE:	SEATTLE, WASHINGTON

REGION:

0 20 40 80

APPROXIMATE SCALE IN FEET

FIGURE 4

EXPLORATION LOCATION PLAN

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A SOUTH — A' NORTH

SEWER WATER | B-1 (RILEY GEOTECH) (16' W) | PROPERTY LINE | DW-4 (7' E) | B-1 (EAI) (6' E) | MW-2 (4' E) | FUEL DISPENSING ISLAND | DW-3 (7' E) | WATER | DW-2 (6' E) | MW104 | MW-1 (6' E) | GLMW-1 (4' E) | PROPERTY LINE | RW01 (8' E) | SW ALASKA STREET | SEWER | MW103 (10' E) | VACANT (FORMER GASOLINE SERVICE STATION) | B-6/MW-4 (39' W) | B-4/MW-3 (79' W) | B-3/MW-2 (23' W)

APPROXIMATE ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL)

FEET BELOW GRADE

WATER LINE
GAS LINE
WATER LINE
USTs
ELECTRICAL UTILIDOR
SP-SM (FILL)
SEWER LINE
SEWER MANHOLE
SEWER LINE
SP-SM
ML
SM
SM-ML
ESTIMATED EXCAVATION DEPTH FOR PLANNED DEVELOPMENT
8/7/12
7/20/05

3,400 NT NT
NT ND NT
44 NT 0.29
77 52.4 <1.0
140 <50.0 <1.0
190 1,140 <1.0
22,000 3,900 2.7
20,000 540 2,600
4,500 4,100 550
5,000 381 2.25
ND NT ND
<2 <50 <0.02
153 ND 0.0346
ND ND 0.0848
<2 NT <0.02
<100 <50 <0.35
180 <250 <0.20
<98 <240 <0.20
NT NT <0.20

LEGEND

- **SM** — SILTY SANDS, SAND - CLAY MIXTURES
- **ML** — INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
- **SP-SM** — SAND AND SILTY SAND
- **SM-ML** — SILTY SAND WITH SILT
- **FILL** — SILTY SANDS WITH GRAVEL
- APPROXIMATE EXTENT OF SOIL CONTAMINATION
- GROUNDWATER LEVEL
- RED INDICATES CONCENTRATION EXCEEDING MTCA METHOD A CLEANUP LEVEL
- CONCENTRATION BELOW MTCA METHOD A CLEANUP LEVEL
- < RESULT BELOW LABORATORY REPORTING LIMITS
- UST UNDERGROUND STORAGE TANK

DW-3 (7' E) WELL OFFSET 7' EAST

- BLANK CASING
- SOIL SAMPLE
- WATER TABLE
- WELL SCREEN INTERVAL
- WELL TERMINATION

5,000 GRPH 381 DRPH 2.25 BENZENE — GROUNDWATER SAMPLE (MICROGRAMS PER LITER)

3,400 GRPH NT DRPH NT BENZENE — SOIL SAMPLE (MILLIGRAMS PER KILOGRAM)

MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
GRPH	GASOLINE-RANGE PETROLEUM HYDROCARBONS
DRPH	DIESEL-RANGE PETROLEUM HYDROCARBONS
ND	NOT DETECTED
NT	NOT TESTED

NOTE: THE SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA SHOWN FOR THE HULING AND KENNEDY PROPERTIES ARE PRESENTED IN THE *REMEDIAL INVESTIGATION AND CLEANUP ACTION PLAN*, PREPARED BY SOUNDEARTH AND DATED MAY 8, 2014.

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DATE: 12/27/12
DRAWN BY: BLR/JQC
CHECKED BY: CER
CAD FILE: 0914-004_FIG5_A-A

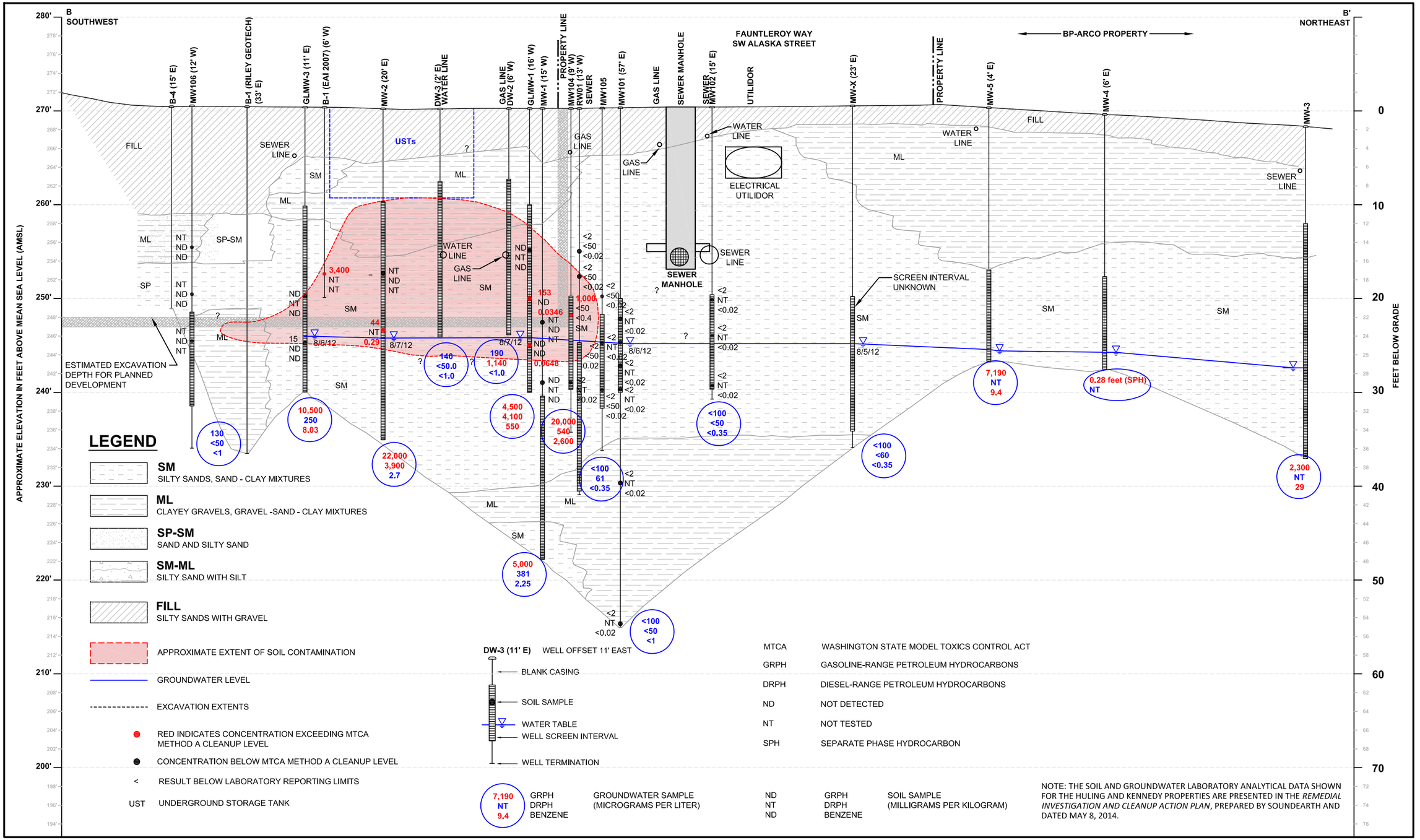
PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 15 30 60
APPROXIMATE SCALE IN FEET

FIGURE 5
SKS SHELL GEOLOGIC CROSS SECTION
A-A'

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004 FIG5 A-A.DWG



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DATE: 12/27/12
DRAWN BY: BLR/JQC
CHECKED BY: CER
CAD FILE: 0914-004_FIG6_B-B

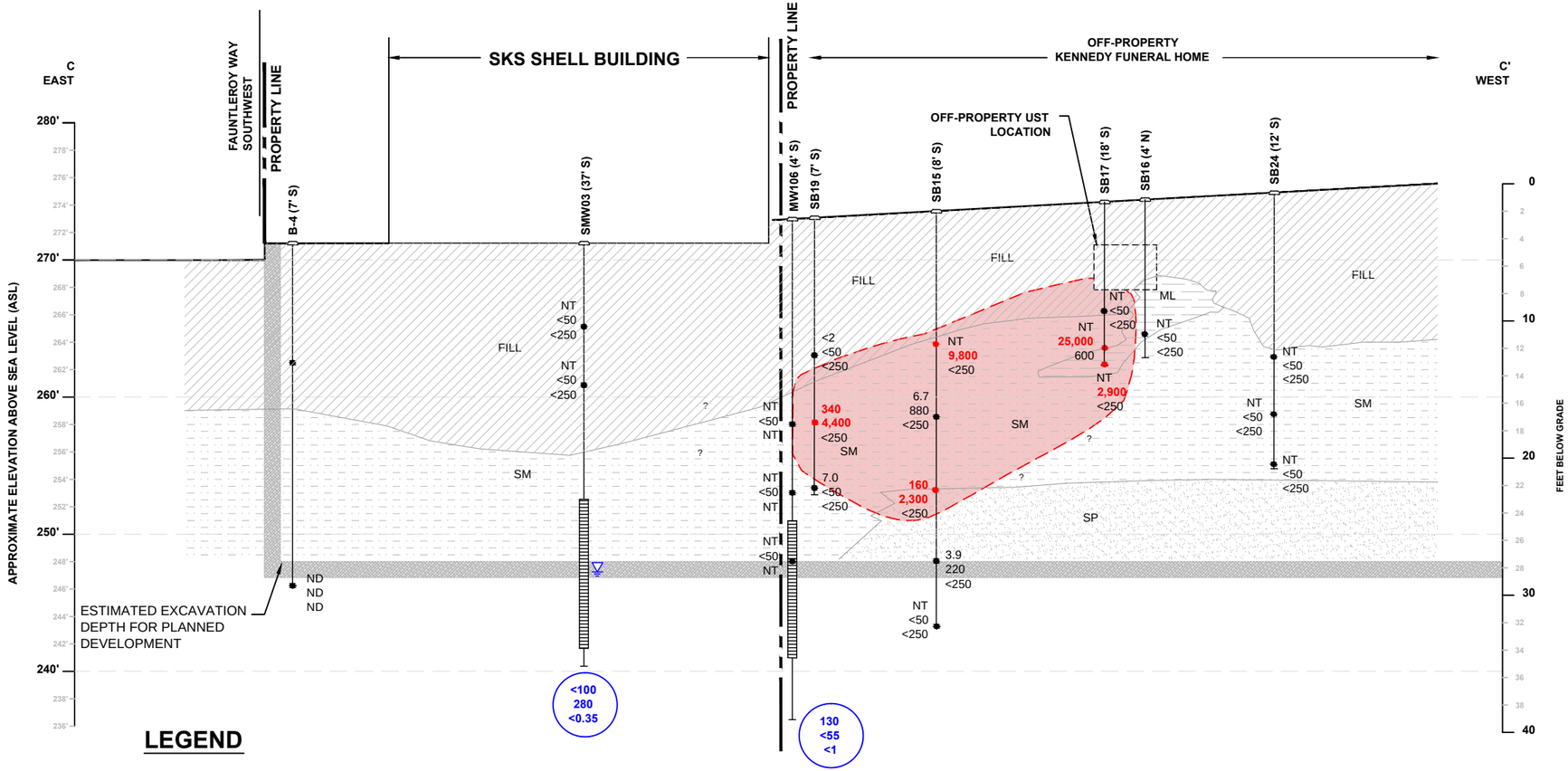
PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 15 30 60
APPROXIMATE SCALE IN FEET

FIGURE 6
SKS SHELL GEOLOGIC CROSS SECTION
B-B'

6/18/2014
P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004 FIG6 B-B.DWG
WWW.SOUNDEARTHINC.COM



LEGEND

SM
SILTY SANDS, SAND - CLAY MIXTURES

ML
INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS

SP
SAND AND SILTY SAND

FILL
SILTY SANDS WITH GRAVEL

APPROXIMATE EXTENT OF SOIL CONTAMINATION

SMW03 (37' S) WELL OFFSET 37' SOUTH

- BLANK CASING
- SOIL SAMPLE
- WATER TABLE
- WELL SCREEN INTERVAL
- WELL TERMINATION

<100 280 <0.35	GRPH DRPH BENZENE	GROUNDWATER SAMPLE (MICROGRAMS PER LITER)
7.0 <50 <250	GRPH DRPH ORPH	SOIL SAMPLE (MILLIGRAMS PER KILOGRAM)

- RED INDICATES CONCENTRATION EXCEEDING MTCA METHOD A CLEANUP LEVEL
- CONCENTRATION BELOW MTCA METHOD A CLEANUP LEVEL
- < RESULT BELOW LABORATORY REPORTING LIMITS

UST	UNDERGROUND STORAGE TANK
MTCA	WASHINGTON STATE MODEL TOXICS CONTROL ACT
GRPH	GASOLINE-RANGE PETROLEUM HYDROCARBONS
DRPH	DIESEL-RANGE PETROLEUM HYDROCARBONS
ORPH	OIL-RANGE PETROLEUM HYDROCARBONS
NT	NOT TESTED
ND	NOT DETECTED

NOTE: THE SOIL AND GROUNDWATER LABORATORY ANALYTICAL DATA SHOWN FOR THE HULING AND KENNEDY PROPERTIES ARE PRESENTED IN THE *REMEDIAL INVESTIGATION AND CLEANUP ACTION PLAN*, PREPARED BY SOUNDEARTH AND DATED MAY 8, 2014.

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DATE: 12/27/12
DRAWN BY: JQC
CHECKED BY: CER
CAD FILE: 0914-004_FIG7_C-C

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 20 40 80
APPROXIMATE SCALE IN FEET

FIGURE 7
SKS SHELL GEOLOGIC CROSS SECTION
C-C'

6/13/2014

FUNERAL HOME

SKS SHELL

FORMER GASOLINE SERVICE STATION

FORMER USTs

FORMER PUMP ISLAND USTs

B-4/MW-3

B-6/MW-4

B-3/MW-2

MW106

SMW04

SMW03 (246.00')

GLMW-3 (245.74')

GLMW-2

MW-3 (245.47')

DW-1

GLMW-1 (244.92')

MW-1 (244.54')

DW-4

MW-2 (245.44')

DW-3

DW-2

RW01

MW104 (244.94')

MW105

MW103 (241.75')

MW102 (243.65')

MW101 (244.12')

MW-X (243.29')

MW-5

MW-4

MW-3

246.00

245.00

244.00

243.00

242.00

SIDEWALK

SOUTHWEST ALASKA STREET

SEATTLE ELECTRIC COMPANY UTILIDORE

FAUNTLEROY WAY SOUTHWEST

39TH AVENUE SOUTHWEST

PLANTER

LES SCHWAB PROPERTY

FORMER GASOLINE SERVICE STATION

BP-ARCO PROPERTY

N

LEGEND

- MW104 — MONITORING WELL (SOUNDEARTH, 2012)
- GLMW-3 — MONITORING WELL (G-LOGICS, 2011)
- B-6/MW-4 — FORMER MONITORING WELL (LSI ADAPT INC, 2005)
- DW-4 — EXTRACTION WELL (ALISTO, 1997)
- MW-3 — MONITORING WELL (EAI, 1995)
- MW-5 — MONITORING WELL (RZA AGRA INC, 1993)
- MW-X — MONITORING WELL (ARCADIS, 2012)
- RW01 — REMEDIATION WELL (SOUNDEARTH, 2013)
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SS — SEWER LINE
- W — WATER LINE
- GAS — NATURAL GAS LINE
- HISTORICAL UTILITY LINES
- EAI — ENVIRONMENTAL ASSOCIATES, INC.
- UST — UNDERGROUND STORAGE TANK
- GROUNDWATER FLOW DIRECTION
- FORMER UNDERGROUND STORAGE TANK
- 1.00-FOOT-INTERVAL GROUNDWATER CONTOUR
- (241.75') — GROUNDWATER SURFACE ELEVATION (NOVEMBER 7, 2012)

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DATE: 12/27/12
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CHECKED BY: CER
CAD FILE: 0914-004_FIG8_SKS_CM

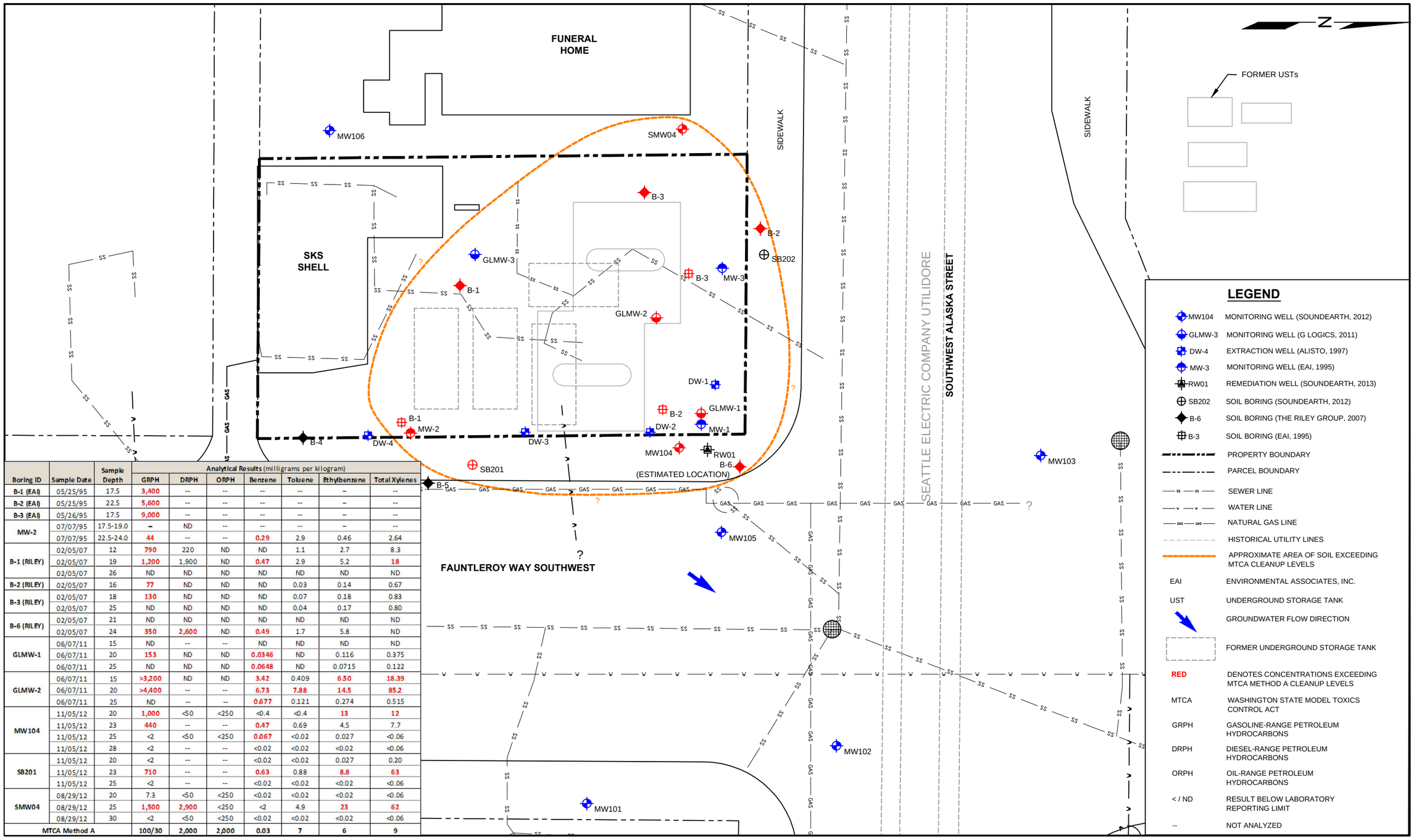
PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 15 30 60
APPROXIMATE SCALE IN FEET

FIGURE 8
SKS SHELL GROUNDWATER ELEVATIONS (NOVEMBER 7, 2012)

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004_FIG8_SKS_CM.DWG



Boring ID	Sample Date	Sample Depth	Analytical Results (milligrams per kilogram) GRPH	DRPH	ORPH	Benzene	Toluene	Ethylbenzene	Total Xylenes
B-1 (EAI)	05/25/95	17.5	3,400	--	--	--	--	--	--
B-2 (EAI)	05/25/95	22.5	5,600	--	--	--	--	--	--
B-3 (EAI)	05/26/95	17.5	9,000	--	--	--	--	--	--
MW-2	07/07/95	17.5-19.0	--	ND	--	--	--	--	--
	07/07/95	22.5-24.0	44	--	--	0.29	2.9	0.46	2.64
B-1 (RILEY)	02/05/07	12	790	220	ND	ND	1.1	2.7	8.3
	02/05/07	19	1,200	1,900	ND	0.47	2.9	5.2	18
	02/05/07	26	ND	ND	ND	ND	ND	ND	ND
B-2 (RILEY)	02/05/07	16	77	ND	ND	ND	0.03	0.14	0.67
B-3 (RILEY)	02/05/07	18	130	ND	ND	ND	0.07	0.18	0.83
	02/05/07	25	ND	ND	ND	ND	0.04	0.17	0.80
B-6 (RILEY)	02/05/07	21	ND	ND	ND	ND	ND	ND	ND
	02/05/07	24	350	2,600	ND	0.49	1.7	5.8	ND
GLMW-1	06/07/11	15	ND	--	--	ND	ND	ND	ND
	06/07/11	20	153	ND	ND	0.0346	ND	0.116	0.375
	06/07/11	25	ND	ND	ND	0.0648	ND	0.0715	0.122
GLMW-2	06/07/11	15	>3,200	ND	ND	3.42	0.409	6.50	18.39
	06/07/11	20	>4,400	--	--	6.73	7.88	14.5	85.2
	06/07/11	25	ND	--	--	0.677	0.121	0.274	0.515
MW104	11/05/12	20	1,000	<50	<250	<0.4	<0.4	13	12
	11/05/12	23	440	--	--	0.47	0.69	4.5	7.7
	11/05/12	25	<2	<50	<250	0.067	<0.02	0.027	<0.06
	11/05/12	28	<2	--	--	<0.02	<0.02	<0.02	<0.06
SB201	11/05/12	20	<2	--	--	<0.02	<0.02	0.027	0.20
	11/05/12	23	710	--	--	0.63	0.88	8.8	63
	11/05/12	25	<2	--	--	<0.02	<0.02	<0.02	<0.06
SMW04	08/29/12	20	7.3	<50	<250	<0.02	<0.02	<0.02	<0.06
	08/29/12	25	1,500	2,900	<250	<2	4.9	23	62
	08/29/12	30	<2	<50	<250	<0.02	<0.02	<0.02	<0.06
MTCA Method A			100/30	2,000	2,000	0.03	7	6	9

LEGEND

- MW104 — MONITORING WELL (SOUNDEARTH, 2012)
- GLMW-3 — MONITORING WELL (G LOGICS, 2011)
- DW-4 — EXTRACTION WELL (ALISTO, 1997)
- MW-3 — MONITORING WELL (EAI, 1995)
- RW01 — REMEDIATION WELL (SOUNDEARTH, 2013)
- SB202 — SOIL BORING (SOUNDEARTH, 2012)
- B-6 — SOIL BORING (THE RILEY GROUP, 2007)
- B-3 — SOIL BORING (EAI, 1995)
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SS — SEWER LINE
- W — WATER LINE
- GAS — NATURAL GAS LINE
- HISTORICAL UTILITY LINES
- APPROXIMATE AREA OF SOIL EXCEEDING MTCA CLEANUP LEVELS
- EAI — ENVIRONMENTAL ASSOCIATES, INC.
- UST — UNDERGROUND STORAGE TANK
- GROUNDWATER FLOW DIRECTION
- FORMER UNDERGROUND STORAGE TANK
- RED — DENOTES CONCENTRATIONS EXCEEDING MTCA METHOD A CLEANUP LEVELS
- MTCA — WASHINGTON STATE MODEL TOXICS CONTROL ACT
- GRPH — GASOLINE-RANGE PETROLEUM HYDROCARBONS
- DRPH — DIESEL-RANGE PETROLEUM HYDROCARBONS
- ORPH — OIL-RANGE PETROLEUM HYDROCARBONS
- < / ND — RESULT BELOW LABORATORY REPORTING LIMIT
- -- — NOT ANALYZED

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PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 10 20 40
APPROXIMATE SCALE IN FEET

FIGURE 9
SKS SHELL
SOIL ANALYTICAL RESULTS

6/13/2014
P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004_FIG9_SKS_SD.DWG
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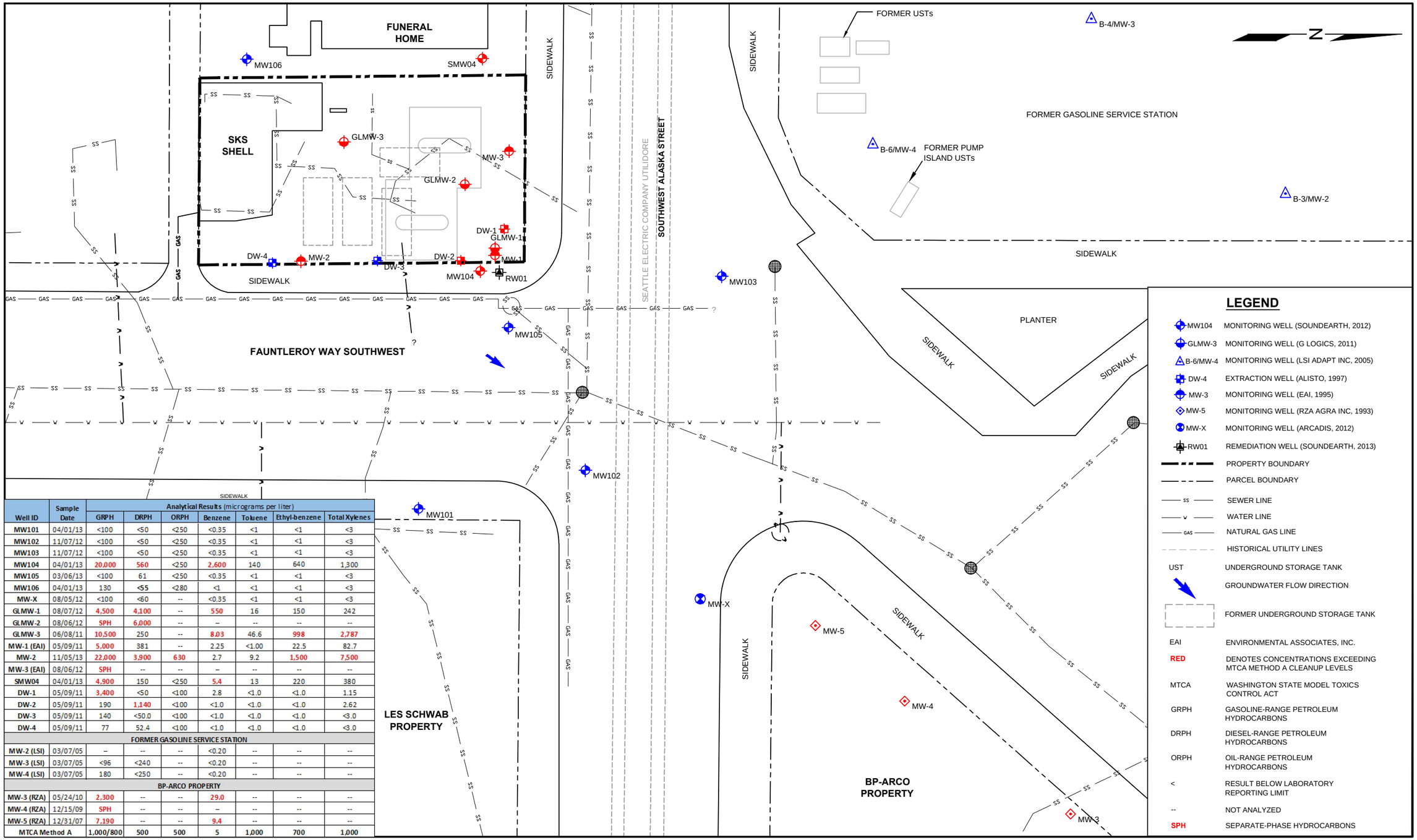

Well ID	Sample Date	Analytical Results (micrograms per liter) GRPH	DRPH	ORPH	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW101	04/01/13	<100	<50	<250	<0.35	<1	<1	<3
MW102	11/07/12	<100	<50	<250	<0.35	<1	<1	<3
MW103	11/07/12	<100	<50	<250	<0.35	<1	<1	<3
MW104	04/01/13	20,000	560	<250	2,600	140	640	1,300
MW105	03/06/13	<100	61	<250	<0.35	<1	<1	<3
MW106	04/01/13	130	<55	<280	<1	<1	<1	<3
MW-X	08/05/12	<100	<60	--	<0.35	<1	<1	<3
GLMW-1	08/07/12	4,500	4,100	--	550	16	150	242
GLMW-2	08/06/12	SPH	6,000	--	--	--	--	--
GLMW-3	06/08/11	10,500	250	--	8.03	46.6	998	2,787
MW-1 (EAI)	05/09/11	5,000	381	--	2.25	<1.00	22.5	82.7
MW-2	11/05/13	22,000	3,900	630	2.7	9.2	1,500	7,500
MW-3 (EAI)	08/06/12	SPH	--	--	--	--	--	--
SMW04	04/01/13	4,900	150	<250	5.4	13	220	380
DW-1	05/09/11	3,400	<50	<100	2.8	<1.0	<1.0	1.15
DW-2	05/09/11	190	1,140	<100	<1.0	<1.0	<1.0	2.62
DW-3	05/09/11	140	<50.0	<100	<1.0	<1.0	<1.0	<3.0
DW-4	05/09/11	77	52.4	<100	<1.0	<1.0	<1.0	<3.0
FORMER GASOLINE SERVICE STATION								
MW-2 (LSI)	03/07/05	--	--	--	<0.20	--	--	--
MW-3 (LSI)	03/07/05	<96	<240	--	<0.20	--	--	--
MW-4 (LSI)	03/07/05	180	<250	--	<0.20	--	--	--
BP-ARCO PROPERTY								
MW-3 (RZA)	05/24/10	2,300	--	--	29.0	--	--	--
MW-4 (RZA)	12/15/09	SPH	--	--	--	--	--	--
MW-5 (RZA)	12/31/07	7,190	--	--	9.4	--	--	--
MTCA Method A		1,000/800	500	500	5	1,000	700	1,000

LEGEND

- MW104 — MONITORING WELL (SOUNDEARTH, 2012)
- GLMW-3 — MONITORING WELL (G LOGICS, 2011)
- B-6/MW-4 — MONITORING WELL (LSI ADAPT INC, 2005)
- DW-4 — EXTRACTION WELL (ALISTO, 1997)
- MW-3 — MONITORING WELL (EAI, 1995)
- MW-5 — MONITORING WELL (RZA AGRA INC, 1993)
- MW-X — MONITORING WELL (ARCADIS, 2012)
- RW01 — REMEDIATION WELL (SOUNDEARTH, 2013)
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SS — SEWER LINE
- W — WATER LINE
- GAS — NATURAL GAS LINE
- HISTORICAL UTILITY LINES
- UST — UNDERGROUND STORAGE TANK
- GROUNDWATER FLOW DIRECTION
- FORMER UNDERGROUND STORAGE TANK
- EAI — ENVIRONMENTAL ASSOCIATES, INC.
- RED — DENOTES CONCENTRATIONS EXCEEDING MTCA METHOD A CLEANUP LEVELS
- MTCA — WASHINGTON STATE MODEL TOXICS CONTROL ACT
- GRPH — GASOLINE-RANGE PETROLEUM HYDROCARBONS
- DRPH — DIESEL-RANGE PETROLEUM HYDROCARBONS
- ORPH — OIL-RANGE PETROLEUM HYDROCARBONS
- < — RESULT BELOW LABORATORY REPORTING LIMIT
- -- — NOT ANALYZED
- SPH — SEPARATE-PHASE HYDROCARBONS

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DATE: 12/27/12
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CAD FILE: 0914-004_FIG10_SKS_GD

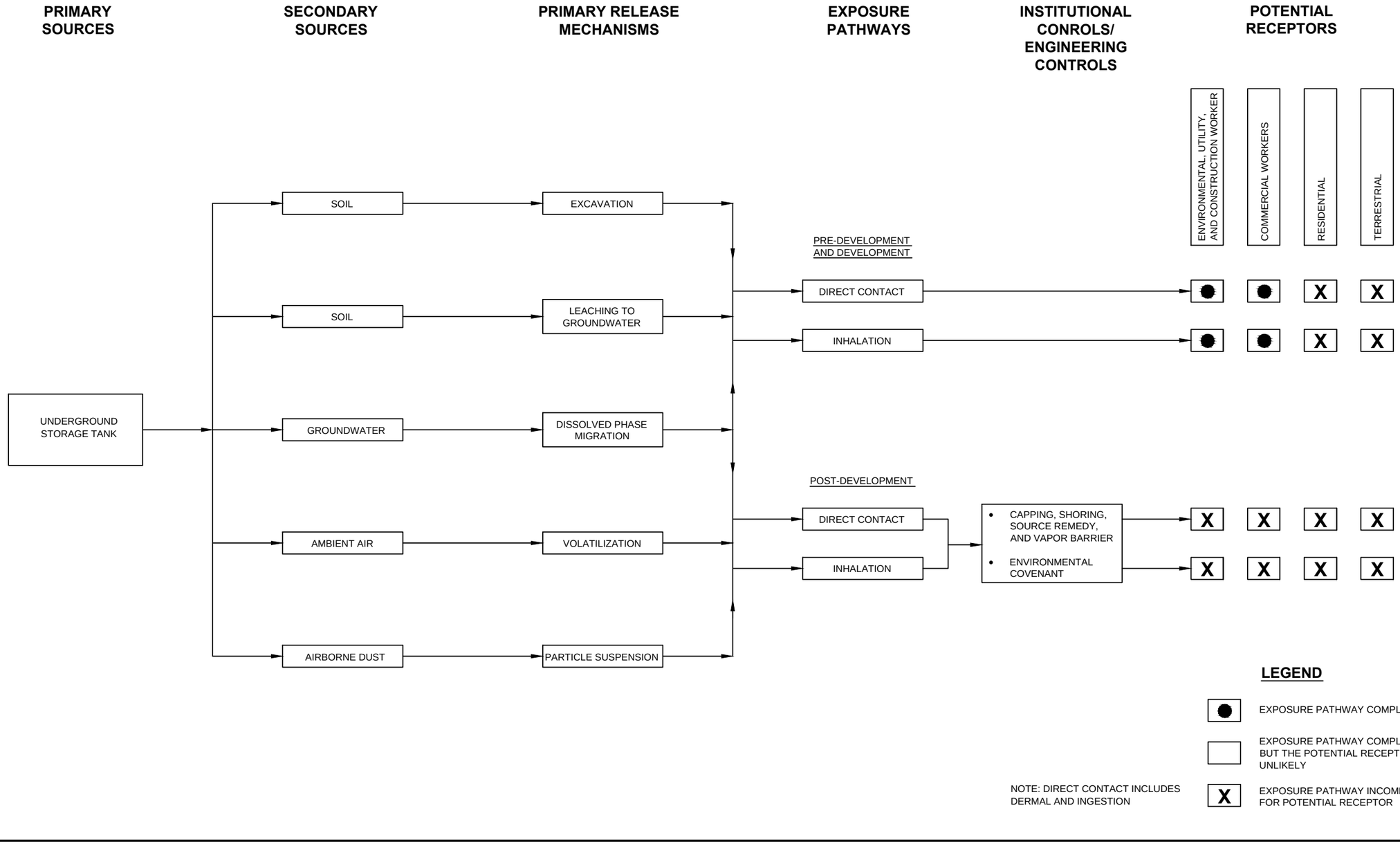
PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 15 30 60
APPROXIMATE SCALE IN FEET

FIGURE 10
SKS SHELL
GROUNDWATER ANALYTICAL RESULTS

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004 FIG10 SKS GD.DWG



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DATE: 12/27/12
DRAWN BY: NAC
CHECKED BY: TJC
CAD FILE: 0914-004_FIG11_CSM

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

NOT TO SCALE

FIGURE 11
PRELIMINARY CONCEPTUAL SITE MODEL

6/13/2014

P:\0914 LENNAR SHELL\0914-004 RIFSCAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004_FIG12_EXCA_SES.DWG

FUNERAL HOME

SKS SHELL

FAUNTLEROY WAY SOUTHWEST

SOUTHWEST ALASKA STREET

SEATTLE ELECTRIC COMPANY UTILIDORE

SIDEWALK

MW101 MW102 MW103 MW104 MW105 MW106 MW107 MW108 MW109 MW110

SMW03 SMW04

GLMW-1 GLMW-2 GLMW-3

MW-1 MW-2 MW-3

DW-1 DW-2 DW-3 DW-4

RW01

B-6/MW-4

FORMER USTs

FORMER PUMP ISLAND USTs

N

LEGEND

- PROPOSED REMEDIAL EXCAVATION AREA (25 FEET DEEP)
- PROPOSED EXCAVATION DEWATERING TRENCH
- EXISTING REMEDIATION WELL
- MONITORING WELL TO BE INSTALLED
- MONITORING WELL TO BE DECOMMISSIONED
- EXISTING MONITORING WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS LINE
- HISTORICAL UTILITY LINES
- UST — UNDERGROUND STORAGE TANK
- FORMER UNDERGROUND STORAGE TANK

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DATE:	04/16/13
DRAWN BY:	NAC
CHECKED BY:	SES
CAD FILE:	0914-004_FIG12_EXCA

PROJECT NAME:	SKS SHELL PROPERTY
PROJECT NUMBER:	0914-004
STREET ADDRESS:	3901 SOUTHWEST ALASKA STREET
CITY, STATE:	SEATTLE, WASHINGTON

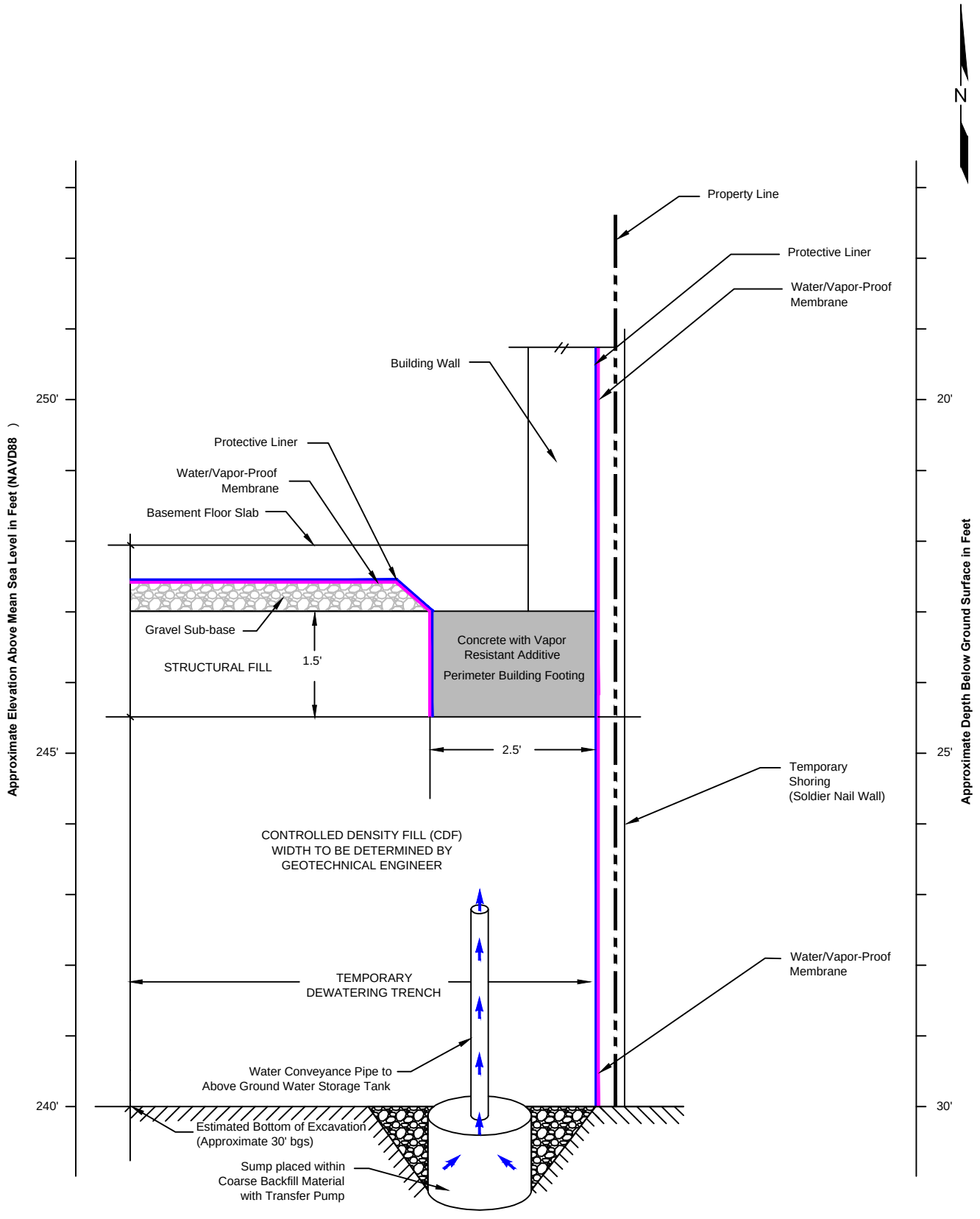
REGION:

0 10 20 40

APPROXIMATE SCALE IN FEET

FIGURE 12

ESTIMATED REMEDIAL EXCAVATION AREA
(BASED ON LABORATORY DETECTIONS FOR PETROLEUM HYDROCARBONS)



Notes: Top of water/vapor-proof membrane at 10 feet below ground surface (bgs).

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DATE: 04/23/13
DRAWN BY: JQC
CHECKED BY: CCC
CAD FILE: 0914-004_FIG13_TE

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

FIGURE 13
TYPICAL EXCAVATION
SECTION AT
SKS SHELL PROPERTY

6/13/2014

PROPOSED LOCATION OF 6,900-GALLON ABOVEGROUND WATER STORAGE TANK 200 FEET WEST

FUNERAL HOME

MW107

SIDEWALK

MW106

SMW04

SKS SHELL

GLMW-3

GLMW-2

GLMW-1

SMW03

RW09

MW108

B-2

MW-3

RW08

RW07

MW109

DW-1

MW-1

RW06

MW110

DW-3

DW-2

MW-2

DW-4

B-4

RW02

RW03

RW04

RW05

MW104

RW01

B-5

SIDEWALK

GAS

SS

15'

8'

6'

FAUNTLEROY WAY SOUTHWEST

MW105

MW102

MW101

SIDEWALK

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

N

FORMER USTs

B-6/MW-4

FORMER PUMP ISLAND USTs

MW103

LEGEND

- PROPOSED HORIZONTAL IMPERMEABLE MEMBRANE EXTENT
- PROPOSED VERTICAL IMPERMEABLE MEMBRANE EXTENT
- RADIUS OF INFLUENCE
- PROPOSED EXCAVATION DEWATERING TRENCH
- PROPOSED REMEDIATION WELL
- EXISTING REMEDIATION WELL
- MONITORING WELL TO BE INSTALLED AFTER EXCAVATION
- MONITORING WELL TO BE DECOMMISSIONED BEFORE EXCAVATION
- EXISTING MONITORING WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS LINE
- HISTORICAL UTILITY LINES
- FORMER UNDERGROUND STORAGE TANK LOCATION
- GRPH — GASOLINE-RANGE PETROLEUM HYDROCARBONS
- UST — UNDERGROUND STORAGE TANK

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DATE: 06/03/14
DRAWN BY: NAC/JQC
CHECKED BY: SES
CAD FILE: 0914-004_FIG14_CA1

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 10 20 40
APPROXIMATE SCALE IN FEET

FIGURE 14
CONCEPTUAL SITE PLAN
CLEANUP ACTION ALTERNATIVE 1
EXCAVATION OF SOIL WITH
ROW DEWATERING AND CHEMICAL OXIDATION

P:\0914 LENNAR SHELL\0914-004 RI\FSCAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004 FIG14 CA1 F.DWG

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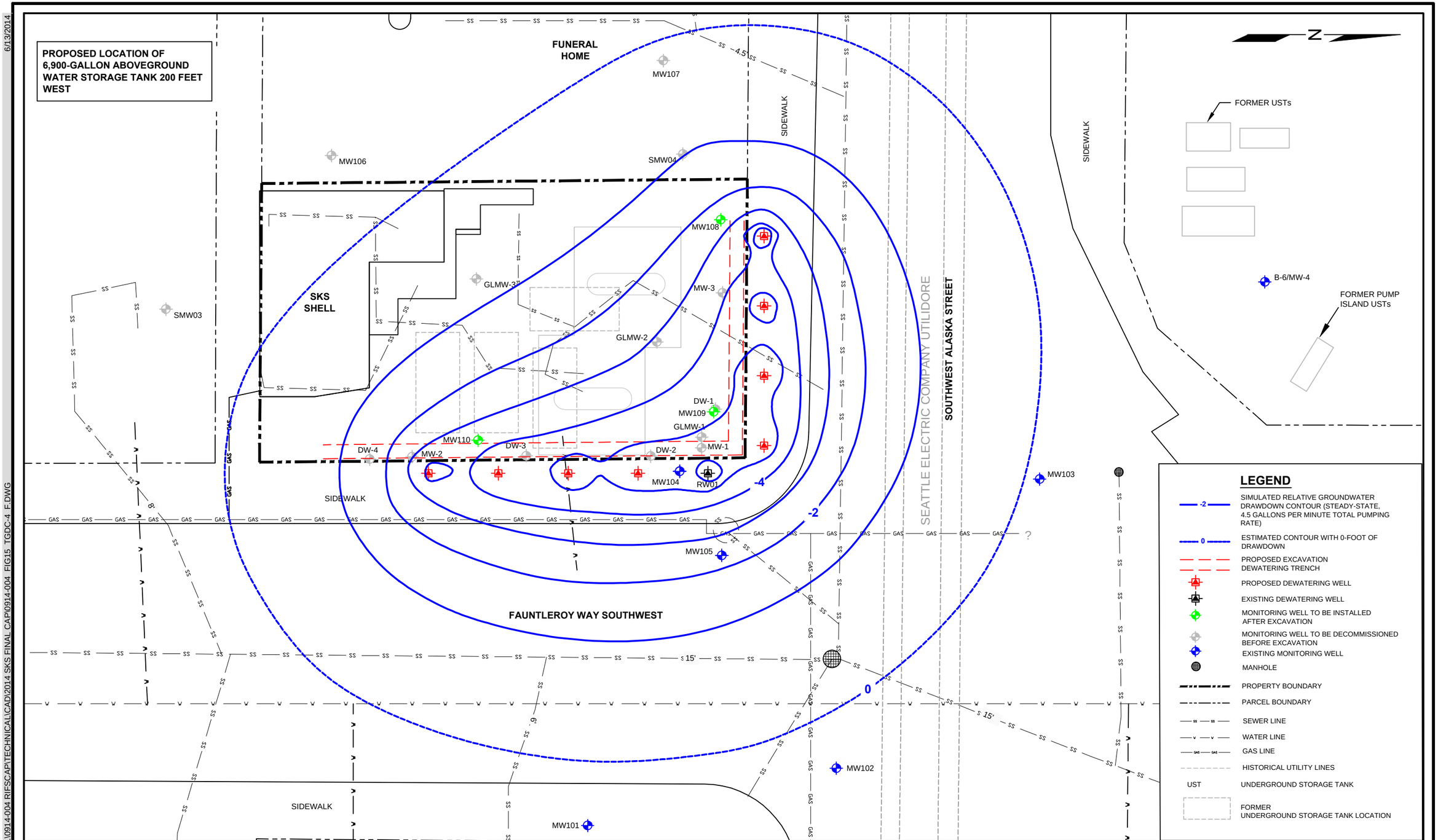

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DATE: 06/02/14
DRAWN BY: BLR/JQC
CHECKED BY: SES
CAD FILE: 0914-004_FIG15_TGDC-4

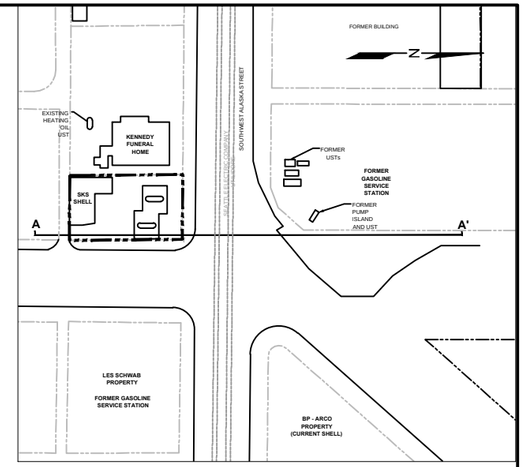
PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

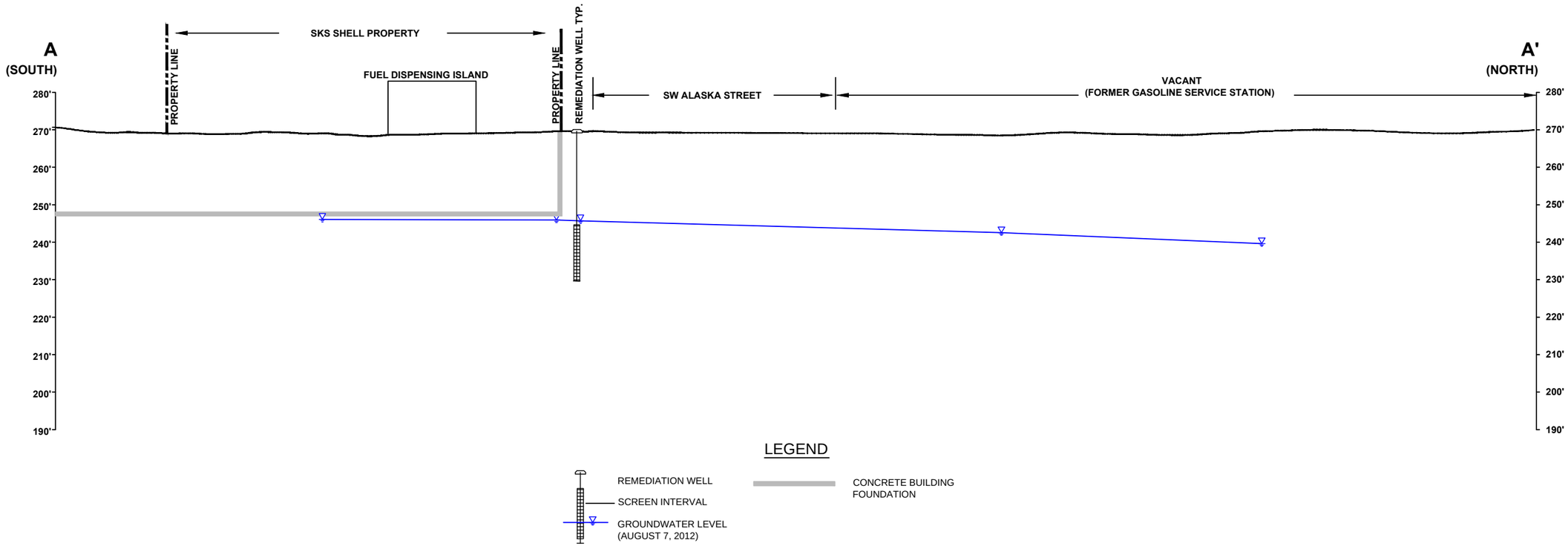
REGION:

0 10 20 40
APPROXIMATE SCALE IN FEET

FIGURE 15
ESTIMATED DRAWDOWN WITH A TOTAL PUMPING RATE OF 4.5 GALLONS PER MINUTE

6/13/2014





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DATE: 04/23/13
DRAWN BY: JQC
CHECKED BY: SES
CAD FILE: 0914-004_FIG16_RW

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY,STATE: SEATTLE, WASHINGTON

REGION:

0 15 30 60
APPROXIMATE SCALE IN FEET

FIGURE 16
CROSS-SECTIONAL LAYOUT OF REMEDIATION WELLS

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004 FIG16 RW.DWG

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DECISION TREE FOR RESPONSE ACTION AND NOTIFICATION PROCEDURE

DURING EXCAVATION, COMMON SENSE CRITERIA USED TO IDENTIFY DISCOVERY OF IMPACTED SOIL OUTSIDE OF THE REMEDIAL EXCAVATION BOUNDARY?

YES →

RESPONSE ACTION SEQUENCE:

- NOTIFY SITE SUPERINTENDENT AND EXCAVATION CONTRACTOR TO STOP WORK IN AREA
- NOTIFY OWNERS, PROJECT MANAGER, AND CONSTRUCTION MANAGER
- CALL SOUNDEARTH FIELD TEAM
- ISOLATE AREA WITH BARRIER TAPE
- RESTRICT TRUCK AND TRACKHOE TRAFFIC TO AVOID SPREADING/CROSS-CONTAMINATION
- INSTALL BARRIER TO VEHICLE ENTRY AS NECESSARY
- SCREEN SUSPECT SOILS WITH FIELD TESTS TO DEFINE BOUNDARIES OF APPARENT CONTAMINATION
- MARK CONTAMINATED AREA WITH WHITE PAINT LINES AND WOOD STAKES
- TAKE PHOTOGRAPHS & SKETCH LOCATION/DIMENSIONS OF IDENTIFIED AREA
- COLLECT SOIL SAMPLES FOR LAB TESTING/MARK SAMPLE LOCATIONS
- COMPLETE FIELD DAILY FORM TO RECORD ACTIVITIES, LOCATIONS, AND SAMPLES COLLECTED
- CONFIRM LAB DATA RESULTS MEET DISPOSAL PROFILE AND DETERMINE PROPER DISPOSAL
- EXCAVATE MATERIAL, RECORD AND MARK VOLUMES BY AREA OF ORIGIN
- COMPLETE PERFORMANCE OR COMPLIANCE SAMPLING IN REMAINING AREA
- PREPARE BILL OF LADING/WASTE MANIFEST FOR TRANSPORT TO PERMITTED FACILITY

NO ↓

IS AN UNDERGROUND STORAGE TANK DISCOVERED OUTSIDE OF THE REMEDIAL EXCAVATION BOUNDARY?

YES →

NO ↓

PREPARE CLOSURE REPORT

DEVELOPMENT TEAM CONTACT INFO:

- BRAD REISENGER, LENNAR MULTIFAMILY — OFFICE: 206-708-2293
- SITE SUPERINTENDANT:
  EVAN CHRISTENSON, W.G. CLARK CONSTRUCTION — OFFICE: 206-624-5244

SOUNDEARTH FIELD TEAM CONTACT INFO:

- ROB ROBERTS, PM — CELL: 425-985-6253
- LIZ FORBES, FIELD — CELL: 802-238-3203
- SOUNDEARTH STRATEGIES, INC. — MAIN NUMBER: 206-306-1900

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DATE: 04/23/13
DRAWN BY: VPB/JQC
CHECKED BY: SES
CAD FILE: 0914-004_FIG17_COMM

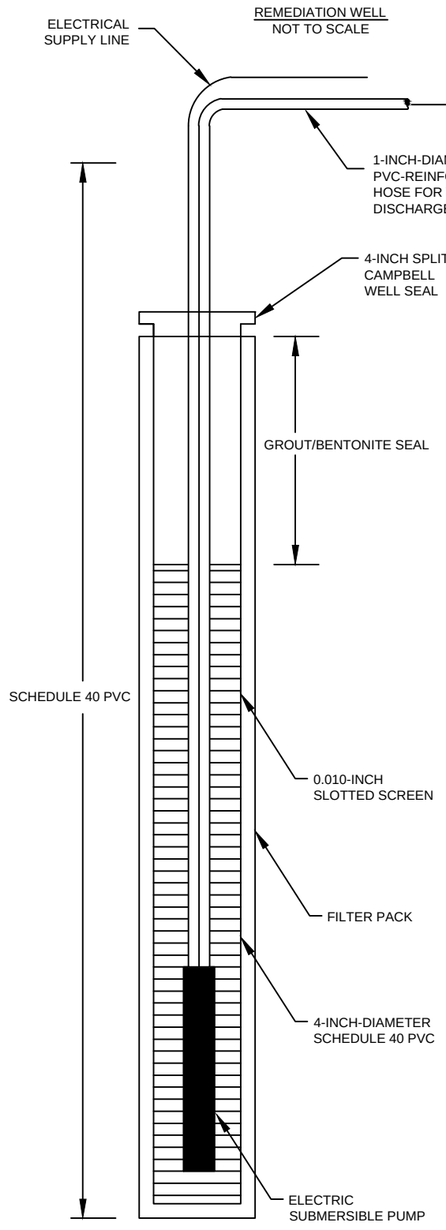
PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

NOT IN SCALE

FIGURE 17
COMMUNICATION PLAN

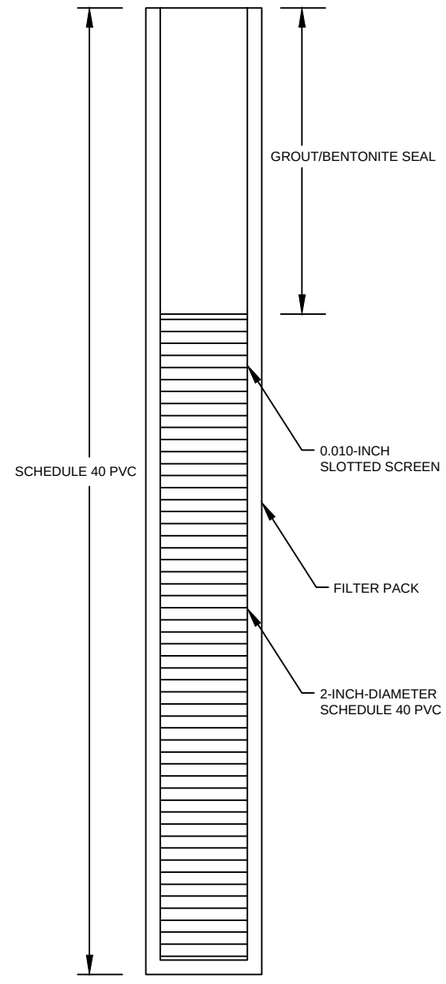
REMEDIATION WELL
NOT TO SCALE



REMEDIATION WELL CONSTRUCTION DETAILS:

1. ALL REMEDIATION WELLS SHALL BE COMPLETED BY A STATE-LICENSED WELL DRILLER AND COMPLY WITH THE REQUIREMENTS OF WASHINGTON ADMINISTRATIVE CODE 173-160.
2. THE WELL SHALL BE CONSTRUCTED WITH 4-INCH-DIAMETER SCHEDULE 40 PVC PIPE. THE WELL SHALL EXTEND 40 BELOW GROUND SURFACE AND SCREENED FROM 25 TO 40 FEET.
3. DRILLERS SAND (#10-20 COLORADO SILICA SAND OR APPROVED EQUIVALENT) SHALL BE USED FOR THE FILTER PACK.
4. USE A 4-INCH BY 1-INCH SCHEDULE 40 PVC REDUCER BUSHING TO CONNECT THE TOP OF THE 2-INCH WELL TO THE 1-INCH-DIAMETER PIPE IN THE PIPE CONVEYANCE TRENCH.

MONITORING WELL
NOT TO SCALE



MONITORING WELL CONSTRUCTION DETAILS:

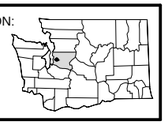
1. ALL MONITORING WELLS SHALL BE COMPLETED BY A STATE-LICENSED WELL DRILLER AND COMPLY WITH THE REQUIREMENTS OF WASHINGTON ADMINISTRATIVE CODE 173-160.
2. THE WELL SHALL BE CONSTRUCTED WITH 2-INCH-DIAMETER SCHEDULE 40 PVC PIPE. THE WELL SHALL EXTEND 40 FEET BELOW GROUND SURFACE AND SCREENED FROM 25 TO 35 FEET.
3. THE MONITORING WELL SHALL HAVE AN 8-FOOT SCREENED SECTION.
4. DRILLERS SAND (#10-20 COLORADO SILICA SAND) OR APPROVED EQUIVALENT) SHALL BE USED FOR THE FILTER PACK.
5. ALL MONITORING WELL MONUMENTS SHALL BE FLUSH MOUNTED WITH SURROUNDING GRADE.

SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

DATE: 04/23/13
DRAWN BY: NAC/JQC
CHECKED BY: SES
CAD FILE: 0914-004_FIG18_WELL

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY,STATE: SEATTLE, WASHINGTON

REGION:



NOT TO SCALE

FIGURE 18
REMEDIATION AND MONITORING WELL CONSTRUCTION DETAILS

6/13/2014

P:\0914 LENNAR SHELL\0914-004 RIFSCAP\TECHNICAL\CAD\2014 SKS FINAL CAP\0914-004 FIG19 GCMW F.DWG

FUNERAL HOME

SKS SHELL

MW107

MW106

SMW04

MW108

SMW03

GLMW-3

MW-3

GLMW-2

DW-1
MW109

GLMW-1

MW110

DW-4

MW-2

DW-3

DW-2

MW-1

MW104

SIDEWALK

SIDEWALK

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

FORMER USTs

B-6/MW-4

FORMER PUMP ISLAND USTs

MW103

MW105

FAUNTLEROY WAY SOUTHWEST

MW102

SIDEWALK

MW101

N

LEGEND

- MONITORING WELL TO BE INSTALLED AFTER EXCAVATION
- MONITORING WELL TO BE DECOMMISSIONED BEFORE EXCAVATION
- EXISTING MONITORING WELL
- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- GAS LINE
- HISTORICAL UTILITY LINES
- UST — UNDERGROUND STORAGE TANK
- GROUNDWATER FLOW DIRECTION
- FORMER UNDERGROUND STORAGE TANK LOCATION

SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

DATE: 06/03/14
DRAWN BY: BLR/JQC
CHECKED BY: SES
CAD FILE: 0914-004_FIG19_GCMW

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 10 20 40
APPROXIMATE SCALE IN FEET

FIGURE 19
GROUNDWATER COMPLIANCE MONITORING WELLS

TABLES

Table 1
Summary of Soil Analytical Results
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Sample Location	Sample ID	Sample Date	Sampled By	Sample Depth (feet bgs)	Analytical Results (milligrams per kilogram)								
					GRPH[1]	DRPH[2]	ORPH[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	MTBE[3]	Lead[4]
B-1	B-1 @ 17.5	05/25/95	EAI	17.5	**3,400**	--	--	--	--	--	--	--	--
B-2	B-2 @ 22.5	05/25/95	EAI	22.5	**5,600**	--	--	--	--	--	--	--	--
B-3	B-3 @ 17.5	05/26/95	EAI	17.5	**9,000**	--	--	--	--	--	--	--	--
MW-1	MW-1 @ 22.5-24.0	07/06/95	EAI	22.5-24.0	--	ND	--	--	--	--	--	--	--
	MW-1 @ 27.5-29.0	07/06/95	EAI	27.5-29.0	ND	--	--	ND	ND	ND	ND	--	--
MW-2	MW-2 @ 17.5-19.0	07/07/95	EAI	17.5-19.0	**--**	ND	--	--	--	--	--	--	--
	MW-2 @ 22.5--24.0	07/07/95	EAI	22.5-24.0	**44**	--	--	**0.29**	2.9	0.46	2.64	--	--
MW-3	MW-3 @12.5-14.0	07/07/95	EAI	12.5-14.0	--	ND	--	--	--	--	--	--	--
	MW-3 @ 22.5-24.0	07/07/95	EAI	22.5-24.0	ND	--	--	ND	ND	ND	ND	--	--
B-1	B-1-12	02/05/07	RGI	12	**790**[d]	220[x]	ND	ND	1.1[d]	2.7[d]	8.3[d]	--	--
	B-1-19	02/05/07	RGI	19	**1,200**[d]	1,900[x]	ND	**0.47**[d]	2.9[d]	5.2[d]	**18**[d]	--	--
	B-1-26	02/05/07	RGI	26	ND	ND	ND	ND	ND	ND	ND	--	--
	B-1-30	02/05/07	RGI	30	ND	ND	ND	ND	ND	ND	ND	--	--
B-2	B-2-16	02/05/07	RGI	16	**77**	ND	ND	ND	0.03	0.14	0.67		
B-3	B-3-18	02/05/07	RGI	18	**130**	ND	ND	ND	0.07	0.18	0.83	--	--
	B-3-25	02/05/07	RGI	25	ND	ND	ND	ND	0.04	0.17	0.80	--	--
B-4	B-4-24	02/05/07	RGI	24	ND	ND	ND	ND	ND	ND	ND	--	--
B-5	B-5-20	02/05/07	RGI	20	**27**	ND	ND	ND	ND	ND	ND	--	--
	B-5-23	02/05/07	RGI	23	**25**	ND	ND	ND	ND	ND	0.08	--	--
B-6	B-6-21	02/05/07	RGI	21	ND	ND	ND	ND	ND	ND	ND	--	--
	B-6-24	02/05/07	RGI	24	**350**[d]	**2,600**[x]	ND	**0.49**[d]	1.7[d]	5.8[d]	ND	--	--
GLMW-1	GLMW-1-15	06/07/11	G-Logics	15	ND	--	--	ND	ND	ND	ND	--	--
	GLMW-1-20	06/07/11	G-Logics	20	**153**	ND	ND	**0.0346**	ND	0.116	0.375	ND	2.10
	GLMW-1-25	06/07/11	G-Logics	25	ND	ND	ND	**0.0648**	ND	0.0715	0.122	--	--
GLMW-2	GLMW-2-15	06/07/11	G-Logics	15	**>3,200**[d]	ND	ND	**3.42**	0.409	**6.50**[d]	**18.39**[d]	ND	2.90
	GLMW-2-20	06/07/11	G-Logics	20	**>4,400**[d]	--	--	**6.73**[d]	**7.88**[d]	**14.5**[d]	**85.2**[d]	--	--
	GLMW-2-25	06/07/11	G-Logics	25	ND	--	--	**0.677**	0.121	0.274	0.515	--	--
GLMW-3	GLMW-3-20	06/07/11	G-Logics	20	ND	--	--	ND	ND	ND	ND	--	--
	GLMW-3-25	06/07/11	G-Logics	25	**15**	ND	ND	ND	ND	0.537	1.856	--	--
MW101	MW101-22.5	08/05/12	SoundEarth	22.5	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW101-25	08/05/12	SoundEarth	25	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW101-27.5	08/05/12	SoundEarth	27.5	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW101-30	08/05/12	SoundEarth	30	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW101-40	08/05/12	SoundEarth	40	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW101-55	08/05/12	SoundEarth	55	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
MTCA Method A Cleanup Level for Soil[5]					**100/30**[6]	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**	**0.1**	**250**

SoundEarth Strategies

Table 1
Summary of Soil Analytical Results
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Sample Location	Sample ID	Sample Date	Sampled By	Sample Depth (feet bgs)	Analytical Results (milligrams per kilogram)								
					GRPH[1]	DRPH[2]	ORPH[2]	Benzene[3]	Toluene[3]	Ethylbenzene[3]	Total Xylenes[3]	MTBE[3]	Lead[4]
MW102	MW102-20	11/02/12	SoundEarth	20	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW102-25	11/02/12	SoundEarth	25	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW102-31	11/02/12	SoundEarth	31	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
MW103	MW103-20	11/02/12	SoundEarth	20	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW103-25	11/02/12	SoundEarth	25	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW103-31	11/02/12	SoundEarth	31	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
MW104	MW104-20	11/05/12	SoundEarth	20	**1,000**	<50	<250	<0.4	<0.4	**13**	**12**	--	--
	MW104-23	11/05/12	SoundEarth	23	**440**	--	--	**0.47**	0.69	4.5	7.7	--	--
	MW104-25	11/05/12	SoundEarth	25	<2	<50	<250	**0.067**	<0.02	0.027	<0.06	--	--
	MW104-28	11/05/12	SoundEarth	28	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	MW104-30	11/05/12	SoundEarth	30	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
	MW104-33	11/05/12	SoundEarth	33	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
MW105	MW105-20	12/12/12	SoundEarth	20	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
	MW105-25	12/12/12	SoundEarth	25	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
	MW105-30	12/12/12	SoundEarth	30	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
SB201	SB201-20	11/05/12	SoundEarth	20	<2	--	--	<0.02	<0.02	0.027	0.20	--	--
	SB201-23	11/05/12	SoundEarth	23	**710**	--	--	**0.63**	0.88	**8.8**	**63**	--	--
	SB201-25	11/05/12	SoundEarth	25	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	SB201-30	11/05/12	SoundEarth	30	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
	SB201-33	11/05/12	SoundEarth	33	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
SB202	SB202-20	11/05/12	SoundEarth	20	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	SB202-25	11/05/12	SoundEarth	25	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	SB202-28	11/05/12	SoundEarth	28	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	SB202-30	11/05/12	SoundEarth	30	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
	SB202-35	11/05/12	SoundEarth	35	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
SMW04	SMW04-15	08/29/12	SoundEarth	15	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
	SMW04-20	08/29/12	SoundEarth	20	7.3	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
	SMW04-25	08/29/12	SoundEarth	25	**1,500**	**2,900**[x]	<250	<2	4.9	**23**	**62**	--	--
	SMW04-30	08/29/12	SoundEarth	30	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
	SMW04-35	08/29/12	SoundEarth	35	<2	--	--	<0.02	<0.02	<0.02	<0.06	--	--
MW106	MW106-15	12/12/12	SoundEarth	15	--	<50	<250	--	--	--	--	--	--
	MW106-20	12/12/12	SoundEarth	20	--	<50	<250	--	--	--	--	--	--
	MW106-25	12/12/12	SoundEarth	25	--	<50	<250	--	--	--	--	--	--
RW01	PW01-15	02/20/13	SoundEarth	15	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
	PW01-17.5	02/20/13	SoundEarth	17.5	<2	<50	<250	<0.02	<0.02	<0.02	<0.06	--	--
MTCA Method A Cleanup Level for Soil[5]					**100/30**[6]	**2,000**	**2,000**	**0.03**	**7**	**6**	**9**	**0.1**	**250**

NOTES:

Red denotes concentration exceeds MTCA Method A cleanup level.

[1]Samples analyzed by Method NWTPH-Gx.

[2]Samples analyzed by Method NWTPH-Dx.

[3]Analyzed by EPA Method 8021B or 8260B.

[4]Analyzed by EPA Method 6010B or 200.8.

[5]MTCA Method A Cleanup Levels, Table 740-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[6]100 mg/kg when benzene is not present and 30 mg/kg when benzene is present.

Laboratory Notes:

[d]Denotes the samples was diluted. Detection limits are raised due to dilution.

[x]The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

-- = not analyzed

< = not detected at a concentration exceeding the laboratory reporting limit

bgs = below ground surface

DRPH = diesel-range petroleum hydrocarbons

EAI = Environmental Associates, Inc.

EPA = Environmental Protection Agency

G-Logics = G-Logics Inc.

GRPH = gasoline-range petroleum hydrocarbons

mg/kg = milligrams per kilogram

MTBE = methyl tertiary-butyl ether

MTCA = Washington State Model Toxics Control Act

ND = not detected, concentration less than the laboratory method detection limit

NWTPH = Northwest Total Petroleum Hydrocarbon

ORPH = oil-range petroleum hydrocarbons

RGI = The Riley Group, Inc.

SoundEarth = SoundEarth Strategies, Inc.

Table 2
Summary of Groundwater Data and Analytical Results
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Well ID	Sample Date	Sampled By	Depth to Groundwater (feet below TOC)	Relative Groundwater Elevation[1]	Analytical Results (micrograms per liter)																
					GRPH[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Total Xylenes[3]	Other 8260 VOCs[3]	MTBE[3]	EDC[3]	EDB[3]	DRPH[2]	ORPH[2]	Tetraethyl Lead[4]	Dissolved Chromium[5]	Dissolved Arsenic[5]	Dissolved Cadmium[5]	Dissolved Lead[5]	Dissolved Mercury[5]
MW101	08/06/12	SoundEarth	24.39	245.15	<100	<0.35	<1	<1	<3	--	<1	<1	<1	--	--	--	--	--	--	--	--
	04/01/13	SoundEarth	24.67	244.87	<100	<1	<1	<1	<3	--	--	--	--	<50	<250	--	--	--	--	--	--
MW101-55 Temp	08/05/12	SoundEarth	Approx. 55'	--	<100	<0.35	<1	<1	<3	--	<1	<1	<1	--	--	--	--	--	--	--	--
MW102	11/07/12	SoundEarth	25.41	243.65	<100	<0.35	<1	<1	<3	--	<1	<1	<1	<50[6]	<250[6]	--	--	--	--	--	--
MW103	11/07/12	SoundEarth	27.80	241.75	<100	<0.35	<1	<1	<3	--	<1	<1	<1	<50[6]	<250[6]	--	--	--	--	--	--
MW104	11/07/12	SoundEarth	24.41	244.94	6,100	2,100	10	120	418	--	<1	<1	<1	4,000	<250	--	--	--	--	--	--
	03/06/13	SoundEarth	23.24	246.11	9,900	2,300	110	470	870	--	--	--	--	1,900[x]	<250	--	--	--	--	--	--
	04/01/13	SoundEarth	23.37	245.98	20,000	2,600	140	640	1,300	--	--	--	--	540[6 x]	<250[6]	--	--	--	--	--	--
MW105	12/13/12	SoundEarth	24.25	245.05	140	<1	<1	<1	<3	--	--	--	--	<50[6]	<250[6]	--	--	--	--	--	--
	03/06/13	SoundEarth	23.33	245.97	<100	<0.35	<1	<1	<3	--	--	--	--	61[x]	<250	--	--	--	--	--	--
MW-X	08/05/12	SoundEarth	24.26	244.19	<100	<0.35	<1	<1	<3	--	<1	<1	<1	<60[b]	--	--	--	--	--	--	--
GLMW-1	06/08/11	G-Logics	22.76	246.68	11,600	1,510	41.8	349	884	--	--	--	--	4,590	--	--	--	--	--	--	--
	08/06/12	SoundEarth	--	--	6,000	640	15	190	233	--	<10	<10	<10	--	--	--	--	--	--	--	--
	08/07/12	SoundEarth	23.52	245.92	4,500	550[ve]	16	150[ve]	242	--	<1	<1	<1	4,100[x]	--	--	--	--	--	--	--
GLMW-2	06/08/11	G-Logics	22.72	246.80	22,500	2,410	467	825	3,340	--	--	--	--	961	--	--	--	--	--	--	--
	08/06/12	SoundEarth	23.34	246.18	0.05' SPH	--	--	--	--	--	--	--	--	6,000[x]	--	480000 mg/kg					
GLMW-3	06/08/11	G-Logics	23.32	247.05	10,500	8.03	46.6	998	2,787	--	--	--	--	250	--	--	--	--	--	--	--
	08/06/12	SoundEarth	23.42	246.95	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-1	07/14/95	EAI[7]	--	--	7,500	78	30	130	410	--	--	--	--	ND	--	--	--	--	--	--	--
	06/18/97	Alisto[7]	--	--	1,800[b]	3.5	ND	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--
	11/10/98	Alisto[7]	--	--	2,140	ND[c]	ND	ND	18.5	--	--	--	--	--	--	--	--	--	--	--	--
	12/17/99	Alisto[7]	--	--	2,120	ND[c]	ND[c]	ND[c]	ND[c]	--	--	--	--	--	--	--	--	--	--	--	--
	07/11/00	Alisto[7]	--	--	1,310	7.26	ND[c]	ND[c]	ND[c]	--	6	--	--	--	--	--	--	--	--	--	--
	03/26/01	Alisto[7]	--	--	851	3.7	ND	ND	ND	--	4.05	--	--	--	--	--	--	--	--	--	--
	12/17/01	Alisto[7]	--	--	540	6.2	2	1	4.7	--	ND	--	--	--	--	--	--	--	--	--	--
	06/28/02	Alisto[7]	--	--	1,300	16	4.8	2.4	10	--	ND	--	--	--	--	--	--	--	--	--	--
	03/01/03	Alisto[7]	--	--	1,800	2.7	4.1	7	3	--	ND	--	--	--	--	--	--	--	--	--	--
	08/08/03	Alisto[7]	--	--	1,100	9.2	3.6	4.7	5	--	--	--	--	--	--	--	--	--	--	--	--
	03/21/04	AEG[7]	--	--	190	ND	4.5	ND	4	--	ND	--	--	--	--	--	--	--	--	--	--
	10/23/08	RGI[7]	--	--	>3' SPH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/08	RGI[7]	--	--	0.01' SPH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/09/11	G-Logics	23.26	246.19	5,000	2.25	<1.00	22.5	82.7	--	ND	<1.00	<0.0100	381	--	--	--	--	--	--	--
	08/06/12	SoundEarth	23.95	245.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-2	07/14/95	EAI[7]	--	--	25,000	2,500	48	100	240	--	--	--	--	9,500	--	--	--	--	--	--	--
	06/18/97	Alisto[7]	--	--	280,000	4,000	44,000	5,500	28,000	--	--	--	--	--	--	--	--	--	--	--	--
	11/10/98	Alisto[7]	--	--	161,000	4,000	42,100	5,710	29,400	--	--	--	--	--	--	--	--	--	--	--	--
	12/17/99	Alisto[7]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	07/11/00	Alisto[7]	--	--	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--
	03/26/01	Alisto[7]	--	--	ND	ND	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--
	12/17/01	Alisto[7]	--	--	390[d]	85	10	2.7	13	--	ND	--	--	--	--	--	--	--	--	--	--
	06/28/02	Alisto[7]	--	--	3,500	58	6.5	160	300	--	ND	--	--	--	--	--	--	--	--	--	--
	03/01/03	Alisto[7]	--	--	140	1	ND	3.50	3	--	ND	--	--	ND	--	--	--	--	--	--	--
	08/08/03	Alisto[7]	--	--	7,500	100	490	1,400	350	--	--	--	--	--	--	--	--	--	--	--	--
	03/21/04	AEG[7]	--	--	25,200	403	1,100	1,540	4,040	--	ND	--	--	80,000	--	--	--	--	--	--	--
	10/23/08	RGI[7]	--	--	20,000	62	ND	530	1,640	--	--	--	--	ND	ND	--	--	--	--	--	--
	05/09/11	G-Logics	--	--	67,000	64.3	56.4	3,670	21,890	--	<1.00	<1.00	<0.0100	1,950	--	--	--	--	--	--	--
	06/08/11	G-logics	22.35	247.44	33,200	29.9	27.7	2,720	9,970	--	<10	<10	<10	411	--	--	--	--	--	--	--
	08/06/12	SoundEarth	--	--	32,000	11	23	1,900	10,100	--	<1	<1	<1	--	--	--	--	--	--	--	--
	08/07/12	SoundEarth	23.24	246.55	5,300	2.2	4.0	400[ve]	1,710	--	<1	<1	<1	2,800	--	--	--	--	--	--	--
	11/05/13	SoundEarth	24.8	244.99	22,000	2.7	9.2	1,500	7,500					3,900[x]	630[x]						
MTCA Method A Cleanup Levels for Groundwater[8]					1,000/800[9]	5	1,000	700	1,000	varies	20	5	0.01	500	500	NA	50	5	5	15	2

Table 2
Summary of Groundwater Data and Analytical Results
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Well ID	Sample Date	Sampled By	Depth to Groundwater (feet below TOC)	Relative Groundwater Elevation[1]	Analytical Results (micrograms per liter)																
					GRPH[2]	Benzene[3]	Toluene[3]	Ethyl-benzene[3]	Total Xylenes[3]	Other 8260 VOCs[3]	MTBE[3]	EDC[3]	EDB[3]	DRPH[2]	ORPH[2]	Tetraethyl Lead[4]	Dissolved Chromium[5]	Dissolved Arsenic[5]	Dissolved Cadmium[5]	Dissolved Lead[5]	Dissolved Mercury[5]
MW-3	07/14/95	EAI[7]	--	--	2,400	140	7.4	13	14	--	--	--	--	ND							
	06/18/97	Alisto[7]	--	--	3,000	48	10	18	19	--	--	--	--	--	--	--	--	--	--	--	--
	11/10/98	Alisto[7]	--	--	2,270	30.1	3.93	5.62	ND[c]	--	--	--	--	--	--	--	--	--	--	--	--
	12/17/99	Alisto[7]	--	--	1,850	ND[c]	ND[c]	ND[c]	13.6[c]	--	--	--	--	--	--	--	--	--	--	--	--
	07/11/00	Alisto[7]	--	--	1,700	54.8	10	9.61	16.8	--	ND	--	--	--	--	--	--	--	--	--	--
	03/26/01	Alisto[7]	--	--	1,030	8.02	3.15	ND	ND	--	2.50	--	--	--	--	--	--	--	--	--	--
	12/17/01	Alisto[7]	--	--	1,200	11	3.5	1.7	1.4	--	ND	--	--	--	--	--	--	--	--	--	--
	06/28/02	Alisto[7]	--	--	3,000	33	11	2.7	5	--	ND	--	--	--	--	--	--	--	--	--	--
	03/01/03	Alisto[7]	--	--	3,900	28	7.5	4.6	4	--	ND	--	--	--	--	--	--	--	--	--	--
	08/08/03	Alisto[7]	--	--	3,200	20	8.4	2.2	0.9	--	--	--	--	--	--	--	--	--	--	--	--
	03/21/04	Alisto[7]	--	--	780	43	15	9.2	57	--	ND	--	--	ND	--	--	--	--	--	--	--
	10/23/08	RGI[7]	--	--	1,300	6.5	2.5	3.6	8.4	--	--	--	--	ND	ND	--	--	--	--	--	--
	05/09/11	G-Logics	--	--	160,000	<1.00	11	690	2,886	--	<1.00	<1.00	<0.0100	13,300	--	--	--	--	--	--	--
	06/08/11	G-Logics	23.25	247.00	13,500	8.46	12.5	362	1,501	--	--	--	--	910	--	--	--	--	--	--	--
	08/06/12	SoundEarth	24.11	246.14	trace SPH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SMW04	08/31/12	SoundEarth	26.03	246.27	1,000	<0.35	3	43	63	ND	--	<1	--	320[x]	<250	--	<1	8.42	1.62	<1	<0.1
	04/01/13	SoundEarth	25.57	246.73	4,900	5.4	13	220	380	--	--	--	--	150[(6) x]	<250[(6)]	--	--	--	--	--	--
MW106	12/13/12	SoundEarth	26.97	246.36	<100	<1	<1	<1	<3	--	--	--	--	110[x]	<250	--	--	--	--	--	--
	04/01/13	SoundEarth	25.92	247.41	130	<1	<1	<1	<3	--	--	--	--	<55[(6)]	<280[(6)]	--	--	--	--	--	--
DW-1	05/09/11	G-Logics	--	--	3,400	2.8	<1.0	<1.0	1.15	--	<1.0	<1.0	<0.01	<50	<100	--	--	--	--	--	--
DW-2	10/23/08	RGI[7]	--	--	>0.5' SPH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/21/08	RGI[7]	--	--	0.6' SPH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	05/09/11	G-Logics	--	--	190	<1.0	<1.0	<1.0	2.62	--	<1.0	<1.0	<1.0	1,140	<100	--	--	--	--	--	--
DW-3	05/09/11	G-Logics	--	--	140	<1.0	<1.0	<1.0	<3.0	--	<1.0	<1.0	<1.0	<50.0	<100	--	--	--	--	--	--
DW-4	12/17/99	Alisto [7]	--	--	857	4.04	5.92	8.47	152	--	--	--	--	--	--	--	--	--	--	--	--
	05/09/11	G-Logics	--	--	77	<1.0	<1.0	<1.0	<3.0	--	<1.0	<1.0	<1.0	52.4	<100	--	--	--	--	--	--
MTCA Method A Cleanup Levels for Groundwater[8]					1,000/800[9]	5	1,000	700	1,000	varies	20	5	0.01	500	500	NA	50	5	5	15	2

NOTES:

Red indicates concentrations exceeding MTCA Method A cleanup levels for groundwater.

2012 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington.

2011 Samples analyzed for G-Logics by Fremont Analytical of Seattle, Washington.

[1]Elevation reference datum NAVD88 (Dowl HKM November 2012).

[2]Analyzed by Northwest Total Petroleum Hydrocarbon Method NWTPH-Gx (gasoline) and NWTPH-Dx (diesel and oil).

[3]Analyzed by EPA Method 8260B or 8260C.

[4]Analyzed by EPA Method 8082 (result is for product sample).

[5]Analyzed by EPA Method 200.8.

[6]Sample extracts passed through a silica gel column prior to analysis.

[7]Data obtained from G-Logics 2011 Remedial Investigation and Feasibility Study Report Table 2: Groundwater Sample Analyses.

[8]MTCA Cleanup Regulation, Method A Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[9]1,000 µg/L when benzene is not present and 800 µg/L when benzene is present.

August 7, 2012 results for wells MW-2 and GLMW-1 reflect 10x casing volume redevelopment conducted August 6.

Laboratory Notes:

[b]This sample did not have a typical gasoline pattern.

[c]The reporting limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.

[ve]Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.

[x]The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

-- = not analyzed, not measured
< = not detected above the laboratory reporting limit
µg/L = micrograms per liter
AEG = Associated Environmental Group LLC
Alisto = Alisto Engineering Group Inc.
DRPH = diesel-range petroleum hydrocarbons
EAI = Environmental Associates, Inc.
EDB = 1,2 dibromoethane
EDC = 1,2 dichloroethane
EPA = U.S. Environmental Protection Agency
G-Logics = G-Logics Inc.
GRPH = gasoline-range petroleum hydrocarbons
mg/kg = milligrams per kilogram
MTBE = methyl tertiary-butyl ether
MTCA = Washington State Model Toxics Control Act
NA = not applicable
ND = not detected
NWTPH = Northwest Total Petroleum Hydrocarbon
ORPH = oil-range petroleum hydrocarbons
RGI = The Riley Group, Inc.
SoundEarth = SoundEarth Strategies, Inc.
SPH = separate-phase hydrocarbon
TOC = top of casing elevation
VOC = volatile organic compound

SoundEarth Strategies

Table 3
Summary of Monitoring Well Data
SKS Shell Property and Adjoining Parcels
Seattle, Washington

Well ID	Property	Installation Date	Installed By	Approximate Screen Depth (feet bgs)	Monument Rim Elevation[1] (feet)	TOC Elevation[1]	TOC Depth to Groundwater (11/07/12)	Groundwater Elevation[1][2] (11/07/12)
MW-1	Huling	05/15/97	EPI	8 to 25	274.12	273.76	19.51	254.25
MW-2	Huling	05/15/97	EPI	15 to 30	273.83	273.26	27.19	246.07
MW-3	Huling	05/15/97	EPI	10 to 30	274.14	273.88	23.64	250.24
SMW01	Huling	08/30/12	SoundEarth	22 to 32	273.87	273.53	26.35	247.18
SMW02	Huling	10/01/12	SoundEarth	20 to 30	273.29	272.92	27.94	244.98
SMW03	Huling	08/29/12	SoundEarth	20 to 30	271.60	271.26	25.26	246.00
SMW04	Kennedy	08/29/12	SoundEarth	23 to 33	272.51	272.30	26.83	245.47
MW-1	SKS Shell	07/06/95	EAI	26 to 44[3]	269.81	269.45	24.91	244.54
MW-2	SKS Shell	07/07/95	EAI	10 to 30[3]	270.20	269.79	24.35	245.44
MW-3	SKS Shell	07/07/95	EAI	10 to 30[3]	270.75	270.25	25.37	244.88
GLMW-1	SKS Shell	2011	G-Logics	10 to 30	269.91	269.44	24.52	244.92
GLMW-2	SKS Shell	2011	G-Logics	10 to 30	270.16	269.52	24.64	244.88
GLMW-3	SKS Shell	2011	G-Logics	10 to 30	270.76	270.37	24.63	245.74
MW101	SKS ROW	08/05/12	SoundEarth	20 to 30	269.79	269.54	25.42	244.12
MW102	SKS ROW	11/02/12	SoundEarth	20 to 30	269.35	269.06	25.41	243.65
MW103	SKS ROW	11/02/12	SoundEarth	20 to 30	269.83	269.55	27.80	241.75
MW104	SKS ROW	11/03/12	SoundEarth	20 to 30	269.64	269.35	24.41	244.94
MW105	SKS ROW	12/12/12	SoundEarth	22 to 32	--	269.30	24.25	245.05
MW106	Kennedy	12/12/12	SoundEarth	22 to 32	--	273.33	26.97	246.36
MW-X	BP Arco ROW	2012	ARCADIS	20 to 35[4]	268.71	268.45	25.16	243.29

NOTES:

Monitoring wells MW101, MW102, MW103, MW104, MW105, MW106, and MW-X surveyed by SoundEarth. All Other well monuments survey by Dowl HKM.

[1]Elevation reference datum North American Vertical Datum 1988 (Surveyed by Dowl HKM November 2012, except for MW105 and MW106 surveyed by SoundEarth Dec. 2012).

[2]Wells MW105 and MW106 groundwater levels were measured on March 6, 2013.

[3]Measured by G-Logics in 2011 using a vactor and camera (not based on the EAI boring logs).

[4]Estimated by SoundEarth with tape measure.

-- = not measured
ARCADIS = ARCADIS U.S. Inc.
bgs = below ground surface
EPI = Environmental Partners Inc.
EAI = Environmental Associates Inc.
G-Logics = G-Logics Inc.
ROW = right-of-way
SoundEarth = SoundEarth Strategies, Inc.
TOC = top of casing

Table 4
Summary of Monitoring Wells to be Decommissioned
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Well ID	Property	Installation Date	Total Depth[(1)(2)] (feet bgs)
DW-1	SKS Shell	04/27/01	23
DW-2	SKS Shell	04/27/01	24
DW-3	SKS Shell	04/27/01	23
DW-4	SKS Shell	04/27/01	23
MW-1	SKS Shell	07/06/95	43.97
MW-2	SKS Shell	07/07/95	29.07
MW-3	SKS Shell	07/07/95	31.21
GLMW-1	SKS Shell	2011	29.00
GLMW-2	SKS Shell	2011	27.67
GLMW-3	SKS Shell	2011	28.82
MW107	Kennedy	To be determined	Not Available

NOTES:

[(1)]SoundEarth collected total depth measurements on November 11, 2012.

[(2)]The total depth for SVE wells DW-1 through DW-4 was taken from boring logs.

-- = not measured

bgs = below ground surface

SoundEarth = SoundEarth Strategies, Inc.

SVE = soil vapor extraction

APPENDIX A
SAMPLING AND ANALYSIS PLAN

SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

SAMPLING AND ANALYSIS PLAN

APPENDIX A OF THE CLEANUP ACTION PLAN

Property:
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Prepared for:
Lennar Multifamily Communities, LLC
1325 Fourth Avenue, Suite 1700
Seattle, Washington

Report Date:
June 16, 2014

Sampling and Analysis Plan

SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington 98116

Prepared for:

Lennar Multifamily Communities, LLC
1325 Fourth Avenue, Suite 1700
Seattle, Washington

Project No.: 0914-004

Prepared by:

Suzy Stumpf, PE
Associate Engineer

Reviewed by:

Terry Montoya, PE
Principal Engineer

Rob Roberts
Senior Scientist

June 16, 2014

SoundEarth Strategies

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CAP	Cleanup Action Plan
COC	chemical of concern
CUL	cleanup level
DRPH	diesel-range petroleum hydrocarbons
DQO	data quality objective
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FC	field coordinator
gpm	gallons per minute
GRPH	gasoline-range petroleum hydrocarbons
HASP	Health and Safety Plan
ID	identifier
MS	matrix spike
MSD	matrix spike duplicate
MTCA	Washington State Model Toxics Control Act
NAVD88	North American Vertical Datum 1988
NWTPH	Northwest Total Petroleum Hydrocarbon
PCS	petroleum-carbonated soil
PID	photoionization detector
PPCD	Prospective Purchaser Consent Decree
PQL	practical quantitation limit
PVC	polyvinyl chloride

ACRONYMS AND ABBREVIATIONS (CONTINUED)

QA/QC	quality assurance/quality control
ROW	right-of-way
RPD	relative percent difference
RCW	Revised Code of Washington
SAP	Sampling and Analysis Plan
The Site	Includes soil and groundwater contaminated with gasoline-, diesel-, and oil-range petroleum hydrocarbons; benzene, toluene, ethylbenzene, and total xylenes; beneath the Property and beneath limited portions of the north-adjoining Southwest Alaska Street right-of-way and the east-adjoining Fauntleroy Way Southwest right-of-way.
SKS Shell Property	3901 Southwest Alaska Street, Seattle, Washington
SoundEarth	SoundEarth Strategies, Inc.
TESC	temporary erosion and sediment control
UST	underground storage tank
WAC	Washington Administrative Code

1.0 INTRODUCTION

SoundEarth Strategies, Inc. (SoundEarth) has prepared this Sampling and Analysis Plan (SAP) for the SKS Shell Property located at 3901 Southwest Alaska Street in Seattle, Washington (the SKS Shell Property; Figure A-1). In accordance with the Washington State Model Toxics Control Act (MTCA) Cleanup Regulations as established in Section 200 of Chapter 173-340 of the Washington Administrative Code (WAC 173-340-200), the Site is defined by the full lateral and vertical extent of contamination that has resulted from several distinct releases of petroleum hydrocarbons at the SKS Shell Property.

The Site is defined by the full lateral and vertical extent of contamination exceeding applicable cleanup levels (CUL) that has resulted from releases of gasoline and diesel at the SKS Shell Property. Based on the information gathered to date, the Site includes soil and groundwater contaminated with gasoline-, and diesel-range petroleum hydrocarbons (GRPH and DRPH, respectively); and benzene, toluene, ethylbenzene, and total xylenes (BTEX) beneath the Property and beneath limited portions of the north-adjoining Southwest Alaska Street right-of-way (ROW) and the east-adjoining Fauntleroy Way Southwest ROW (Figure A-2).

This SAP was developed to supplement the requirements of the cleanup action plan and to meet the requirements of a SAP as defined by MTCA (WAC 173-340-820).

1.1 PURPOSE AND OBJECTIVES

The purpose of the SAP is to describe the sample collection, handling, and analysis procedures to be implemented during the cleanup action in accordance with WAC 173-340-380 of MTCA. This SAP identifies specific sampling and analysis protocols, project schedule, and organization and responsibilities. It also provides detailed information regarding the sampling and data quality objectives, sample location and frequency, equipment, and procedures to be used during the cleanup action; sample handling and analysis; procedures for management of waste; quality assurance protocols for field activities and laboratory analysis; and reporting requirements.

1.2 SAMPLING AND ANALYSIS PLAN ORGANIZATION

The SAP is organized into the following sections:

- **Section 1.0, Introduction.** This section describes the purpose of the SAP and provides a description of the SKS Shell Property features and location, a brief summary of the current and historical uses of the SKS Shell Property, and a summary of the results of previous investigations conducted at the Site.
- **Section 2.0, Project Organization and Management.** This section presents the project team, including field personnel and management.
- **Section 3.0, Cleanup Action Plan Field Program.** This section presents the cleanup action objectives and construction activity summary.
- **Section 4.0, Sample Handling and Quality Control Procedures.** This section describes the sample handling techniques and quality assurance procedures that will be followed during the cleanup action.

- **Section 5.0, Analytical Testing.** This section describes the type and number of sample analyses that will be conducted on soil, groundwater, and process water samples during the cleanup action.
- **Section 6.0, Management of Investigation-Derived Waste.** This section provides details on handling and disposal procedures that will be implemented during the cleanup action.
- **Section 7.0, Data Quality Objectives.** This section summarizes the data quality objectives that will need to be met to ensure the validity of the analytical results.
- **Section 8.0, Data Collection.** This section describes the type, transfer, inventory management, and validation procedures of the data that will be gathered during the cleanup action.
- **Section 9.0, Quality Control Procedures.** This section provides details regarding the quality control (QC) procedures for both field activities and laboratory analysis.
- **Section 10.0, Corrective Actions.** This section identifies the approaches that will be used to correct any protocols that may compromise the quality of the data.
- **Section 11.0, Documentation and Records.** This section outlines the documentation that will be prepared during the cleanup action. It includes a discussion of document management, waste disposal tracking, and compliance reports.
- **Section 12.0, Health and Safety Procedures.** This section summarizes the health and safety procedures outlined in the project-specific Health and Safety Plan (Appendix B of the Cleanup Action Plan [CAP]).
- **Section 13.0, Bibliography**. This section lists references used in the preparation of this document.

1.3 BACKGROUND

This section provides a description of the Property features and location, a summary of historical SKS Shell Property use, and a summary of previous investigations conducted at the SKS Shell Property and adjoining parcels and ROWs.

1.3.1 Property Location and Description

The SKS Shell Property is located on a 0.14-acre parcel (King County parcel no. 6126600495) within the West Seattle Triangle urban neighborhood. The SKS Shell Property has been occupied by a gasoline station since 1934 and is surrounded by commercial businesses and parking lots. The SKS Shell Property and the petroleum-impacted adjoining ROWs are described in the following sections and are presented on Figure A-2.

Potable water and sewer service are provided to the SKS Shell Property by Seattle Public Utilities. Puget Sound Energy provides natural gas and Seattle City Light provides electricity to the SKS Shell Property. Solid waste disposal and recycling services are provided by Waste Management.

In addition to the SKS Shell Property, two adjoining ROWs, Fauntleroy Way Southwest and Southwest Alaska Street are impacted by petroleum. According to City of Seattle's Arterial Classifications Zoning Map, the Fauntleroy Way Southwest ROW is zoned as a principal arterial and the Southwest Alaska Street ROW is zoned as an arterial street. The Fauntleroy Way

Southwest ROW is comprised of six through lanes and the Southwest Alaska Street ROW is comprised of four through lanes.

A 15-inch diameter concrete sewer line and 6-foot City Light electrical utilidor are located beneath the Southwest Alaska Street ROW. A 15-inch-diameter concrete sewer line and a water line are located beneath the Fauntleroy Way Southwest ROW. A natural gas line is located beneath the western sidewalk adjoining the SKS Shell Property.

1.4 PROPERTY HISTORY

The historical uses of the SKS Shell and adjoining Huling and Kennedy properties are summarized below in the following Sections 1.4.1 through 1.4.4.

1.4.1 SKS Shell Property

This SKS Shell Property was developed as a gasoline station and an automotive repair facility in 1934. Successive oil companies retailing gasoline products at the SKS Shell Property include Gilmore Red Lion in the 1930s, Mobil Oil in the 1940s, Texaco in the 1950s, Atlantic Richfield in the 1960s, Arco from 1975 to 1995, Texaco from approximately 1998 to 2004, and Shell from 2004 to the present.

In 1950, the original 1934 gasoline fueling equipment was removed and two 4,000-gallon underground storage tank (USTs) were installed. The pump island and service station office were removed in 1961 and replaced with a new and relocated pump island. An additional 8,000-gallon UST was installed in 1974. The 1950-vintage USTs were removed in 1984 and replaced with one 10,000-gallon UST and two 12,000-gallon USTs. The 1984-vintage USTs are still active. Over time, both leaded and unleaded gasoline and diesel fuel have been used and stored in various USTs at the SKS Shell Property.

In July 2013, the gasoline station closed and remaining fuel was removed from the USTs. The four USTs and associated piping and dispensers were removed in December 2013. The USTs appeared to be in good condition, with no holes or other obvious indications of a recent release observed. SoundEarth prepared and submitted a UST removal report to Ecology in January 2014 (2014). No excavation of petroleum-impacted soil was conducted at that time. However, approximately 172 tons of petroleum-impacted auger cuttings drilled from the adjacent Fauntleroy Way Southwest ROW were transported and disposed of off site. The augers were required for installation of a shoring system for the UST excavation as well as the future development excavation. Shoring installation also required the decommissioning of monitoring well MW-2.

1.4.2 Adjoining Huling Property

Huling Chevrolet. In 1929, the Huling property was undeveloped except for a small residential structure near the southwest corner. Historical street grading profiles indicate that approximately 9 feet of fill was placed on the south end of the property near Southwest Edmunds Street.

A real estate office was constructed on the northern portion of the property in 1950. The office was initially heated by a stove and was converted to electric heat by 1967. Between 1959 and 1961, the office was moved to the northwestern portion of the property. A one-story, wood-framed, stove-heated coffee shop was constructed on the northern portion of the property in 1953. The coffee shop operated on the property until at least 1980. A one-story, masonry-

framed repair garage was constructed on the northeastern portion of the property in 1959. Heat was provided by a suspended electric heater. All three buildings were demolished in 1983.

The existing automotive dealership and service garage building were constructed on the southern half of the property in 1952. The dealership and service facility was occupied by Westside Ford from the early 1950s to the early 1970s, Jim Houston Ford in the late 1970s, Goodyear Tire and Hart Chevrolet in the 1980s, and Huling Chevrolet from 1989 to 2008. The facilities have been vacant since 2008. An additional automotive repair building was constructed to the north of the dealership building in 1983. This building was demolished by 1990. The existing retail building on the northern portion of the property was constructed between 1990 and 1995 and used as a used car sales office, and later as a produce stand.

The service garage equipment included 14 underground hydraulic hoists (one was removed in the 1990s) and a trench drain outlet leading to an oil-water separator. Three USTs were removed by Lee Morse Contractors in September 1989. The removed USTs included a 2,500-gallon UST used for gasoline storage, a 1,000-gallon UST used for heating oil storage, and a 500-gallon UST used for waste oil storage.

1.4.3 Adjoining Kennedy Property

A funeral home has operated on the Kennedy property since 1941. The existing building was initially heated by a stove and was later converted to an oil-burning furnace. The building has been occupied by the Howden Kennedy Funeral Home since at least 1966. Embalming took place on the property until approximately January 2012. An operational heating oil UST of unknown capacity is located on the southern portion of the property.

1.4.4 Southwest Alaska Street and Fauntleroy Way Southwest

The width and use of the affected ROWs have remained relatively unchanged since the SKS Shell Property was first developed in the 1920s.

1.5 SUMMARY OF PREVIOUS INVESTIGATIONS

The results of previous subsurface investigations and the remedial investigation conducted at the Site indicate the presence of soil and groundwater contaminated with GRPH, DRPH, and BTEX; beneath the SKS Shell Property and beneath limited portions of the north-adjoining Southwest Alaska Street ROW and the east-adjoining Fauntleroy Way Southwest ROW.

1.5.1 SKS Shell Property

Previous subsurface investigations indicated that soil beneath the Shell SKS Property is contaminated with GRPH, DRPH, and BTEX exceeding the applicable soil CULs at depths generally ranging between 12 and 25 feet below ground surface (bgs). Petroleum-contaminated soil (PCS) is located beneath the northern two-thirds of the SKS Shell Property. The lateral extent of contaminated soil was bound by boring SB201 to the north and monitoring well MW105 to the northeast. The southern extent is likely beneath the SKS Shell building. Soil borings conducted further south on the Huling and alley properties did not encounter PCS.

Groundwater samples collected from monitoring wells located around the perimeter of the USTs and pump islands (wells MW-1 through MW-3 and GLMW-1 through GLMW-3) contain concentrations of GRPH, DRPH, and BTEX that exceeded the applicable groundwater CULs. Separate-phase hydrocarbon has been intermittently observed in wells MW-1, MW-3, GLMW-2,

and DW-2. Laboratory analytical results for groundwater samples collected from downgradient monitoring wells MW101 through MW103, MW105, and MW-X indicate that the plume extends less than 25 feet northeast of the SKS Shell Property boundary beneath the Fauntleroy Way Southwest ROW and the plume does not extend beyond the Southwest Alaska Street ROW.

1.6 CLEANUP ACTION PLAN TASK DESCRIPTIONS

The tasks proposed as part of the cleanup action plan include the following:

- Site preparation and mobilization
- Hazardous Materials Survey, building demolition, and UST decommissioning
- Well decommissioning
- Shoring installation
- Excavation
- Remediation well installation and temporary right of way dewatering system
- Chemical Oxidation Injection
- Installation of the vapor and water barrier
- Monitoring well installation
- Compliance monitoring (soil and groundwater sampling)
- Remediation and monitoring well decommissioning

A summary of the CAP schedule is provided in Table A-1.

2.0 PROJECT ORGANIZATION AND MANAGEMENT

This section describes the overall project management strategy for implementing the cleanup action.

To ensure efficient decision making for field sampling and laboratory analysis, key data collection decisions, decision criteria, process for decision making, quality assurance/quality control (QA/QC) procedures, and responsibilities are described below and detailed in Table A-2.

These decision and communication plans will be followed by field personal under direction of the field coordinator and task manager. Site quality control to ensure proper communication and adherence to this SAP is discussed below in Section 9.0.

The cleanup action is being conducted by SoundEarth on behalf of Lennar Multifamily Communities, LLC. The cleanup action for the SKS Shell Property will be performed under a Prospective Purchaser Consent Decree (PPCD). Washington State Department of Ecology (Ecology) is providing regulatory guidance of Site activities.

The following key personnel have been identified for the project. A summary of key personnel roles and responsibilities is provided in Table A-2.

Regulatory Agency. Ecology is the lead regulatory agency for the Site, as promulgated in MTCA. The cleanup action for the Voluntary Cleanup Program Properties is being conducted as an independent remedial action in accordance with WAC 173-340-515 of MTCA. The cleanup of the SKS Shell Property will be performed under the PPCD. Ecology's site manager for the project is:

Mr. Eugene Freeman
Washington State Department of Ecology
3190 160th Avenue Southeast
Bellevue, Washington 98008
425-649-7191
eufr461@ecy.wa.gov

Project Contact. SoundEarth has been contracted by Lennar Multifamily Communities, LLC to plan and implement the cleanup action at the Site. The project contact for Lennar Multifamily Communities, LLC is:

Mr. Brad Reisinger
Lennar Multifamily Communities, LLC
1325 Fourth Avenue, Suite 1700
Seattle, Washington 98101
206-708-2293
brad.reisinger@lennar.com **Project Principal.** The project principal provides oversight of all project activities and reviews all data and deliverables before their submittal to the project contact or regulatory agency. The project principal for SoundEarth is:

Mr. John Funderburk
SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102
206-306-1900
Fax: 206-306-1907
jfunderburk@soundearthinc.com

Project Manager. The project manager has overall responsibility for developing the SAP, monitoring the quality of the technical and managerial aspects of the cleanup action, and implementing the SAP and corresponding corrective measures, where necessary. The project manager for SoundEarth is:

Rob Roberts
SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102
206-306-1900
Fax: 206-306-1907
rroberts@soundearthinc.com

Laboratory Project Manager. The laboratory project manager will provide analytical support and will be responsible for providing certified, pre-cleaned sample containers and sample preservatives (as

appropriate) and for ensuring that all chemical analyses meet the project quality specifications detailed in this SAP. Friedman and Bruya Inc., of Seattle, Washington, has been contracted by Lennar Multifamily Communities, LLC to perform the chemical and physical analysis for compliance samples collected during the cleanup action. The laboratory project manager is:

Mr. Mike Erdahl
Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, Washington 98119
206-285-8282
merdahl@friedmanandbruya.com

Project QA/QC Officer. The project QA/QC officer has the responsibility to monitor and verify that the work is performed in accordance with the SAP and other applicable procedures. The project QA/QC officer has the responsibility to assess the effectiveness of the QA/QC program and to recommend modifications to the program when applicable. The project QA/QC officer is responsible for assuring that the personnel assigned to the project are trained relative to the requirements of the QA/QC program and for reviewing and verifying the disposition of nonconformance and corrective action reports. The project QA/QC officer for SoundEarth is:

Ms. Audrey Hackett
SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102
206-306-1900
Fax: 206-306-1907
ahackett@soundearthinc.com

Field Coordinator. The field coordinator (FC) will supervise field collection of all samples. The FC will ensure proper recording of sample locations, depths, and identification; sampling and handling requirements, including field decontamination procedures; physical evaluation and logging of samples; and completing of chain-of-custody forms. The FC will ensure that all field staff follows the SAP, that the physical evaluation and logging of soil is based on the visual-manual classification method American Society for Testing and Materials D-2488, and that standardized methods for sample acceptability and physical description of samples be followed. The FC will ensure that field staff maintains records of field sampling events using the forms included as Attachment A of this SAP. The FC will be responsible for proper completion and storage of field forms. The FC for SoundEarth is:

Elizabeth Forbes
SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102
206-306-1900
Fax: 206-306-1907
eforbes@soundearthinc.com

Field Staff. Members of the field staff must understand and implement the QA/QC program, coordinate and participate in the field sampling activities, coordinate sample deliveries to laboratory, and report any deviations from project plans as they relate to the cleanup action objectives as presented in the SAP. Major deviations from the SAP, such as the inability to collect a sample from a specific sampling location, obtaining an insufficient sample volume for the required analyses, or a change in sampling method, must be reported to the project manager.

Subcontractors. All subcontractors will follow the protocols outlined in this SAP and will be overseen and directed by SoundEarth. The following subcontractors have been identified:

Private Utility Locator:

Mr. Kemp Garcia
Bravo Environmental
6437 South 144th Street
Tukwila, Washington 98168
425-424-9000

Site Superintendent/General Contractor:

Mr. Evan Christenson
W.G. Clark
408 Aurora Avenue North
Seattle, Washington 98109
206-689-0493

3.0 CLEANUP ACTION PLAN FIELD PROGRAM

The objectives of the cleanup action for the Site have been established in consideration of the future use of the SKS Shell Property and include the following:

- Excavate on-property PCS containing petroleum hydrocarbons and BTEX at concentrations that present a risk to human health and the environment.
- Remove petroleum hydrocarbons and BTEX impacted-groundwater from the adjoining Fauntleroy Way Southwest and Southwest Alaska Street ROWs.
- Provide engineering controls to mitigate any potential vapor intrusion and recontamination of the SKS Shell Property.
- Monitored natural attenuation of soil and groundwater beneath the Fauntleroy Way Southwest and Southwest Alaska Street ROWs.
- Acquire a certification of completion under the PPCD for the SKS Shell Property.

A discussion of the field program is provided in the following sections.

3.1 SUMMARY OF FIELD ACTIVITIES AND SCOPE OF WORK

3.1.1 Site Preparation and Mobilization

Before initiating construction activities, temporary erosion and sediment control (TESC) measures will be established as part of the larger construction excavation project. When all TESC measures are implemented in accordance with the construction project plan, construction equipment and supplies will be mobilized to the Site.

3.1.2 Demolition and Underground Storage Tank Decommissioning

A hazardous materials survey will be completed for all the buildings on the SKS Shell Property before demolition. If abatement measures are necessary, the contractor will perform these activities before the demolition of the buildings.

All known USTs on the SKS Shell Property have been decommissioned and a UST site assessment was conducted under the oversight of a Washington State-certified UST site assessor in accordance with the *Guidance for Site Checks and Site Assessment for Underground Storage Tanks* (Ecology 2003), *Underground Storage Tank Regulations* (WAC 173-360), and *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2011).

3.1.3 Well Decommissioning

Monitoring wells within the footprint of the excavation area will be decommissioned by a licensed well driller or under the supervision of a professional engineer in accordance with the Ecology Water Well Construction Act (1971), Revised Code of Washington (RCW) 18.104 (WAC 173-160-460). The wells will be abandoned in place using bentonite clay.

3.1.4 Shoring Installation

Shoring will be installed around the entire perimeter of the redevelopment and will consist of a soil nail wall. Shoring will be installed in 5- to 10-foot increments as the excavation proceeds to facilitate the safe excavation of contaminated soil to the required depth.

3.1.5 Shoring and Excavation Sequence

The bulk excavation will begin after the completion of the following items:

- Installing TESC measures.
- Establishing site security and fencing.
- Demolishing existing buildings.
- Preparing ingress and egress pathways.
- Decommissioning monitoring wells within the Remedial Excavation Area.
- Decommissioning and removal of USTs.
- Storage tank to contain groundwater pumped from the remediation wells, surface water runoff/infiltration, and construction dewatering for off-Site treatment and disposal.

Approximately 13,000 tons of contaminated soil will be excavated and disposed of at a Subtitle D landfill. SoundEarth will use a soil management grid, which breaks the entire Remedial

Excavation Area into 10-foot by 10-foot grid cells, to readily identify and classify each grid cell for proper off-Site disposal (Figure A-3). The excavation will be coordinated to first address the contaminated soil along the northeast corner of the SKS Shell Property due to the deeper extent of PCS.

When performance samples show that all of the PCS has been removed from the identified remedial excavation area, the larger redevelopment excavation and soil screening will resume.

3.1.5.1 Contingency Plan to Address Unknown Contamination

The presence of aesthetic impacts and conditions encountered by Site employees and equipment operators during the construction excavation activities at the SKS Shell Property may be indicative of conditions associated with contaminated media. Equipment operators will be instructed to use these criteria to alert the site superintendent and construction manager of potential issues of previously unidentified contamination at the Site, in accordance with the communication plan. Any of the following occurrences are considered common sense criteria that may require a mitigation or remediation response. These criteria include, but are not limited to:

- Obvious petroleum staining, sheen, or colored hues in soil or standing water.
- The presence of petroleum products or leachate of other chemicals.
- The presence of utility pipe lines with sludge or trapped liquid indicating petroleum or chemical discharge sludge.
- The presence of buried pipes, conduits, tanks, or unexplained metallic objects or debris.
- Materials with a granular texture that suggests industrial origin.
- Vapors causing eye irritation or nose tingling or burning.
- White, chalky compounds or fine particulate soil layers.
- Presence of gasoline- or oil-like vapor or odor.
- Burnt debris or the presence of slag-like material.

Any criteria identified by on-Site personnel will be evaluated and, as appropriate, a sampling plan will be developed to properly characterize and manage the material in accordance with state and federal regulations.

In the event that a previously unidentified UST is encountered during the course of the excavation activities, a UST site assessment will be conducted under the oversight of a Washington State-certified UST site assessor, and the UST will be removed in accordance with the *Guidance for Site Checks and Site Assessment for Underground Storage Tanks* (Ecology 2003), *Underground Storage Tank Regulations* (WAC 173-360), and *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology 2011). In the event that impacts to soil are observed, performance and confirmational soil samples will be collected and analyzed to ensure that the contaminated soil is removed and properly characterized before disposal.

3.1.6 Excavation Trench Dewatering

Most of the excavation is above the groundwater table and minimal water is anticipated to be generated except along the northeast corner of the SKS Shell Property where the limits of the excavation extend below the groundwater table. Water that is generated from surface water runoff due to precipitation events and any groundwater encountered during the course of the excavation will be gathered at a low point in the excavation, as determined by the contractor, and pumped into a 6,900-gallon polyethylene aboveground water storage tank that will be stored on the SKS Shell Property before being transported for treatment and disposal. The water storage tank will be located in an area that is accessible for a vacuum truck service to remove the contaminated water and transport it for treatment and disposal off the SKS Shell Property.

3.1.7 Parking Structure

Construction of the subgrade parking structure will begin after the excavation is completed. Architectural details for the project are not currently available; however, preliminary plans are to construct two levels of below-grade parking. Footing drains will be completed along the exterior perimeter of the foundation to collect any groundwater that may come into contact with the structure. Considering the depth of the excavation (approximately 247 feet above NAVD88), as well as the location of the primary water-bearing zone (approximately 246 feet above NAVD88), any groundwater collected at the footing drains is likely to be limited in volume.

The concrete shoring and foundation system will be constructed to act as a barrier to recontamination and vapor intrusion from the groundwater plume within the ROWs. Any vapor intrusion into the subgrade parking structure will be further mitigated by the venting system typically incorporated into such structures to avoid buildup of carbon monoxide and petroleum fumes generated by running vehicle engines.

3.1.8 Right-of-Way Dewatering System

The ROW dewatering system will be installed before beginning excavation activities and will operate for three to four months during the course of the excavation. The dewatering system is comprised of nine extraction wells. The remediation wells are spaced approximately 15 feet apart. The ROW dewatering system will remove approximately 3 pore volumes for an estimated 50,000 gallons, from the northeast corner of the SKS Shell Property and Fauntleroy Way Southwest and Southwest Alaska Street ROWs.

Electric submersible pumps will be placed at the bottom of each remediation well to extract groundwater from the formation and pump the water to the 6,900-gallon aboveground water storage tank. The remediation piping and electrical supply for the pumps will all be placed aboveground and will run along the shoring wall to minimize interference with the planned development underground utilities beneath Fauntleroy Way Southwest and Southwest Alaska Street ROWs.

Based on the aquifer test performed on March 19, 2013, a radius of influence of 15 feet was determined for each remediation well. The anticipate extraction rate from each remediation well is 0.5 gallons per minute (gpm) for a total of 4.5 gpm for the combined system. The extracted water will be pumped to a main discharge header and transferred to a water storage tank. The water storage tank will be emptied, as needed, and water levels will be monitored by personnel to ensure that an adequate capacity is maintained in the storage tank.

3.1.9 Remedial Well Installation

There will be nine remediation wells advanced beneath the Fauntleroy Way Southwest and Southwest Alaska Street ROWs to a total depth of 40 feet bgs. All wells will be completed by a licensed well driller and comply with the requirements of WAC 173-160, Minimum Standards for Construction and Maintenance of Wells.

Each remediation well will be constructed of 4-inch-diameter blank polyvinyl chloride (PVC) casing, flush-threaded to a 0.010-inch slotted well screen. The bottom of each of the wells will be fitted with a threaded PVC bottom cap, and the top of each well will be fitted with a PVC reducer bushing and connected to a 1-inch-diameter PVC water discharge line. Each remediation well will have a dedicated water discharge line that runs aboveground to the 6,900-gallon holding tank.

Each remediation well will be completed with a bentonite seal extending down from the top of casing, which will be the approximate elevation at the base of the excavation. The annulus of the remediation wells will be filled with #10/20 silica sand extending from the bottom of the bentonite seal to total depth.

The remediation wells will be developed by SoundEarth field staff with the use of a whale pump or bailer and will consist of surging and purging until a minimum of five well volumes are removed and the groundwater no longer appears turbid. Turbidity will be measured visually by field staff conducting development activities. The installation of the remediation wells and system piping will be completed before the beginning excavation activities. The estimated remedial time frame for groundwater restoration is 5 years following the removal of the source material, ROW dewatering, and chemical oxidation.

3.1.10 Installation of the Vapor and Water Barrier

In order to prevent recontamination of on-property soil and groundwater from the impacts that will remain beneath the adjacent Fauntleroy Way Southwest and Southwest Alaska Street ROWs, a spray-on vapor and water membrane will be applied on the interior face of the shoring wall. A protective liner will be laid on top of the membrane before pouring the concrete walls and foundation. The contaminant barrier will limit potential vapor intrusion and the migration of chemicals of concern (COCs) that could leach from off-property soil and groundwater.

3.1.11 Monitoring Well Installation and Development

When the excavation activities are completed and the foundation for the parking structure has been poured, three monitoring wells, MW108 through MW110, will be advanced to a depth of 35 feet bgs along the north and east SKS Shell Property boundaries. Monitoring well design and specifications are presented on. All wells will be completed by a licensed well driller and comply with the requirements of WAC 173-160, Minimum Standards for Construction and Maintenance of Wells.

Each monitoring well will be constructed of 2-inch-diameter blank PVC casing, flush-threaded to 0.010-inch slotted well screen. The bottom of each of the wells will be fitted with a threaded PVC bottom cap, and the top of each well will be fitted with a locking j-plug cap. Each monitoring well will be completed with a bentonite seal extending down from the top of casing, which will be the approximate elevation at the base of the excavation. The annulus of the

remediation wells will be filled with #10/20 silica sand extending from the bottom of the bentonite seal to total depth.

The monitoring wells will be developed by SoundEarth field staff with the use of a whale pump or bailer and will consist of surging and purging until a minimum of five well volumes are removed and the groundwater no longer appears turbid. Turbidity will be measured visually by field staff conducting development activities.

3.1.12 Well Decommissioning

Upon completion of the required confirmational monitoring and Ecology's issuance of a Certificate of Completion under the PPCD for the SKS Shell Property, the compliance monitoring wells and the remediation wells will be decommissioned in accordance with the Ecology Water Well Construction Act (1971), Chapter 18.104 RCW (WAC 173-160-460). The wells will be decommissioned in place using bentonite clay.

3.2 GROUNDWATER SAMPLING

Groundwater samples will be collected from each of the compliance monitoring wells for laboratory analysis. The groundwater sampling locations and frequency and procedures for groundwater sample collection and handling are presented below.

3.2.1 Sample Collection and Handling Procedures

Groundwater samples will be collected quarterly and handled in accordance with the 1996 U.S. Environmental Protection Agency (EPA) guidance document, *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures* at least 24 hours following well development. SoundEarth field staff with follow the procedures described below when collecting groundwater samples:

- The locking well cap from the monitoring well will be removed and the groundwater level in the well will be allowed to equilibrate to atmospheric pressure for a minimum of 20 minutes.
- The depth to groundwater in the monitoring well will be measured relative to the top of well casing to the nearest 0.01 foot using an electronic water-level meter. The depth to the monitoring well bottom will also be measured to evaluate siltation of the monitoring well and to calculate the estimated purge water volume. All non-disposable equipment will be decontaminated between uses.
- Each monitoring well will be purged at a low-flow rate (100 to 300 milliliters per minute) using a bladder pump and dedicated polyethylene tubing. The pump intake will be placed at the approximate center of the screened interval. Temperature, pH, specific conductivity, dissolved oxygen, and oxidation-reduction potential will be monitored during purging using a water quality meter equipped with a flow-through cell while purging to determine when stabilization of these parameters occurs.
- Groundwater samples will be collected directly from the pump outlet following stabilization of temperature, pH, specific conductance, turbidity, dissolved oxygen, and oxygen-reduction potential. If the monitoring well is completely dewatered during purging, samples will be collected when the groundwater in the well has recovered to at least 80 percent of the pre-purge casing volume.

- If low-flow sampling methods are not practical, the monitoring well will be allowed to recharge for no longer than 2 hours following cessation of purging and will be sampled using a dedicated, disposable, polyethylene double-check valve bailer and sampling cord.
- The sample containers, as described in Table A-3, will be filled directly if collected from a pump, or the water samples will be transferred immediately from the bailer into laboratory-supplied sample containers, taking care to minimize turbulence. Care will be taken not to handle the seal or lid of the container when decanting the sample into the containers. The containers will be filled completely to eliminate any headspace, and the seals/lid will be secured.
- Each sample container will be labeled and handled following the protocols described in Section 4.0, Sample Handling and Quality Control Procedures.
- The chain-of-custody protocols will be maintained during sample transport and submittal to the laboratory.
- The well cap and monument will be secured following sampling. Any damaged or defective well caps or monuments will be noted and scheduled for replacement, if necessary.

Field personnel will be required to prepare Groundwater Purge and Sample Forms during groundwater monitoring and sampling activities. The forms will include depth to groundwater and total depth measurements, as well as water quality measurements, including pH, temperature, dissolved oxygen, specific conductance, oxidation-reduction potential, and/or turbidity. In addition, the sample identifier (ID), date of sample collection, and analyses will be recorded on the form. An example of the Groundwater Purge and Sample Form is included in Attachment A.

3.3 SOIL SAMPLING

Performance soil samples will be collected and analyzed using an EPA-accredited laboratory to confirm that all of the PCS has been removed. Performance soil samples will be collected from the bottom of each 10-foot by 10-foot soil grid cell and from the sidewall of each remedial excavation area. Performance soil samples will be centered in the grid cell and will be located and identified by the grid cell. Information logged during soil performance sampling will include sample depth, Unified Soil Classification System description, soil moisture content, observations of physical indications of contamination (e.g., odors, staining), and field screening data obtained using a photoionization detector (PID).

A contingency for performance samples will be retained in the event that an unknown condition is encountered during the course of the excavation, such as a UST. In this case, performance monitoring for soil will be conducted, the analytical results will direct the advancement of the excavation and characterize the soil for disposal.

Soil samples will be collected directly from the sidewalls and/or bottom of the remedial excavation area using either stainless steel or plastic sampling tools. Soil samples collected at depths of less than 4 feet bgs will be collected manually. Samples collected at depths below 4 feet bgs will be collected with the backhoe bucket unless engineering controls are in place that allow for manual sample collection at

depths greater than 4 feet bgs. All non-dedicated sampling equipment will be decontaminated between uses. The samples will be submitted for laboratory analysis and the analytical results will be used to assess when the points of compliance for soil have been achieved.

4.0 SAMPLE HANDLING AND QUALITY CONTROL PROCEDURES

Sections 4.1 through 4.5 summarize sample labeling, containers, handling, chain of custody, and field quality control procedures to be applied during the cleanup action.

4.1 SAMPLE IDENTIFICATION

Each sample collected during the cleanup action will be assigned a unique sample ID and number. Sample ID labels will be filled out and affixed to appropriate containers immediately before sample collection. The label is filled out in indelible ink and will include the following information: media, date, time sampled, sample identification and number, project name, project number, sampler's initials, and analyte preservative(s) if any. An example of the Sample ID Label is included in Attachment A of this SAP.

4.1.1 Soil

Soil samples collected during the cleanup action will be identified by their position relative to a grid measuring 310 feet (east-west) by 360 feet (north-south), and segregated into 1,116 discrete grid cells (A1 through JJ31), each measuring 10 feet by 10 feet.

Bottom and sidewall samples will be assigned a unique identifier that will include the components listed below:

- The grid cell identification (e.g., A1)
- The compass heading of the sidewall (e.g., N)
- The sample type (e.g., bottom "B", sidewall "Southwest")
- The number of samples collected in that area (e.g., 01, 02, 03)
- The depth in feet bgs (e.g., 24)

For example, a soil sample collected from the bottom of the remedial excavation in grid cell A1 at a depth of 24 feet bgs would be identified as A1B01-24.

Likewise, a soil sample collected from the north side wall of grid cell JJ31 at a depth of 32 feet would be identified as JJ31NSouthwest01-32. If this sidewall required overexcavation and further sampling within the same grid cell and depth, a second sample would be collected and would be identified as JJ31NSouthwest02-32. The sample identification would be recorded on the Sample ID Label, Field Report form, and Sample Chain of Custody form.

4.1.2 Groundwater

Groundwater sample IDs will include a prefix of the well identification and the date. For example, the groundwater sample collected from monitoring well MW06 on October 22, 2013, would be numbered MW06-20131022. The sample identification will be placed on the Sample ID Label, the Field Report form, the Groundwater Purge and Sample Form, and the Sample Chain of Custody form.

4.2 DECONTAMINATION PROCEDURES

Decontamination of all nondisposable tools and equipment will be conducted before each sampling event and between each sampling location, including stainless steel bowls/containers, stainless steel spoons/spatulas, stainless steel core catcher, hack saw blades, and drill bits. A sufficient supply of pre-decontaminated small equipment will be mobilized to the sampling locations to minimize the need for performing field decontamination. Field personnel will change disposable latex or nitrile gloves before collecting each sample and before decontamination procedures and will take precautions to prevent contaminating themselves with water used in the decontamination process. The following steps will be followed to decontaminate reusable soil and groundwater sampling equipment:

- The equipment will be washed with a solution of Alconox (or an equivalent detergent) and water.
- The equipment will be rinsed with tap water.
- A final rinse will be conducted with distilled or deionized water.

Residual sample media from the equipment, used decontamination solutions and associated materials, and disposable contaminated media will be disposed of according to the procedures described in Section 6.0, Management of Investigation-Derived Waste.

4.3 SAMPLE CONTAINER AND HANDLING PROCEDURES

Soil samples collected for analysis of volatile organic compounds will be collected in accordance with EPA Method 5035. Groundwater samples will be collected in accordance with the EPA's 1996 guidance *Low Flow (Minimal Drawdown) Groundwater Sampling Procedures*. Required containers, preservation, and holding times for each anticipated analysis are listed in Table A-3.

SoundEarth personnel will be responsible for following the container handling procedures below:

- Each sample container will be labeled and handled with the date and time sampled, well identification number, project number, and preservative(s), if any.
- All sample collection information will be documented on a Sample Chain of Custody form; the sample will be placed in a cooler chilled to near 4 degrees Celsius and transported to the laboratory.

The field coordinator will check all container labels, chain of custody for entries, and field notes for completeness and accuracy at the end of each day.

4.4 SAMPLE CHAIN-OF-CUSTODY PROCEDURES

The written procedures that will be followed whenever samples are collected, transferred, stored, analyzed, or destroyed are designed to create an accurate written record that can be used to trace the possession and handling of the sample from the moment of its collection through analysis and reporting of analytical values. This written record, the Sample Chain of Custody form, will be filled out by the field sampling team at the time the sample is obtained. An example of the Sample Chain of Custody form is included in Attachment A.

All samples submitted to the laboratory are accompanied by the Sample Chain of Custody form. This form is checked for accuracy and completeness and then signed and dated by the laboratory sample custodian accepting the sample. At the laboratory, each sample is assigned a unique, sequential laboratory identification number that is stamped or written on the Sample Chain of Custody form.

All samples are held under internal chain of custody in the sample control room using the appropriate storage technique (i.e., ambient, refrigeration, frozen). The laboratory project manager assigned to a particular client will be responsible for tracking the status of the samples throughout the laboratory. Samples will be signed out of the sample control room in a sample control logbook by the analyst who will prepare the samples for analysis.

The Sample Chain of Custody form will include the following information: client, project name and number, date and time sampled, sample identification, sampler's initials, analysis, and analyte preservative(s), if any.

4.5 FIELD QUALITY ASSURANCE SAMPLING

Field and laboratory activities will be conducted in such a manner that the results be valid and meet the data quality objectives for this project. QA/QC groundwater samples will be collected during the course of the groundwater monitoring to provide for data validation, as detailed in Section 7.0. QA/QC samples will consist of field duplicates. QA/QC samples will be collected and sent to the laboratory along with the primary field samples. Based on the sampling frequency and number of groundwater samples anticipated, it is estimated that one groundwater field duplicate sample will be submitted per sampling event. The QA/QC samples will be assigned a unique sample identifier and number. The number will include a prefix of MW99 for field duplicates. For example, a field duplicate collected on October 22, 2013, would be labeled MW99-20131022. SoundEarth will note the locations of the field duplicates in the field notes.

5.0 ANALYTICAL TESTING

All compliance samples will be submitted to Friedman and Bruya, Inc., an Ecology-accredited analytical laboratory, on a standard 7- to 10-day turnaround time. All chemical and physical testing will adhere to EPA's Southwest-846 (EPA 2007) QA/QC procedures and analysis protocols or follow the appropriate Ecology methods. In completing chemical analyses for this project, the laboratory will meet the following minimum requirements:

- Adhere to the methods outlined in this SAP, including methods referenced for each analytical procedure.
- Provide a detailed discussion of any modifications made to previously-approved analytical methods.
- Deliver PDF and electronic data as specified.
- Meet reporting requirements for deliverables.
- Meet turnaround times for deliverables.
- Implement QA/QC procedures discussed in Section 7.0, including data quality objectives (DQOs), laboratory quality control requirements, and performance evaluation testing requirements.

- Notify the project QA/QC manager of any QA/QC problems when they are identified to allow for quick resolution.
- Allow laboratory and data audits to be performed, if deemed necessary.

Copies of the *Laboratory Quality Assurance Manual* from Friedman and Bruya, Inc. are on file at SoundEarth's offices for review and reference and will be followed throughout the cleanup action. Access to laboratory personnel, equipment, and records pertaining to samples, collection, transportation, and analysis can be provided. Container requirements, holding times, and preservation methods for soil and water are summarized in Table A-3.

Sample laboratory analytical results for each analyte will be compared to regulatory limits applicable to the cleanup action. A detailed description of the analytical methods, laboratory practical quantitation limits (PQLs), and applicable regulatory limits for each analyte is provided in Table A-4 and is summarized in the Sections 5.1 through 5.2 below for each medium to be sampled during the cleanup action.

5.1 SOIL

Select soil samples will be submitted for laboratory analysis of GRPH Northwest Total Petroleum Hydrocarbon (NWTPH) Method NWTPH-Gx; DRPH by NWTPH-Dx; and BTEX by EPA Method 8021B.

5.2 GROUNDWATER

Groundwater samples will be submitted for laboratory analysis of GRPH by Method NWTPH-Gx, DRPH by NWTPH-Dx, and BTEX by EPA Method 8021B.

6.0 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

Contaminated soil, groundwater, and disposable equipment generated during the cleanup action will be handled in accordance with a contained-in determination and/or in accordance with state and federal regulations. The procedures for managing investigation-derived waste for the expected waste streams are discussed in Sections 6.1 through 6.3 below.

6.1 SOIL

Soil containing petroleum hydrocarbon constituents that is excavated during the cleanup action at the Site will be segregated from clean overburden soil based on existing laboratory analytical data for that grid cell and field observations, when feasible. If soil is stockpiled for transport, samples of stockpiled excavated soil will be collected from locations where field instrumentation (i.e., PID) or field observations indicate that contamination is likely to be present, and will be collected from a depth of 6 to 12 inches beneath the surface of the stockpile. The number of samples to be collected from the stockpile will be determined by Table 6.9 from Ecology's *Guidance for Remediation of Petroleum Contaminated Sites,* dated September 2011 (Attachment B). Based on the current development plan, all the soil being excavated from the Site will be removed for off-site disposal. The treatment, storage, and disposal facility will classify the soil being delivered based on the laboratory analytical data provided by the generator.

6.2 WASTEWATER

Wastewater will be generated during the cleanup action in the course of equipment decontamination activities, dewatering activities, and purging water from the wells during compliance groundwater sampling events. Groundwater from the excavation area and from the temporary groundwater dewatering system will be pumped to an aboveground storage tank and removed using a vacuum truck. Purge water generated from compliance monitoring activities will be drummed on site, labeled, and disposed of at an appropriate waste disposal facility.

6.3 DISPOSABLES

Disposable personal protective clothing (e.g., Tyvek suits, rubber gloves, and boot covers) and disposable sampling devices (e.g., plastic tubing, plastic scoops, and bailers) will be placed in plastic garbage bags and disposed of as nonhazardous waste.

7.0 DATA QUALITY OBJECTIVES

Field and laboratory activities will be conducted in such a manner that the results be valid and meet the data quality objectives for this project. Guidance for QA/QC will be derived from the protocols developed for the cited methods within EPA's documents *Test Methods for the Evaluation of Solid Wastes Laboratory Manual Physical/Chemical Methods Southwest-846* (EPA 2007) and the *USEPA Contract Laboratory Program, National Functional Guidelines for Organic Data Review* (EPA 2008). The data quality objectives are designed to:

- Assist the project manager and project team to focus on the factors affecting data quality during the planning stage of the project.
- Facilitate communication among field, laboratory, and project staff as the project progresses.
- Document the planning, implementation, and assessment procedures for QA/QC activities for the cleanup action.
- Verify that the DQOs are achieved.
- Provide a record of the project to facilitate final report preparation.

The DQOs for the project include both qualitative and quantitative objectives, which define the appropriate type of data and specify the tolerable levels of potential decision errors that will be used as a basis for establishing the quality and quantity of data needed to support the cleanup action. To verify that the DQOs are achieved, this SAP details aspects of sample collection and analysis including analytical methods, QA/QC procedures, and data quality reviews. This SAP describes both qualitative and quantitative measures of data quality to verify that the DQOs are achieved.

Detailed QA/QC procedures in the field and at the laboratory are provided in the following sections. The DQOs for the cleanup action will be used to develop and implement procedures to verify that data collected is of sufficient quality to adequately address the objectives of the cleanup action as defined in the CAP. All observations and measurements will be made and recorded in such a manner as to yield results representative of the media and conditions observed and/or measured. Goals for representativeness will be met by verifying that sampling locations are selected properly, that a sufficient number of samples are collected, and that field screening and laboratory analyses are conducted properly.

The quality of the laboratory data will be assessed by precision, accuracy, representativeness, completeness, comparability, and sensitivity. Definitions of these parameters and the applicable QC procedures are described in Sections 7.1 through 7.6. Quantitative DQOs are provided following each definition. Laboratory DQOs have been established by the analytical laboratory. Applicable quantitative goals for these DQOs are listed in Table A-5.

7.1 PRECISION

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of two or more measurements compared to their average values. Precision is calculated from results of duplicate sample analyses. Precision is quantitatively expressed as the relative percent difference (RPD) and is calculated as follows:

$$RPD = \frac{(C_1 - C_2)}{(C_1 + C_2)/2} x\,100$$

Where:

RPD = relative percent difference

C_1 = larger of the two duplicate results (i.e., the highest detected concentration)

C_2 = smaller of the two duplicate results (i.e., the lowest detected concentration)

There are no specific RPD criteria for organic chemical analyses. Quantitative RPD criteria for organic analyses will be based on laboratory-derived control limits.

7.2 ACCURACY

Accuracy is a measure of the closeness (bias) of the measured value to the true value. The accuracy of chemical analytical results is assessed by "spiking" samples in the laboratory with known standards (a surrogate or matrix spike of known concentration) and determining the percent recovery. The accuracy is measured as the percent recovery (%R) and is calculated as follows:

$$\%R = \frac{(M_{sa} - M_{ua})}{C_{sa}} x\,100$$

Where:

%R = percent recovery

M_{sa} = measured concentration in spiked aliquot

M_{ua} = measured concentration in unspiked aliquot

C_{sa} = actual concentration of spike added

Laboratory matrix spikes and surrogates will be carried out at the analytical laboratory in accordance with EPA Southwest-846 (EPA 2007) and Ecology methods and procedures for inorganic and organic chemical analyses. The frequency of matrix spikes and matrix spike duplicates will each be one per batch of 20 samples or less for soil samples. Quantitative percent recovery criteria for organic analyses will be based on laboratory-derived control limits for surrogate recovery and matrix spike results.

The accuracy of sample results can also be affected by the introduction of contaminants to the sample during collection, handling, or analysis. Contamination of the sample can occur because of improperly cleaned sampling equipment, exposing samples to chemical concentrations in the field or during transport to the laboratory, or because of chemical concentrations in the laboratory. To demonstrate that the samples collected are not contaminated, laboratory method blank samples will be analyzed. The laboratory will run method blanks at a minimum frequency of 5 percent, or one per batch, to assess potential contamination of the sample within the laboratory.

7.3 REPRESENTATIVENESS

Representativeness is a qualitative assessment of how closely the measured results reflect the actual concentration or distribution of the constituent concentrations in the matrix sampled. The sampling plan design, sample collection techniques, sample handling protocols, sample analysis methods, and data review procedures have been developed to verify that the results obtained are representative of the site conditions. These issues are addressed in detail in Section 5.0, Analytical Testing, and Section 9.0, Quality Control Procedures, in this SAP.

7.4 COMPLETENESS

Completeness is defined as the percentage of measurements judged to be valid. Results will be considered valid if they are not rejected during data validation (Section 9.0, Quality Control Procedures). Completeness is calculated as follows:

$$C = \frac{(Number\ of\ Valid\ \ Measurements)}{(Total\ Number\ of\ \ Measurements)}\, x\, 100$$

Objectives for completeness are based, in part, on the subsequent uses of the data (i.e., the more critical the use, the greater the completeness objective). The objectives for completeness of samples are expressed as percentages, which refer to the minimum acceptable percentages of samples received at the laboratory in good condition and acceptable for analysis. The objectives of completeness for other samples are 95 percent for soil and water samples. These objectives will be met through the use of proper sample containers, proper sample packaging procedures to prevent breakage during shipment, proper sample preservation, and proper labeling and chain-of-custody procedures. A loss of 5 to 10 percent of intended samples is common, and the goals set are sufficient for intended data uses.

The objectives for completeness of chemical analyses are also expressed as percentages and refer to the percentages of analytical requests for which usable analytical data are produced. The initial objective for completeness of chemical analyses in the laboratory is 95 percent.

7.5 COMPARABILITY

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. The use of standard Ecology and EPA methods and procedures for both sample collection and laboratory analysis will make the data collected comparable to both internal and other data generated.

7.6 SENSITIVITY

Analytical sensitivities are measured by PQLs, which are defined as the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. PQLs are determined by the laboratory. The specific analytes and their corresponding PQLs that will be required for the cleanup action are presented in Table A-4. The detection or reporting limits for actual samples may be higher depending on the sample matrix and laboratory dilution factors.

8.0 DATA COLLECTION

This section outlines the procedures to be followed for the inventory, control, storage, and retrieval of data collected during performance of the cleanup action. The procedures contained in this SAP are designed to verify that the integrity of the collected data is maintained for subsequent use. Moreover, project-tracking data (e.g., schedules and progress reports) will be maintained to monitor, manage, and document the progress of the cleanup action.

8.1 DATA COLLECTION APPROACH

Procedures that will be used to collect, preserve, transport, and store samples are described in Section 4.0, Sample Handling and Quality Control Procedures, of this SAP. All sampling protocols will be performed in accordance with generally accepted environmental practices and will meet or exceed current regulatory standards and guidelines. Sampling procedures may be modified, if necessary, to satisfy amendments to current regulations, methods, or guidelines. The data collection approach for key elements of the cleanup action field program will verify the project DQOs are met or exceeded. The key elements include soil samples collected and analytical results used to demonstrate that the concentrations of COCs at the limits of the remedial excavation are below applicable cleanup levels as defined in the SAP. The total number of samples collected and specific analyses to be performed will be based on field screening results, field observations, and analytical results for performance and confirmational monitoring.

8.2 DATA TYPES

A variety of data will be generated during the cleanup action, including sampling and analytical data. The laboratory analytical data will be transmitted to SoundEarth as an electronic file, in addition to a hardcopy laboratory data report. This method will facilitate the subsequent validation and analysis of these data while avoiding transcription errors that may occur with computer data entry. Examples of data types include manually recorded field data, such as boring logs, and electronically reported laboratory data.

8.3 DATA TRANSFER

Procedures controlling the receipt and distribution of incoming data packages to SoundEarth and outgoing data reports from SoundEarth include the following:

- Incoming documents will be date-stamped and filed. Correspondence and transmittal letters for all reports, maps, and data will be filed chronologically. Data packages, such as those from field personnel, laboratories (such as soil data) and surveyors (elevation data), will be filed by project task, subject heading, and date. If distribution is required, the appropriate number of copies will be made and distributed to the appropriate persons or agencies.

- A transmittal sheet will be attached to all project data and reports sent out. A copy of each transmittal sheet will be kept in the administrative file and the project file. The project manager and project QA/QC officer will review all outgoing reports and maps.

8.4 DATA INVENTORY

Procedures for filing, storage, and retrieval of project data and reports are discussed below.

8.4.1 Document Filing and Storage

As previously discussed, project files and raw data files will be maintained at SoundEarth's office. Files will be organized by project tasks or subject heading and maintained by the document control clerk. Hard copy project files will be archived for a minimum of 3 years after completion of the project. Electronic copies of files will be maintained in a project directory and backed up daily, weekly, and monthly.

8.4.2 Access to Project Files

Access to project files will be controlled and limited to Lennar Multifamily Communities, LLC and its authorized representatives, Ecology, and SoundEarth personnel. When a hard copy file is removed for use, a sign-out procedure will be used to track custody. If a document is to be used for a long period, a copy will be used, and the original will be returned to the project file. Electronic access to final reports, figures, and tables will be write-protected in the project directory.

8.5 DATA VALIDATION

Data quality review will be performed, where applicable, in accordance with the current EPA guidance as set forth in *Guidance on Environmental Data Verification and Data Validation* (EPA QA/G-8). The following types of QC information will be reviewed, as appropriate:

- Method deviations
- Sample extraction and holding times
- Method reporting limits
- Blank samples (equipment rinsate and laboratory method)
- Duplicate samples
- Matrix spike/matrix spike duplicate samples (accuracy)
- Surrogate recoveries
- Percent completeness and RPD (precision)
- A QA review of the final analytical data packages for samples collected during the cleanup action

8.6 DATA REDUCTION AND ANALYSIS

The project manager and project QA/QC officer are responsible for data review and validation. Data validation parameters are outlined as quantitative DQOs in Section 7.0, Data Quality Objectives, of this SAP. The particular type of analyses and presentation method selected for any given data set will depend on the type, quantity, quality, and prospective use of the data in question. The analysis of the project data will require data reduction for the preparation of tables, charts, and maps. To verify that

data are accurately transferred during the reduction process, two data reviews will be performed, one by the project QA/QC officer or project manager and another by the project principal, before issuing the documents. Any incorrect transfers of data will be highlighted and changed.

9.0 QUALITY CONTROL PROCEDURES

This section provides a description of the QC procedures for both field activities and laboratory analysis. The field QC procedures include standard operating procedures for sample collection and handling, equipment calibration, and field QC samples.

9.1 FIELD QUALITY CONTROL

Field QC samples (e.g., duplicate samples) will be collected during this project and will follow the standard operating procedures during field screening activities. The procedural basis for these field data collection activities will be documented on the field report forms, as described in Section 11.1, Field Documentation, of this SAP. Any deviations from the established protocols will be documented on the field report forms.

QA/QC groundwater samples will be collected during the cleanup action to provide for data validation, as described in Section 7.0, Data Quality Objectives. QA/QC samples will consist of field duplicates. QA/QC samples will be collected and shipped to the laboratory along with the primary field samples. Based on the sampling frequency and number of groundwater samples anticipated, it is estimated that one field duplicate sample will be submitted per sampling event. The QA/QC samples will be assigned a unique sample identifier and number. The number will include a prefix of MW99 or MW98 (if two field duplicates are collected) for field duplicates. For example, a field duplicate collected on October 22, 2011, would be labeled MW99-20111022. SoundEarth will note the locations of the field duplicates in the field notes.

9.2 LABORATORY QUALITY CONTROL

Analytical laboratory QA/QC procedures are provided in the *Laboratory Quality Assurance Manual* that is on file at SoundEarth's office for Friedman & Bruya, Inc. and are summarized below:

- **Laboratory Quality Control Criteria.** Results of the QC samples from each sample group will be reviewed by the analyst immediately after a sample group has been analyzed. The QC sample results will then be evaluated to determine whether control limits were exceeded. If control limits are exceeded in the sample group, corrective action (e.g., method modifications followed by reprocessing the affected samples) will be initiated before processing a subsequent group of samples. All primary chemical standards and standard solutions used in this project will be traceable to documented and reliable commercial sources. Standards will be validated to determine their accuracy by comparison with an independent standard. Any impurities identified in the standard will be documented.

The following paragraphs summarize the procedures that will be used to assess data quality throughout sample analysis:

- **Laboratory Duplicates.** Analytical duplicates provide information on the precision of the analysis and are useful in assessing potential sample heterogeneity and matrix effects. Analytical duplicates are subsamples of the original sample that are prepared and analyzed as a separate

sample. A minimum of 1 duplicate will be analyzed per sample group or for every 20 samples, whichever is more frequent.

- **Matrix Spikes and Matrix Spike Duplicates.** Analysis of matrix spike (MS) samples provides information on the extraction efficiency of the method on the sample matrix. By performing matrix spike duplicate (MSD) analyses, information on the precision of the method is also provided for organic analyses. A minimum of 1 MS/MSD will be analyzed for every sample group or for every 20 samples, whichever is more frequent.
- **Laboratory Control Samples.** A laboratory control sample is a method blank sample carried throughout the same process as the samples to be analyzed, with a known amount of standard added. The blank spike compound recovery assesses analytical accuracy in the absence of any sample heterogeneity or matrix effects.
- **Surrogate Spikes.** All project samples analyzed for organic compounds will be spiked with appropriate surrogate compounds, as defined in the analytical methods. Surrogate recoveries will be reported by the laboratories; however, no sample result will be corrected for recovery using these values.
- **Method Blanks.** Method blanks are analyzed to assess possible laboratory contamination at all stages of sample preparation and analysis. A minimum of 1 method blank will be analyzed for every extraction batch or for every 20 samples, whichever is more frequent.

9.3 DATA QUALITY CONTROL

All data generated by Friedman & Bruya, Inc. will undergo two levels of QA/QC evaluation: one by the laboratory and one by SoundEarth. As specified in Friedman & Bruya, Inc.'s *Laboratory Quality Assurance Manual*, the laboratory will perform initial data reduction, evaluation, and reporting. The analytical data will then be validated at SoundEarth under the supervision of the project QA/QC officer. The following types of QC information will be reviewed, as appropriate:

- Method deviations
- Sample transport conditions (temperature and integrity)
- Sample extraction and holding times
- Method reporting limits
- Blank samples
- Duplicate samples
- Surrogate recoveries
- Percent completeness
- RPD (precision)

SoundEarth will review field records and results of field observations and measurements to verify procedures were properly performed and documented. The review of field procedures will include the following:

- Completeness and legibility of field logs

- Preparation and frequency of field QC samples
- Equipment calibration and maintenance
- Sample Chain of Custody forms

Corrective actions are described in Section 10.0, Corrective Actions.

9.4 DATA ASSESSMENT PROCEDURES

The project manager and project QA/QC officer are responsible for data review and validation. Upon receipt of each data package from the laboratory, calculations using the equations presented for precision, accuracy, and completeness will be performed. Results will be compared to quantitative DQOs, where established, or qualitative DQOs. Data validation parameters are outlined in Section 7.0, Data Quality Objectives, of this SAP.

9.5 PERFORMANCE AUDITS

Performance audits will be completed for both sampling and analysis work. Field performance will be monitored through regular review of Sample Chain of Custody forms, field forms, and field measurements. The project manager and/or the project QA/QC Officer may also perform periodic review of work in progress at the Site.

Accreditations received from Ecology for each analysis by Friedman & Bruya, Inc. demonstrate the laboratory's ability to properly perform the requested methods. Therefore, a system audit of the analytical laboratory during the course of this project will not be conducted.

The project manager and/or project QA/QC officer will oversee communication with the analytical laboratory on a frequent basis while samples are being processed and analyzed at the laboratory. This will allow SoundEarth to assess progress toward meeting the DQOs and to take corrective measures if problems arise.

The analytical laboratory will be responsible for identifying and correcting, as appropriate, any deviations from performance standards as discussed in Friedman & Bruya, Inc.'s *Laboratory Quality Assurance Manual.* The laboratory will communicate to the project manager or the project QA/QC officer all deviations to the performance standards and the appropriate corrective measures made during sample analysis. Corrective actions are discussed in Section 10.0 of this SAP.

10.0 CORRECTIVE ACTIONS

Corrective actions will be the joint responsibility of the project manager and the project QA/QC officer. Corrective procedures can include:

- Identifying the source of the violation.
- Reanalyzing samples, if holding time criteria permit.
- Resampling and analyzing.
- Re-measuring parameter.
- Evaluating and amending sampling and analytical procedures.

- Qualifying data to indicate the level of uncertainty.

During field sampling operations, the project manager and field staff will be responsible for identifying and correcting protocols that may compromise the quality of the data. All corrective actions taken will be documented in the field notes.

11.0 DOCUMENTATION AND RECORDS

Project files and raw data files will be maintained at SoundEarth's office. Project records will be stored and maintained in a secure manner. Each project team member is responsible for filing all necessary project information or providing the information to the person responsible for the filing system. Individual team members may maintain files for individual tasks, but team members must provide such files to the central project files upon completion of each task. A project-specific index of file contents will be kept with the project files. Hard copy documents will be kept on file at SoundEarth or at a document storage facility throughout the duration of the project, and all electronic data will be maintained in the database at SoundEarth. All sampling data will be submitted to Ecology in both printed and electronic formats pursuant to WAC 173-340-840(5) and Ecology's Toxics Cleanup Program Policy 840 (Data Submittal Requirements).

11.1 FIELD DOCUMENTATION

Documentation of field activities will be included on Field Report forms, Boring Log forms, Groundwater Purge and Sample Forms, Sample ID Labels, Waste Material Labels, Drum Inventory forms, Material Import and Export Summary forms, and Sample Chain of Custody forms, examples of which are provided in Attachment A. Field forms will be scanned and saved to an electronic project folder. Original and copied forms will be filed in a binder that will be maintained by the project manager.

Field personnel will be required to keep a daily field log on a Field Report form. Field notes will be as descriptive and as inclusive as possible, allowing independent parties to reconstruct the sampling situation from the recorded information. Language will be objective, factual, and free of inappropriate terminology. A summary of each day's events will be completed on a Field Report form. At a minimum, field documentation will include the date, job number, project identification and location, weather conditions, sample collection data, personnel present and responsibilities, field equipment used, and activities performed in a manner other than specified in the SAP. In addition, if other forms are completed or used (e.g., Sample Chain of Custody form), they will be referred to in and attached to the Field Report form. Field personnel will sign the Field Report form. An example of the Field Report form is included in Attachment A.

11.2 ANALYTICAL RECORDS

Analytical data records will be retained by the laboratory and stored electronically in the SoundEarth project file and project database. For all analyses, the data reporting requirements will include those items necessary to complete data validation, including copies of all raw data. The analytical laboratory will be required to report the following, as applicable: project narrative, chain-of-custody records, sample results, QA/QC summaries, calibration data summary, method blank analysis, surrogate spike recovery, matrix spike recovery, matrix duplicate, and laboratory control sample(s).

12.0 HEALTH AND SAFETY PROCEDURES

Field personnel will adhere to health and safety procedures that will be detailed under a separate cover as the project-specific Health and Safety Plan (HASP). The health and safety and emergency response protocols outlined in the HASP are designed to ensure compliance with state and federal regulations governing worker safety on hazardous waste sites. The U.S. Department of Labor has published final rules (Part 1910.120 of Title 29 of the Code of Federal Regulations, March 6, 1990) that amend the existing Occupational Safety and Health Administration standards for hazardous waste operations and emergency response. Within Washington State, these requirements are addressed in WAC 296-843, Hazardous Waste Operations. These regulations apply to the activities to be performed at this Site as a site remediation, or cleanup, under Resource Conservation and Recovery Act 1976 and/or MTCA.

Subcontractors to SoundEarth are required to prepare and effectively implement their own HASP based on their unique scope of work and professional expertise. Each subcontractor's HASP must comply with all applicable federal, state, and local regulations. The subcontractor's HASP should employ appropriate best practices to protect all personnel working on the Site, as well as the public, and to prevent negative impacts to the project or Site.

The responsibilities of SoundEarth for safety on this Site are limited to the following:

- Implementation of the provisions of this HASP for the protection of its employees and visitors on the Site to the extent that the Site and its hazards are under the control of SoundEarth.
- Protection of the Site, other personnel, and the public from damage, injury, or illness as a result of the activities of SoundEarth and its employees while on the Site.
- Provision of additional safety-related advice and/or management as contractually determined between the parties.

It is anticipated that all field work will be performed during the cleanup action in Level D personal protective equipment. Potential hazards that may be encountered during the cleanup action field activities include exposure to contaminants; traffic/mobile equipment; process hazards; unstable ground; noise exposure; overhead and underground utilities; slips, trips, and falls; powered tools and equipment; working around heavy equipment; rolling and/or pinching objects; and exposure to weather conditions.

13.0 BIBLIOGRAPHY

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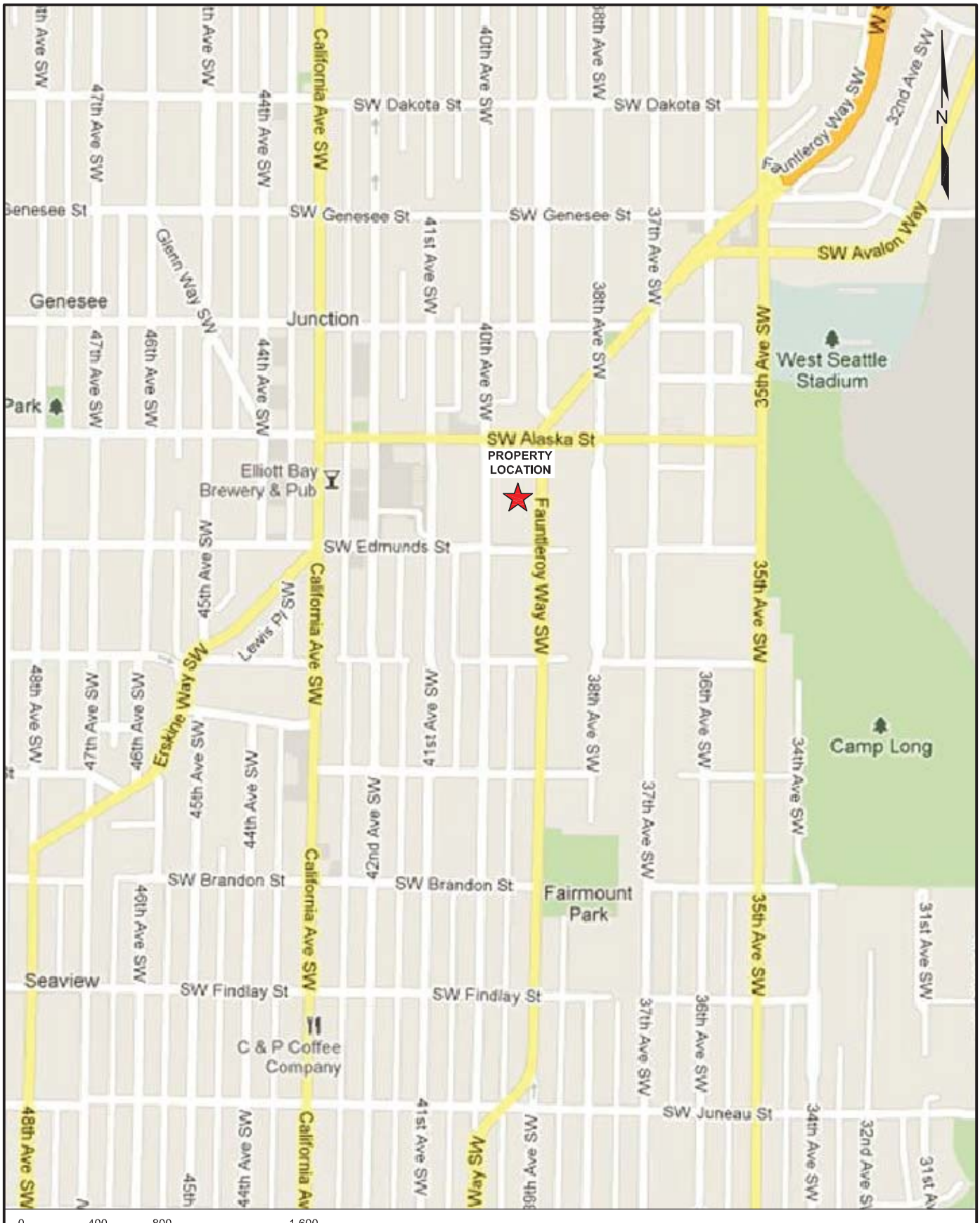
FIGURES



SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

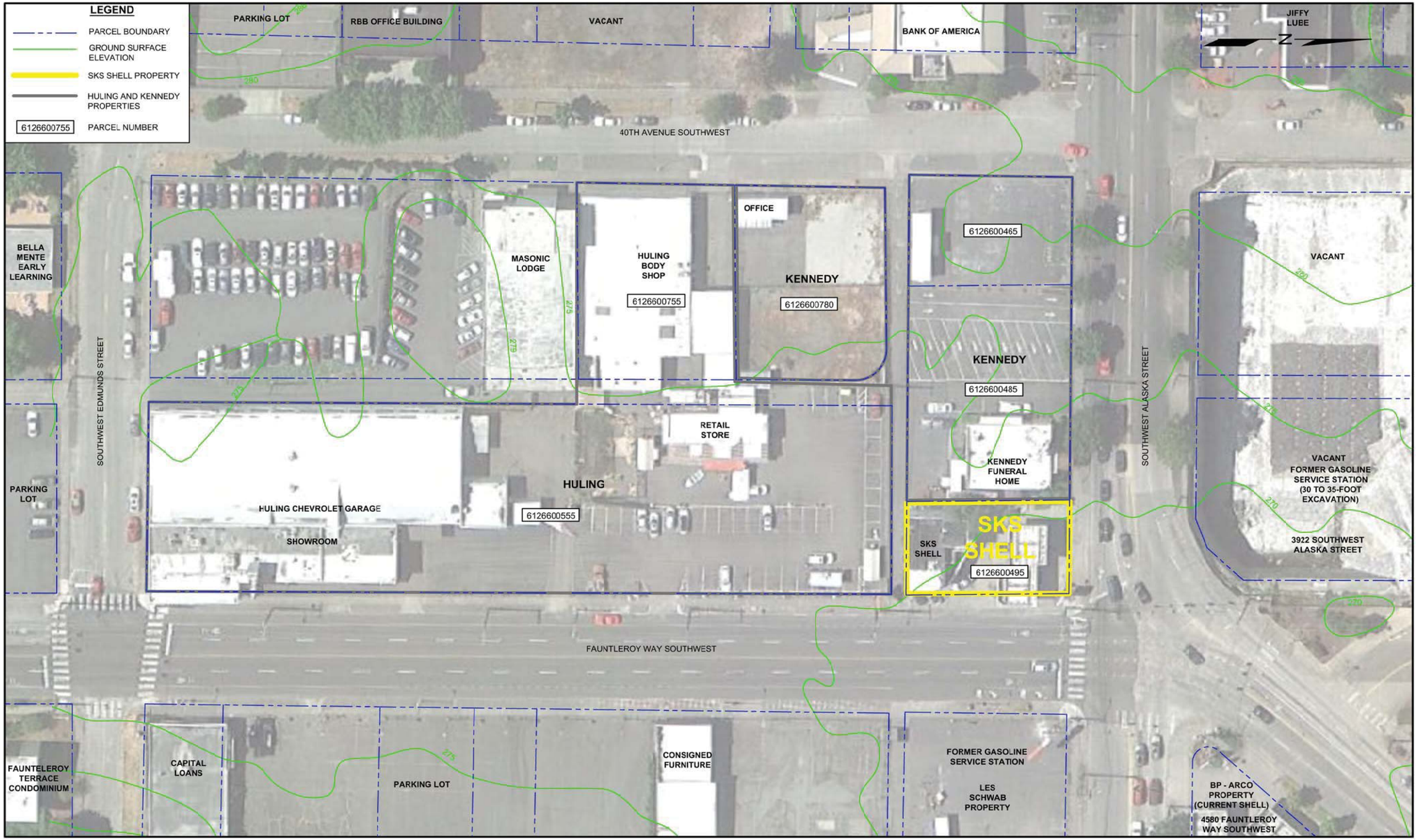
DATE: 11/01/12
DRAWN BY: BLR
CHECKED BY: CER
CAD FILE: 0914-004_VIC

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA ST
CITY, STATE: SEATTLE, WASHINGTON

FIGURE A-1
PROPERTY LOCATION MAP

4/28/2013

P:\0914 LENNAR SHELL\0914-004 RIFSCAP\TECHNICAL\CAD\2013 SKS SHELL CAP\APPENDIX A_SAP\0914-004_VIC_F_SAP_A-1.DWG



SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

DATE: 12/27/12
DRAWN BY: BLR/JQC/NAC
CHECKED BY: CER
CAD FILE: 0914-004_FIG2_SP

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 30 60 120
APPROXIMATE SCALE IN FEET

FIGURE A-2
PROJECT AND SITE LOCATION PLAN

6/12/2014
P:\0914 LENNAR SHELL\0914-004 RI\FSCAP\TECHNICAL\CAD\2014 SKS FINAL CAP\APPENDIX A SAP\0914-004 SP SAP A-2 F.DWG
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6/12/2014

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\2014 SKS FINAL CAP\APPENDIX A SAP\0914-004 2013SAP FIG A-3 F.DWG

FUNERAL HOME

10 9 8 7 6 5 4 3 2 1

A B C D E F G

SKS SHELL

B16 SB23 SB15 SB22 SB19 MW106 SMW04 B-4 SMW03 GLMW-3 MW-3 B-1 GLMW-2 DW-1 DW-4 MW-2 DW-3 DW-? GLMW-1 MW-1 RW01 MW104 MW105 MW103 MW102 MW101

SEATTLE ELECTRIC COMPANY UTILIDORE

SOUTHWEST ALASKA STREET

FORMER USTs

B-6/MW-4

FORMER PUMP ISLAND USTs

N

LEGEND

- EXISTING MONITORING WELL
- EXISTING REMEDIATION WELL
- MONITORING WELL TO BE DECOMMISSIONED
- SB29 GEOTECHNICAL BORING (SOUNDEARTH, 2012)
- B-1 GEOTECHNICAL BORING (THE RILEY GROUP 2008)
- B16 SOIL BORING (THE RILEY GROUP 2008)
- STORM DRAIN
- PROPERTY/CONSTRUCTION EXCAVATION BOUNDARY
- PARCEL BOUNDARY
- SEWER LINE
- WATER LINE
- NATURAL GAS LINE
- UST UNDERGROUND STORAGE TANK
- AST ABOVEGROUND STORAGE TANK
- REMEDIAL EXCAVATION AREA (30 FEET DEEP)
- 10' x10' SOIL SAMPLING GRID

SoundEarth Strategies
WWW.SOUNDEARTHINC.COM

DATE: 04/29/13
DRAWN BY: JQC
CHECKED BY: SES
CAD FILE: 0914-004_2013SAP_FIG_A-3

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 10 20 40
APPROXIMATE SCALE IN FEET

FIGURE A-3
ESTIMATED REMEDIAL EXCAVATION AREA AND SOIL SAMPLING GRID

TABLES

Table A-1
Preliminary Project Schedule
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Task/Scope of Work*	Schedule
Task 1: Prefield activities, including site preparation and mobilization	Third Quarter 2014
Task 2: Hazardous Materials Survey, Building Demolition and UST Decommissioning	Third Quarter 2013 and 2014
Task 3: Well decommissioning	Third Quarter 2014
Task 4: Shoring installation	August 2014
Task 5: Excavation	August - November 2014
Task 6: Construction dewatering	August -November 2014
Task 7: Remediation Well Installation and Temporary groundwater dewatering system	July - November 2014
Task 8: Installation of the vapor and water barrier	Fourth Quarter 2014
Task 9: Monitoring well installation	First Quarter 2015
Task 10: Compliance monitoring well sampling	2015 - 2025
Task 11: Cleanup action progress report	Second Quarter 2015
Task 12: Site closure/final reporting	2025
Task 13: Remediation and monitoring well decommissioning	2025

NOTE:

*Timing and conduct of the tasks will be determined by City of Seattle Entitlements process/issuance of the building permit, as well as any pre-leasing or financial requirements/limitations. Site closure and well decommissioning will be determined based on the results of compliance monitoring events.

Table A-2
Key Personnel and Responsibilities
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Project Title	Name	Project Role	Organization	Mailing Address	Email Address	Phone
Regulatory Agency	Eugene Freeman	Regulatory project management. Reviews and approves all submittals to Washington State Department of Ecology.	Washington State Department of Ecology	3190 160th Avenue Southeast Bellevue, Washington 98008	eufr461@ecy.wa.gov	425-649-7191
Project Contact	Steve Orser	Property owner and project contact.	Lennar Multifamily	1191 Second Avenue, Suite 1570 Seattle, Washington 98101	steve.orser@lennar.com	206-816-1578
Project Principal	John Funderburk	Reviews and oversees all project activities. Reviews all data and deliverables prior to submittal to project contact or Washington State Department of Ecology.	SoundEarth Strategies, Inc.	2811 Fairview Avenue South Suite 2000 Seattle, Washington 98102	jfunderburk@soundearthinc.com	206-306-1900
Project Manager	Rob Roberts	Overall project management, including SAP development, field oversight, document preparation and submittal, and project coordination.	SoundEarth Strategies, Inc.	2811 Fairview Avenue South Suite 2000 Seattle, Washington 98102	rroberts@soundearthinc.com	206-306-1900
Project QA/QC Officer	Audrey Hackett	Coordinates with laboratory to ensure that SAP requirements are followed and that laboratory QA objectives are met.	SoundEarth Strategies, Inc.	2811 Fairview Avenue South Suite 2000 Seattle, Washington 98102	ahackett@soundearthinc.com	206-306-1900
Field Coordinator	Elizabeth Forbes	Reports to the project manager. Ensures all project health and safety requirements are followed; coordinates and participates in the field sampling activities; coordinates sample deliveries to laboratory; coordinates sampling activities with site owner subcontractors; reports any deviations from project plans.	SoundEarth Strategies, Inc.	2811 Fairview Avenue South Suite 2000 Seattle, Washington 98102	eforbes@soundearthinc.com	206-306-1900
Field Staff	Various licensed geologists and environmental professionals	Reports to field coordinator. Conducts sampling activities.	SoundEarth Strategies, Inc.	2811 Fairview Avenue South Suite 2000 Seattle, Washington 98102		206-306-1900
Data Manager	Jenny Cheng	Ensures that analytical data is incorporated into site database with appropriate qualifiers following validation.	SoundEarth Strategies, Inc.	2811 Fairview Avenue South Suite 2000 Seattle, Washington 98102	jcheng@soundearthinc.com	206-306-1900
Data Validation	Audrey Hackett	Coordinates with laboratory to ensure that the SAP requirements and laboratory QA/QC objectives are met.	SoundEarth Strategies, Inc.	2811 Fairview Avenue South Suite 2000 Seattle, Washington 98102	ahackett@soundearthinc.com	206-306-1900
Laboratory Project Manager	Michael Erdahl	Provides analytical support and will be responsible for providing certified, precleaned sample containers and sample preservatives (as appropriate) and for ensuring that all chemical analyses meet the project quality specifications detailed in the SAP.	Friedman & Bruya, Inc.	3012 16th Avenue West Seattle, Washington 98119	merdahl@friedmanandbruya.com	206-285-8282
Private Utility Locator (Subcontractor)	Kemp Garcia	Under the oversight of SoundEarth Strategies, Inc., clears all boring locations for utilities prior to drilling.	Bravo Environmental	6437 South 144th Street Tukwila, Washington	kgarcia@bravonw.com	425-424-9000
Site Superintendent/General Contractor	Evan Christenson	Manages the construction excavation activities throughout the duration of the redevelopment project.	W.G. Clark	408 Aurora Avenue North Seattle, Washington 98109	echristenson@wgclark.com	206-624-5244

NOTES:

QA/QC = quality assurance/quality control

SAP = Sampling Analysis Plan

Table A-3
Analytical Methods, Container, Preservation, and Holding Time Requirements
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Analyte and Analytical Method	Size and Type of Container	Number of Containers	Preservation Requirements	Holding Time
Soil Samples				
GRPH by Method NWTPH-Gx BTEX by EPA Method 8021B or 8260B	40-mL VOA	3	4°C/-7°C at the laboratory	48 hours/2 weeks
DRPH and ORPH by Method NWTPH-Dx	4-oz jar	1	4°C	14/40 days
Water Samples				
GRPH by Method NWTPH-Gx BTEX by EPA Method 8021B	40-mL VOA vial	3	HCl/4°C	14 days
DRPH and ORPH by Method NWTPH-Dx	500-mL amber	1	4°C	14/40 days

NOTES:
°C = degrees Celsius
BTEX = benzene, toluene, ethylbenzene, and total xylenes
DRPH -= diesel-range petroleum hydrocarbons
EPA = U.S. Environmental Protection Agency
GRPH = gasoline-range petroleum hydrocarbons
HCl = hydrochloric acid
HNO3 = nitric acid
mL = milliliter
NWTPH = Northwest Total Petroleum Hydrocarbon
ORPH = oil-range petroleum hydrocarbons
oz = ounce
VOA = volatile organic analysis

Table A-4
Analytes, Analytical Methods, Laboratory Practical Quantitation Limits, and Applicable Regulatory Limits
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Analyte	Analytical Method	Unit	Laboratory PQL[1]	Applicable Regulatory Limit[2]
Soil				
GRPH	NWTPH-Gx	mg/kg	<2	30/100[3]
DRPH	NWTPH-Dx	mg/kg	<50	2,000
Benzene	EPA Method 8021B	mg/kg	<0.02	0.03
Toluene	EPA Method 8021B	mg/kg	<0.02	7
Ethylbenzene	EPA Method 8021B	mg/kg	<0.02	6
Total xylenes	EPA Method 8021B	mg/kg	<0.06	9
Groundwater				
GRPH	NWTPH-Gx	µg/L	<100	800/1,000[3]
DRPH	NWTPH-Dx	µg/L	<50	500
Benzene	EPA Method 8021B	µg/L	<1	5/NE
Toluene	EPA Method 8021B	µg/L	<1	1,000/NE
Ethylbenzene	EPA Method 8021B	µg/L	<1	700/NE
Total xylenes	EPA Method 8021B	µg/L	<3	1,000/NE

NOTES:

[1]Standard laboratory PQLs for Friedman & Bruya, Inc.

[2]MTCA Method A or B Cleanup Levels, Table 720-1 of Section 900 of Chapter 173-340 of the Washington Administrative Code, revised November 2007.

[3]Cleanup levels for gasoline in soil and groundwater without benzene are 100 mg/kg and 1,000 µg/L, respectively. Cleanup levels for gasoline in soil and groundwater that also contain benzene are 30 mg/kg and 800 µg/L, respectively.

< = less than

µg/L = micrograms per liter

DRPH = diesel-range petroleum hydrocarbons

EPA = U.S. Environmental Protection Agency

GRPH = gasoline-range petroleum hydrocarbons

mg/kg = milligrams per kilogram

MTCA = Washington State Model Toxics Control Act

NE = no King County Industrial Waste Local Discharge Limit established

NWTPH = Northwest Total Petroleum Hydrocarbon

PQL = practical quantitation limit

Table A-5
Quantitative Goals of Data Quality Objectives
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Analyte	Analytical Method	Precision[1]	Accuracy[2]			Completeness (%)[3]	Sensitivity[4]
		RPD (%)	Surrogate (% Recovery)	MS (% Recovery)	LCS (% Recovery)		PQL[5]
Soil							
GRPH	NWTPH-Gx	20	50-150	50-150	50-150	95	<2
DRPH	NWTPH-Dx	20	50-150	50-150	50-150	95	<2
Benzene	EPA Method 8021B	20	50-150	50-150	50-150	95	<0.02
Toluene	EPA Method 8021B	20	50-150	50-150	50-150	95	<0.02
Ethylbenzene	EPA Method 8021B	20	50-150	50-150	50-150	95	<0.02
Total Xylenes	EPA Method 8021B	20	50-150	50-150	50-150	95	<0.06
Water							
GRPH	NWTPH-Gx	20	50-150	50-150	50-150	95	<100
DRPH	NWTPH-Dx	20	50-150	50-150	58-134	95	<50
Benzene	EPA Method 8021B	20	50-150	50-150	50-150	95	<1
Toluene	EPA Method 8021B	20	50-150	50-150	50-150	95	<1
Ethylbenzene	EPA Method 8021B	20	50-150	50-150	50-150	95	<1
Total Xylenes	EPA Method 8021B	20	50-150	50-150	50-150	95	<3

NOTES:

[1]Precision measured in RPD between sample and lab duplicate, LCS and LCS duplicate, and/or MS and MS duplicate.

[2]Laboratory to follow in accordance with the EPA SW-846 and Ecology methods and procedures for inorganic and organic chemical analyses. Method Blanks will be analyzed for each analyte in addition to the quantitative data quality objectives listed in this table.

[3]Refers to the minimum acceptable percentages of samples received at the laboratory in good condition that are acceptable for analysis.

[4]Sensitivity is measured by the laboratory PQL for each analyte.

[5]Standard PQLs for Friedman & Bruya, Inc., standard PQLs.

< = less than
DRPH = diesel-range petroleum hydrocarbons
Ecology = Washington State Department of Ecology
EPA = U.S. Environmental Protection Agency
GRPH = gasoline-range petroleum hydrocarbons
LCS = laboratory control sample
MS = matrix spike
NWTPH = Northwest Total Petroleum Hydrocarbon Method
PQL = practical quantitation limit
RPD = relative percent difference

ATTACHMENT A
FIELD FORMS

FIELD REPORT

SoundEarth Strategies
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102
P: (206) 306-1900 F: (206) 306-1907

Client & Site Name/Number:		**SoundEarth Project Number:**	**Date:**
Site Address:		**Purpose of Visit/Task #:**	**Field Report Prepared by:**
Temp/Weather:	**Permit Required to Work:**	**Time of Arrival/Departure** (2400): _____ onsite to _____ offsite	**Personnel Onsite:**

Attachments:

SoundEarth Strategies

Project:
Project Number:
Logged by:
Date Started:
Surface Conditions:
Well Location N/S:
Well Location E/W:
Reviewed by:
Date Completed:

BORING LOG

Site Address:

Water Depth At Time of Drilling: feet bgs
Water Depth After Completion: feet bgs

Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppm)	Sample ID	USCS Class	Graphic	Lithologic Description	Well Construction Detail
0									
5									
10									
15									

Drilling Co./Driller:
Drilling Equipment:
Sampler Type:
Hammer Type/Weight: lbs
Total Boring Depth: feet bgs
Total Well Depth: feet bgs
State Well ID No.:

Well/Auger Diameter: inches
Well Screened Interval: feet bgs
Screen Slot Size: inches
Filter Pack Used:
Surface Seal:
Annular Seal:
Monument Type:

Notes/Comments:

SoundEarth Strategies

Project:
Project Number:
Logged by:
Date Started:
Surface Conditions:
Well Location N/S:
Well Location E/W:
Reviewed by:
Date Completed:

BORING LOG

Site Address:

Water Depth At Time of Drilling: feet bgs
Water Depth After Completion: feet bgs

Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppm)	Sample ID	USCS Class	Graphic	Lithologic Description	Well Construction Detail
15									
20									
25									
30									

Drilling Co./Driller:
Drilling Equipment:
Sampler Type:
Hammer Type/Weight: lbs
Total Boring Depth: feet bgs
Total Well Depth: feet bgs
State Well ID No.:

Well/Auger Diameter: inches
Well Screened Interval: feet bgs
Screen Slot Size: inches
Filter Pack Used:
Surface Seal:
Annular Seal:
Monument Type:

Notes/Comments:

SoundEarth Strategies

GROUNDWATER PURGE AND SAMPLE FORM
LOW FLOW PUMP

General Info

Client: _____ Project #: _____

Site Name/ #: _____ Field/Sampling Personnel: _____ **Well ID Number:** _____

Well Details

Total Depth (TD)	Depth to Water (DTW) (Immediately Prior to Purging)	Water Column (WC) =TD-DTW	Casing Diameter Volume Conversion Factor (VC)					Casing Volume =WC x VC
			0.75"	1"	2"	4"	6"	
Feet BTOC	Feet BTOC	Feet BTOC	0.023	0.041	0.16	0.65	1.44	gallons

Screened Interval: _____ to _____ Feet bgs

Screen Submerged? ☐ **NO** ⟹ Place tubing intake 2 to 3 feet below depth to water
☐ **YES** ⟹ Place tubing intake at approximate center of screen

Equipment

Pump Method: ☐ Peristaltic ☐ Other: _____ Owner/ID #: _____ **Water Quality Meter** Brand/Model: _____ Owner/ID #: _____

Water Level Instrument: ☐ WL Meter ☐ Bubbler ☐ Interface ☐ Other: _____ Owner/ID #: _____

Sampling

Depth of Tubing Intake: _____ Feet BTOC Time Start Purge: _____

Time (3-5 min intervals)	Water Level (feet) drawdown <0.33 feet	**Purge Rate** (L/min) 0.1 – 0.5	**pH**[1] *± 0.1*	**Specific Conductivity**[1] **UNITS:** _____ *± 3%*	**Turbidity**[1] (NTU) *If ≥10, ±10% if <10, stabilized*	**Dissolved Oxygen**[1] (mg/L) *If ≥1.00, ± 10% if ≤1.00, ± 0.2*	Temperature (ºC)	ORP (mV)
Minimum # of Readings								

Sample Date: _____ **Sample Time:** _____ **Field Duplicate Sample Time:** _____ **Time Sampling Ended:** _____

Sampling Comments: _____

Analytical

Sample Number/ID	Container Type	Preservative	Field Filtered?			Analysis Request
			No	0.45	0.10	
			No	0.45	0.10	
			No	0.45	0.10	
			No	0.45	0.10	
			No	0.45	0.10	
			No	0.45	0.10	

Purge Water

Sheen? ☐ NO ☐ YES **Odor?** ☐ NO ☐ YES ⟹ Describe: _____ Color (describe): _____

Total Discharged (1Gal = 3.88 liter): _____ gallons Disposal Method: ☐ Drummed ☐ Remediation System ☐ Other: _____

Well Condition

Well/Security Devices in good condition (i.e.: Monument, Bolts, Seals, J-cap, Lock)? ☐ YES ☐ NO ⟹ Describe: _____

Water in Monument? ☐ NO ☐YES ⟹ Describe: _____

Additional Well Condition Comments or Explanation of any Access Issues: _____

[1]At minimum, pH, specific conductivity, and dissolved oxygen and/or turbidity must stabilize within the limits (indicated in *italics*) for three successive readings prior to sampling.

SoundEarth Strategies

GROUNDWATER PURGE AND SAMPLE FORM
LOW FLOW PUMP – *Continued*

General Info

Client: ________________ Project #: ________________________

Site Name/ #: ________________ Field/Sampling Personnel: ________________________ **Well ID Number:** ____________________________

See Page 1 for well construction and purge water information

Sample Date: ________________ **Sample Time:** ____________ **Field Duplicate Sample Time:** ______________ **Time Sampling Ended:** ______________

Sampling *(Continued from Page 1)*

Time (3-5 min intervals)	Water Level (feet) drawdown <0.33 feet	**Purge Rate** (L/min) 0.1 – 0.5	**pH**[1] *± 0.1*	**Specific Conductivity**[1] **UNITS:** __________ *± 3%*	**Turbidity**[1] (NTU) *If ≥10, ±10%* *if <10, stabilized*	**Dissolved Oxygen**[1] (mg/L) *If ≥1.00, ± 10%* *if ≤1.00, ± 0.2*	Temperature (ºC)	ORP (mV)

Additional Sampling Comments: ____

[1]At minimum, pH, specific conductivity, and dissolved oxygen and/or turbidity must stabilize within the limits (indicated in *italics*) for three successive readings prior to sampling.

FRIEDMAN & BRUYA, INC.	
Client:	
Sample ID:	
Date Sampled:	Time:
Project:	
Analysis Request:	
Preservative:	

SAMPLE CHAIN OF CUSTODY

Send Report to _____

Company SoundEarth Strategies, Inc.

Address 2811 Fairview Avenue E, Suite 2000

City, State, ZIP Seattle, WA 98102

Phone # 206-306-1900 Fax # 206-306-1907

SAMPLERS *(signature)*	
PROJECT NAME/NO.	PO #
REMARKS	

Page # _____ of _____

TURNAROUND TIME
Standard (2 Weeks)
RUSH_____
Rush charges authorized by:
_____

SAMPLE DISPOSAL
Dispose after 30 days
Return samples
Will call with instructions

Sample ID	Sample Location	Sample Depth	Lab ID	Date Sampled	Time Sampled	Matrix	# of Jars	ANALYSES REQUESTED								
								DRPH & ORPH by NWTPH-Dx	GRPH by NWTPH-Gx	VOCs by EPA 8260C	RCRA 8 Metals by EPA 200.8 & 1631E					Notes

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282
Fax (206) 283-5044

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

DRUM INVENTORY SHEET

Site Name: _____

Site Address: _____

Reason for Site Visit: _____

Date of Inventory: _____

Field Personnel: _____

_____

Drum #[1] (eg. 001)	Content Information	Date(s) Accumulated	Fullness (%)	Sample Analysis Performed?	Composite Soil Sample (RCRA 8 metals)[2] (Y/N)	Saturated Soil[3] (Y/N)	Drum Labeled (Y/N)	Drum Location Photo (Y/N)	Drum Access[4]
Eg. 001	Soil, B05, 5'-15'	2/3/10	100%	Gx, BTEX	Y	N	Y	Y	Combo lock #xxxx
Eg. 002	Purge Water	2/3/10	100%	Gx, BTEX	N/A	N/A	Y	Y	Combo lock #xxxx

NOTES:

[1]Drum #— Write the Drum # on the drum lid, as well as on the non-hazardous or hazardous waste labels.

[2]Composite Soil Sample—For all sites, collect one composite soil sample from each drum onsite. Place sample on hold at the laboratory, for future RCRA 8 metals analysis. Collect sample in one-4 ounce jar.

[3]Saturated soil—Add bentonite chips or kitty litter to the water that has accumulated or may accumulate inside the drum. Bentonite chips available in the garage.

[4]Drum access for pickup—(eg. fenced, owner notification, lock combination?)

NON-HAZARDOUS WASTE

GENERATOR INFORMATION (Optional)

SHIPPER _____

ADDRESS _____

CITY, STATE, ZIP _____

CONTENTS _____

_____

NON-HAZARDOUS WASTE

HAZARDOUS WASTE

ACCUMULATION
START DATE _____

CONTENTS _____

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

SoundEarth Strategies

Material Import and Export Summary

Truck Company	Truck Number	Date	Time	Volume (note: tons or yards)	Type of Material	Destination of Material

ATTACHMENT B

TABLE 6.9 FROM ECOLOGY'S *GUIDANCE FOR REMEDIATION OF PETROLEUM CONTAMINATED SITES,* DATED SEPTEMBER 2011

Table 6.9 Typical Number of Samples Needed to Adequately Characterize Stockpiled Soil (1)	
Cubic Yards of Soil	**Number of Samples for Chemical Analysis**
0-100	3
101-500	5
501-1000	7
1001-2000	10
>2000	10 + 1 for each additional 500 cubic yards
(1) Source: 1995 Guidance for Remediation of Petroleum Contaminated Soil.	

APPENDIX B

HEALTH AND SAFETY PLAN

SoundEarth Strategies, Inc.
2811 Fairview Avenue East, Suite 2000
Seattle, Washington 98102

SITE-SPECIFIC HEALTH AND SAFETY PLAN

APPENDIX B OF THE CLEANUP ACTION PLAN

Property:
SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington

Prepared for:
Lennar Multifamily Communities, LLC
1325 Fourth Avenue, Suite 1700
Seattle, Washington

Report Date:
June 16, 2014

Site-Specific Health and Safety Plan

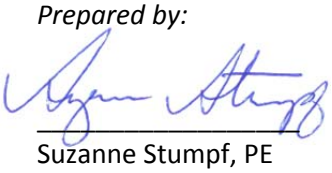
Prepared for:

Lennar Multifamily Communities, LLC
1325 Fourth Avenue, Suite 1700
Seattle, Washington

SKS Shell Property
3901 Southwest Alaska Street
Seattle, Washington 98116

Project No.: 0914-004

Prepared by:



Suzanne Stumpf, PE
Associate Engineer

Reviewed by:

Rob Roberts
Senior Scientist

Initiation Date: July 1, 2014
Expiration Date: June 30, 2015

HAZARD SUMMARY

SoundEarth Strategies, Inc. has prepared this Site-Specific Health and Safety Plan for the SKS Shell Property, located at 3901 Southwest Alaska Street in Seattle, Washington (the Site). This Site-Specific Health and Safety Plan was written in general accordance with the Washington State Model Toxics Control Act as promulgated in Chapter 173-340-350 of the Washington Administrative Code.

SITE DESCRIPTION

The SKS Shell Property is a 0.14-acre parcel (Parcel #6126600495) that is part of an assemblage of six parcels in the West Seattle Triangle urban neighborhood (as shown on Figure B-1; the Project Property, that will be redeveloped as a residential and retail development. As shown on Figure B-2, the other properties in the Project property include the former Huling Chevrolet garage and auto body shop (Huling property) and the Kennedy funeral home (Kennedy property). The SKS Shell Property, presently operated as a Shell gasoline service station, is located on the northeast corner of the development site. The topography of the area slopes to the east and north, with an elevation of approximately 270 feet at the northeast corner above mean sea level (North American Vertical Datum 1988). Puget Sound is located approximately 0.9 miles to the west, and Elliot Bay is located approximately 1.3 miles to the northeast of the Project Property. The Site is defined by the full lateral and vertical extent of contamination exceeding applicable cleanup levels that has resulted from releases of gasoline and diesel at the SKS Shell Property. Based on the information gathered to date, the Site includes soil and groundwater contaminated with gasoline-, diesel-, and oil-range petroleum hydrocarbons and benzene, toluene, ethylbenzene, and total xylenes beneath the Project Property and beneath limited portions of the north-adjoining Southwest Alaska Street right-of-way and the east-adjoining Fauntleroy Way Southwest right-of-way (Figure B-2).

SITE HAZARDS

Hazards present at the Site potentially include the chemicals of concern identified in previous investigations; physical hazards associated with the Site; and activities proposed in the Cleanup Action Plan.

Chemical

- Potentially gasoline- and diesel-range petroleum hydrocarbons; benzene, toluene, ethylbenzene, and total xylenes in soil and/or groundwater.

Physical

- Heavy lifting
- Heavy equipment
- Noise exposure
- Overhead utilities and features
- Slips/trips/falls/cuts
- Temperature extremes

HAZARD SUMMARY (CONTINUED)

- Traffic and moving equipment
- Underground utilities and features
- Unstable ground/open excavation

FIELD ACTIVITIES

- Monitoring well, pumping well, and remediation well development and sampling.
- Hollow-stem auger drilling, soil sampling, and well installation.
- Soil excavation for development, including removal of petroleum-contaminated soil.
- Chemical injection event.

The following hazard controls, based on the tasks identified in the Field Activities above, are required for employees of SoundEarth Strategies, Inc. while performing work at the Site:

- Work clothing or coveralls.
- Level D personal protective equipment, which includes gloves (task-specific), steel-toed boots, safety glasses, and a reflective safety vest.
- Modified level D personal protective equipment for chemical injections will include face splash guard and tyvek coveralls.
- Traffic control, lighting, hard hats, and hearing protection when appropriate**.**

This hazard summary is presented solely for introductory purposes, and the information contained in this section should be used only in conjunction with the full text of this report. A complete description of the project, site conditions, investigation methods, and investigation results is in previous reports referenced in Section 5.1.1, Reports that Provide Chemical Data.

TABLE OF CONTENTS

FIGURES

ATTACHMENTS

1.0 INTRODUCTION

This Site-Specific Health and Safety Plan (HASP) was written for the use of SoundEarth Strategies, Inc. (SoundEarth) and its employees. The health and safety and emergency response protocols outlined in this plan are designed to ensure compliance with state and federal regulations governing worker safety on hazardous waste sites. The U.S. Department of Labor has published final rules (Part 1910.120 of Title 29 of the Code of Federal Regulations, March 6, 1990) that amend the existing Occupational Safety and Health Administration standards for hazardous waste operations and emergency response. Within the State of Washington, these requirements are addressed in Chapter 296-843 of the Washington Administrative Code, Hazardous Waste Operations. These regulations apply to the activities to be performed at this Site as a site remediation, or cleanup, under the Federal Resource Conservation and Recovery Act of 1976 and/or the Washington State Model Toxics Control Act (MTCA).

Subcontractors to SoundEarth are required to prepare and effectively implement their own HASP based on their unique scope of work and professional expertise. Each subcontractor's HASP must comply with all applicable federal, state, and local regulations. The subcontractor's HASP should employ appropriate best practices to protect all personnel working on the Site, as well as the public, and to prevent negative impacts to the project or Site.

The responsibilities of SoundEarth for safety on this Site are limited to:

- **Implementation** of the provisions of this HASP for the protection of its employees and visitors on the Site to the extent that the Site and its hazards are under the control of SoundEarth.
- **Protection of the Site**, other personnel, and the public from damage, injury, or illness as a result of the activities of SoundEarth and its employees while on the Site.
- **Provision** of additional safety-related advice and/or management as contractually determined between the parties.

This plan is active for this Site until 1 year from the date of this HASP or until SoundEarth implements a scope of work change not covered by this HASP, whichever comes first, after which time it must be reviewed and extended.

NOTE: Reference identifications (08-01, Project Responsibilities through 08-23, Work Near Water) incorporated into this Site-Specific HASP refer to the *HASP Reference Manual*, prepared by SoundEarth and dated January 2011, which is a stand-alone document that compiles detailed information and instructions for protecting SoundEarth employees from chemical and physical hazards applicable to this Site-Specific HASP. The *HASP Reference Manual* and this Site-Specific HASP **MUST** be present at the Site during field activities.

2.0 SITE INFORMATION

Site Name: SKS Shell Property
Site Address: 3901 Southwest Alaska Street Seattle, Washington
Site Owner: Lennar Multifamily Communities, LLC
Site Tenant: Shell gasoline station
Nature of Activities at this Site: Past: gasoline service station
Figures B-1 through B-3 show the Site location and features.

3.0 PROJECT RESPONSIBILITIES

Site personnel shall acknowledge that they have reviewed a copy of the HASP for this project, that they understand it, and that they agree to comply with all of its provisions by signing and dating the Acknowledgement and Agreement form in Attachment A.

A daily health and safety tailgate meeting shall take place at the start of every day in the field. Persons attending this meeting are to print and sign their name on the attached Daily Health and Safety Briefing Log in Attachment B.

(Reference 08-01, Project Responsibilities, provides more information.)

Project Manager: Rob Roberts
Site Manager/Health and Safety Officer: Elizabeth Forbes
Principal in Charge: John Funderburk
Corporate Health and Safety Administrator: John Funderburk

4.0 EMERGENCY INFORMATION

For a critical emergency, 911 should be called. (The definition of critical emergency is in Reference 08-02, Emergency Response Plan.)

Note: A SoundEarth employee MAY NOT transport a non-SoundEarth employee off of the Site for medical attention.

Local Emergency Numbers		
Institution/Department	**Name/Address**	**Phone Number**
Hospital	Swedish First Hill 700 Minor Avenue Seattle, Washington	911 or 206-836-2573
Alternative Hospital/Urgent Care Facility	Franciscan Medical Clinic 4550 Fauntleroy Way Southwest Seattle, Washington	911 or 206-971-0425
Police/Sheriff	Seattle Police Department 2300 Southwest Webster Street Seattle, Washington	911 or 206-733-9800
Fire	Seattle Fire Department 301 2nd Avenue S Seattle, Washington	911 or 206-386-1400

Project Emergency Numbers		
Title	**Name**	**Phone Number**
Project Manager	Rob Roberts	O: 206-245-1184 C: 425-985-6253
Site Manager/Health and Safety Officer	Elizabeth Forbes	O: 206-436-5907 C: 802-238-3203
Principal in Charge	John Funderburk	O: 206-436-5933 C: 425-922-9922
Corporate Health and Safety Representative	John Funderburk	O: 206-436-5933 C: 425-922-9922
Certified Industrial Hygienist working for SoundEarth	Michelle Copeland	O: 206-612-6355

Attachment C, Hospital Route, provides the location and driving directions to the nearest hospital. The route must be posted at the Site.

5.0 GENERAL SITE HAZARD ANALYSIS

This section is used to determine the project's potential health and safety hazards specifically as they relate to the Site where the work will occur. Task-related hazards are analyzed in Section 6.0, Task-Related Site Hazard Analysis.

5.1 GENERAL SITE HAZARD ANALYSIS—CHEMICAL

This section describes and identifies potential and known chemical hazards that may be encountered at the Site (Table B-1). Reference 08-03, Chemical Hazards Analysis, provides more information.

5.1.1 Reports that Provide Chemical Data

- Remedial Investigation and Feasibility Study Report, SoundEarth, April 24, 2013.

5.1.2 Summary of Potential Chemical Hazards

- Potentially gasoline- and diesel-range petroleum hydrocarbons; benzene, toluene, ethylbenzene, and total xylenes (GRPH, DRPH, BTEX) in soil and/or groundwater.

5.1.3 Past Opportunities for Chemical Contamination

- The operation of a gasoline service station on the SKS Shell Property with underground storage tanks (UST), dispenser islands, and associated product lines provide potential sources for contamination from any leaks within the system and/or spills related to standard operation of the dispensers or UST-filling activities.
- Previous investigations have identified petroleum-contaminated soil beneath the northern and eastern two-thirds of the SKS Shell Property. Groundwater samples collected from monitoring wells located around the perimeter of the USTs and pump islands (wells MW-1 through MW-3 and GLMW-1 through GLMW-3) contain concentrations of GRPH, DRPH, and BTEX that exceeded the applicable groundwater cleanup levels. Separate-phase hydrocarbon has been intermittently observed in wells MW-1, MW-3, GLMW-2, and DW-2.

5.1.4 Opportunities for Unknown or Unidentified Chemical Contamination

- There are no recognized potential source points beyond those addressed in previous investigations. The Site history is discussed further in the main text of this Cleanup Action Report.

5.1.5 Existing Controls in Place

- Most of the Site is capped by asphalt and concrete, preventing direct contact with contaminated soil and/or groundwater.

5.1.6 Chemical Analytical Results

- None reported.

TABLE B-1 CHEMICAL HAZARDS

Chemical (or Class)	DOSH PEL/AL (OSHA PEL if different)	Other Pertinent Limits	Routes of Exposure / Warning Properties	Exposure Symptoms	Target Organs	Recommended PPE / Respiratory Protection	Recommended Monitoring/Sampling Method
Benzene (component of gasoline)	DOSH PEL: 1 ppm TWA 5 ppm STEL DOSH AL: 0.5 ppm TWA	NIOSH REL: 0.1 ppm TWA 1 ppm STEL IDLH: 500 ppm FP: 12°F LEL: 1.2%	Inhalation, ingestion, skin absorption, eye contact Aromatic odor	Irritation of eyes, skin, nose, respiratory system; dizziness; headache; nausea (carcinogen)	Eyes, skin, respiratory system, blood, central nervous system, bone marrow	▪ Impermeable, disposable clothing ▪ Nitrile or Neoprene gloves ▪ Min ½ Mask AP/HEPA If PEL is exceeded, min full-face SA respirator in positive pressure/ pressure demand mode. ▪ Higher APF if per air monitoring	If potential for exposure exists: ▪ Initial personal air sampling ▪ Additional sampling if necessary based on initial results ▪ Verify method with laboratory prior to ordering media and equipment Real Time: ▪ Detector Tube ▪ 10.2 or 10.6 eV PID

Chemical (or Class)	DOSH PEL/AL (OSHA PEL if different)	Other Pertinent Limits	Routes of Exposure / Warning Properties	Exposure Symptoms	Target Organs	Recommended PPE / Respiratory Protection	Recommended Monitoring/Sampling Method
Ethylbenzene	DOSH PEL: 100 ppm TWA 125 ppm STEL	NIOSH REL: 50 ppm TWA 100 ppm STEL IDLH: 700 ppm FP: 55°F LEL: 0.8%	Inhalation, ingestion, skin or eye contact Sweet, floral odor	Irritation of eyes, skin, nose, respiratory system; dizziness; headache; drowsiness; unsteady gait; defatting; inflammation of skin; possible liver injury; reproductive effects	Eyes, skin, central nervous system, liver, respiratory system, reproductive system	▪ Impermeable, chemical resistant disposable clothing ▪ Silver Shield/ composite glove If PEL is exceeded, min ½ Mask AP with OV cartridge	If potential for exposure exists: ▪ Initial personal air sampling ▪ Additional sampling if necessary based on initial results ▪ Verify method with laboratory prior to ordering media and equipment Real Time: ▪ 10.2 or 10.6 eV PID
Polychlorinated Biphenyl (PCB)	OSHA PEL: 0.5 ppm TWA 2 ppm STEL	NIOSH REL: **0.01** ppm TWA IDLH: 5 ppm FP: N/A LEL: N/A	Inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation of eyes, chloracne, liver damage, reproductive effects	Skin, eyes, liver, reproductive system	▪ Impermeable, chemical resistant disposable clothing ▪ Silver Shield/ composite glove ▪ If REL is exceeded, escape mask must be air-purifying, full-face piece with N100, R100, or P100 filter	If potential for exposure exists: ▪ Initial personal air sampling ▪ Additional sampling if necessary based on initial results Verify method with laboratory prior to ordering media and equipment

Chemical (or Class)	DOSH PEL/AL (OSHA PEL if different)	Other Pertinent Limits	Routes of Exposure / Warning Properties	Exposure Symptoms	Target Organs	Recommended PPE / Respiratory Protection	Recommended Monitoring/Sampling Method
Toluene	DOSH PEL: 100 ppm TWA 150 ppm STEL OSHA PEL: 200 ppm TWA C 300 ppm 500 ppm (10-minute maximum peak)	NIOSH REL: 100 ppm TWA 150 ppm STEL IDLH: 500 ppm FP: 40°F LEL: 1.1%	Inhalation, ingestion, skin absorption, skin or eye contact Sweet, pungent benzene-like odor	Irritation of eyes and nose, weakness, exhaustion, confusion, euphoria, dizziness, headache, dilated pupils, tear discharge, anxiety, muscle fatigue, insomnia, tingling, prickling, and inflammation of skin, liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	▪ Impermeable, chemical-resistant, disposable clothing ▪ Nitrile or Silver Shield gloves (for more extensive contact) If PEL is exceeded, min ½ Mask AP with OV cartridge	If potential for exposure exists: ▪ Initial personal air sampling ▪ Additional sampling if necessary based on initial results ▪ Verify method with laboratory prior to ordering media and equipment Real Time: ▪ 9.8 eV PID
TPH as Diesel (petroleum distillates as a surrogate)	DOSH PEL: 100 ppm TWA 150 ppm STEL OSHA PEL: 500 ppm TWA	NIOSH REL: 86 ppm TWA 444 ppm STEL IDLH: 1,100 ppm FP: -40 to -86°F LEL: 1.1%	Inhalation, ingestion, skin or eye contact Gasoline or kerosene-like odor	Irritation of eyes, nose, throat; dizziness; drowsiness; headache; nausea; dry cracked skin; inflammation of lungs	Eyes, skin, respiratory system, central nervous system	▪ Impermeable, chemical-resistant, disposable clothing ▪ Nitrile or Neoprene gloves If PEL is exceeded, any SA respirator	If potential for exposure exists: ▪ Initial personal air sampling ▪ Additional sampling if necessary based on initial results ▪ Verify method with laboratory prior to ordering media and equipment Real Time: ▪ 10.2 or 10.6 eV PID

Chemical (or Class)	DOSH PEL/AL (OSHA PEL if different)	Other Pertinent Limits	Routes of Exposure / Warning Properties	Exposure Symptoms	Target Organs	Recommended PPE / Respiratory Protection	Recommended Monitoring/Sampling Method
TPH as Gasoline	DOSH PEL: 300 ppm TWA 500 ppm STEL OSHA PEL: None	FP: -45°F LEL: 1.4%	Inhalation, ingestion, skin absorption, skin or eye contact Characteristic odor	Irritation of eyes, skin, and mucous membranes; inflammation of skin and lungs; headache; weakness; exhaustion; blurred vision; dizziness, slurred speech; confusion; convulsions; possible liver and kidney damage; (potential occupational carcinogen)	Eyes, skin, respiratory system, central nervous system, liver, kidneys	▪ Impermeable, chemical-resistant, disposable clothing ▪ Nitrile gloves If PEL is exceeded, any SA respirator in positive pressure/ pressure demand mode	If potential for exposure exists: ▪ Initial personal air sampling ▪ Additional sampling if necessary based on initial results ▪ Verify method with laboratory prior to ordering media and equipment Real Time: ▪ 10.2 or 10.6 eV PID
Xylenes	DOSH PEL: 100 ppm TWA 150 ppm STEL	NIOSH REL: 100 ppm TWA 150 ppm STEL IDLH: 900 ppm FP: 81-90°F LEL: 0.9-1.1%	Inhalation, ingestion, skin absorption, skin or eye contact Aromatic odor	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal cell debris; anorexia, nausea, vomiting, abdominal pain; inflammation of skin	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	▪ Impermeable, chemical-resistant, disposable clothing ▪ Nitrile gloves If PEL is exceeded, min ½ Mask AP with OV cartridge	If potential for exposure exists: ▪ Initial personal air sampling ▪ Additional sampling if necessary based on initial results ▪ Verify method with laboratory prior to ordering media and equipment Real Time: ▪ 10.2 or 10.6 eV PID

NOTES:
The NIOSH Pocket Guide provides more information for the chemical in question or for a chemical not listed.

AL = action limit
AP = air purifying respirator
APF = assigned protection factor
C = ceiling exposure limit
DOSH = Washington State Department of Labor and Industries, Division of Occupational Safety and Health (formerly the Washington Industrial Safety and Health Act)
eV = electron volt
°F = degrees Fahrenheit
FP = flash point
HEPA = high efficiency particulate air cartridge
IDLH = immediately dangerous to life and health
LEL = lower explosive limit
min = minimum
N/A = not applicable
NIOSH = National Institute of Safety and Health
OSHA = Occupational Safety and Health Administration
OV = organic vapor cartridge
PEL = permissible exposure limit
PID = photoionization detector
PPE = personal protective equipment
ppm = parts per million
REL = recommended exposure limit
SA = supplied air respirator
STEL = short-term exposure limit, 15 minutes, unless otherwise noted
TPH = total petroleum hydrocarbon
TWA = time-weighted average

5.2 GENERAL SITE HAZARD ANALYSIS—PHYSICAL

This section addresses known and potential physical hazards specific to the Site. Reference 08-04, Physical Hazards Analysis, provides more information. Site documents provided by the client/owner/tenant can be helpful to identify Site-specific hazards (such as non-SoundEarth HASPs, traffic control plans, and operation and maintenance plans).

5.2.1 General Site Specific Physical Hazards

Described below are physical hazards that may be encountered while on the Site:

- Heavy lifting
- Heavy equipment
- Noise exposure
- Overhead utilities and features
- Slips/trips/falls/cuts
- Temperature extremes
- Traffic and moving equipment
- Underground utilities and features
- Unstable ground/open excavation

5.2.2 Utility Hazards

Described below are utility hazards that may be present at the Site. In order to locate utilities, the Northwest Utility Notification Center should be called at 800-424-5555, a private locate should be scheduled (as appropriate), side sewer cards should be reviewed, owner/tenant documents should be reviewed, and the Site should be visually inspected.

5.2.2.1 Underground Utilities (Reference 08-19, Underground Services Location and Protection)

- Reference the most recent utility ticket number in Attachment D for utilities currently buried on the Site.

5.2.2.2 Overhead Utilities (Reference 08-10, Electrical Safety)

- Reference the most recent utility ticket number in Attachment D for utilities that intersect the Site.

6.0 TASK-RELATED SITE HAZARD ANALYSIS

This section outlines the health and safety hazards that may be present on the Site as a result of the tasks to be performed by SoundEarth or subcontractors as they relate to the chemical and physical hazards identified in Sections 5.1 and 5.2 above. References noted in Table B-2 for the controls and any personal protective equipment (PPE) required should be reviewed. Reference identifications (08-01, Project Responsibilities through 08-23, Work Near Water) incorporated into Table B-2 refer to the *HASP Reference Manual,* dated January 2011, which is a stand-alone document that compiles detailed

information and instructions for protecting SoundEarth employees from chemical and physical hazards applicable to this Site-Specific HASP. A summary of the controls specific to the Site is presented in Section 7.0, Task-Related Site Hazard Controls Summary.

7.0 TASK-RELATED SITE HAZARD CONTROLS SUMMARY

The following controls are required for SoundEarth employees while performing work on the Site:

- Work clothing or coveralls.
- Level D PPE, which includes gloves (task-specific), steel-toed boots, safety glasses, and a reflective safety vest.
- Traffic control, lighting, hard hats, and hearing protection when appropriate.

TABLE B-2 SITE-SPECIFIC TASK-RELATED HAZARDS

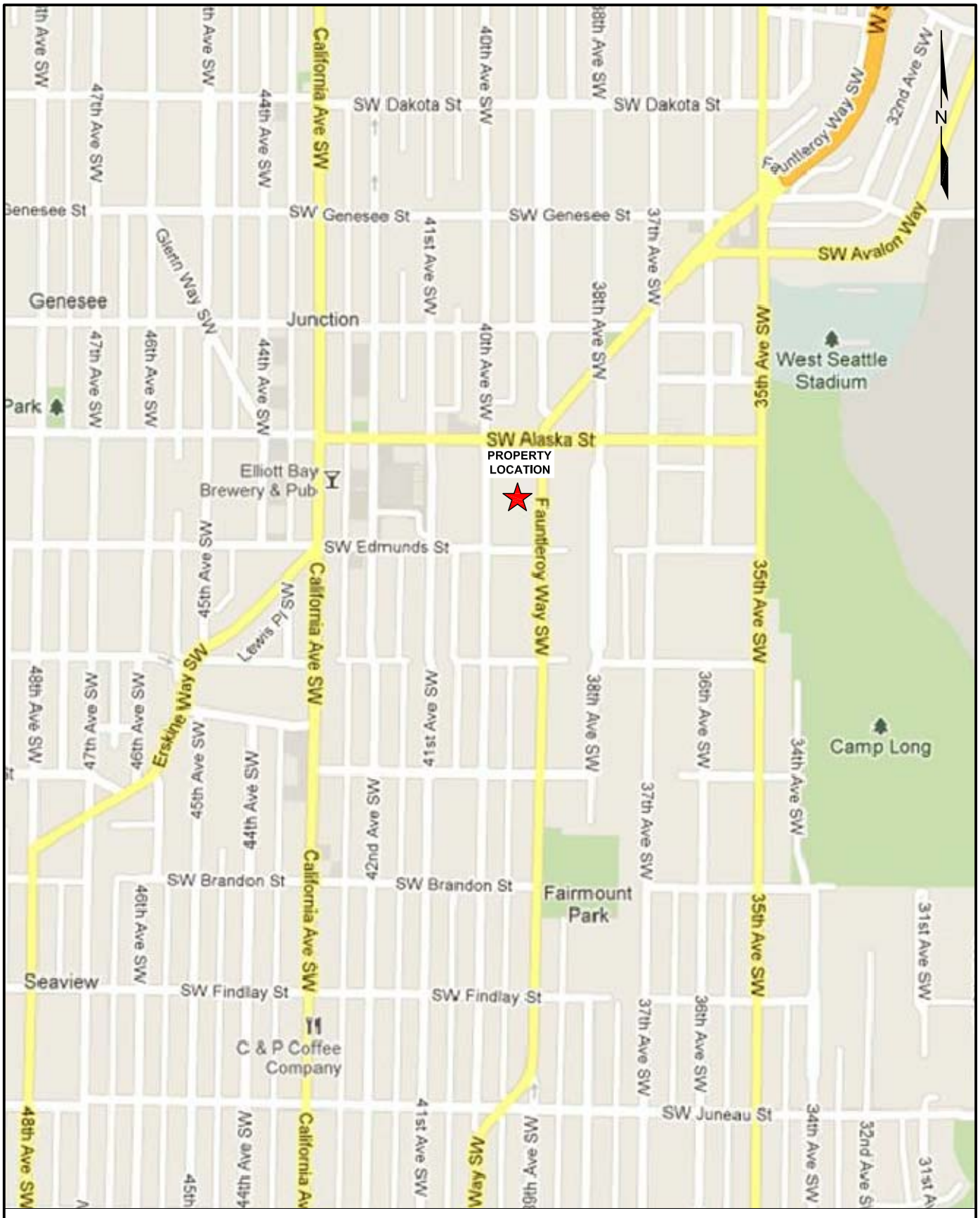
Tasks	Role	Hazard	References
Sampling – Environmental	Task performed by SoundEarth	Chemicals	Table 1, Chemical Hazards 08-17, Sample Collection
		Confined space	08-09, Confined Space Awareness
		Emergency	08-02, Emergency Response Plan
		Heat stress/hypothermia	08-13, Temperature Extremes
		Ladders or heights	08-22, Work at Heights
		PPE, meetings, inspections	08-07, General Site Safety Requirements
		Process hazards	08-21, Work Around Hazardous Processes
		Traffic/mobile equipment	08-18, Traffic and Moving Equipment Hazards
		Unstable ground	08-20, Unstable Ground
		Water hazards	08-23, Work Near Water

Tasks	Role	Hazard	References
Drilling and Subsurface Investigation	Task performed by Subcontractor, Observation by SoundEarth	Chemicals	Table 1, Chemical Hazards 08-06, Site-Specific Chemical Hazard Controls
		Emergency	08-02, Emergency Response Plan
		General site safety	08-07, General Site Safety Requirements
		Heat stress/hypothermia	08-13, Temperature Extremes
		Noise	08-15, Noise and Hearing Protection
		Overhead electric utilities	08-10, Electrical Safety
		Powered tools and equipment	08-10, Electrical Safety
		PPE, meetings, inspections	08-07, General Site Safety Requirements
		Unsecure/uncontrolled Site	08-08, Site Security and Overall Site Control
		Traffic/mobile equipment	08-18, Traffic and Moving Equipment Hazards
		Underground utilities and features	08-19, Underground Services Location and Protection
		Unstable ground	08-20, Unstable Ground
UST Decommissioning	Task performed by Subcontractor, Observation by SoundEarth	Chemicals	08-06, Chemical Hazard Controls Table 1, Chemical Hazards
		Confined spaces	08-09, Confined Space Awareness
		Cutting/welding	08-14, Hot Work Awareness
		Emergency	08-02, Emergency Response Plan
		General site safety	08-07, General Site Safety Requirements
		Heat stress/hypothermia	08-13, Temperature Extremes
		Noise	08-15, Noise and Hearing Protection
		Overhead electric utilities	08-10, Electrical Safety

Tasks	Role	Hazard	References
…continued	Task performed by Subcontractor, Observation by SoundEarth	Powered tools and equipment	08-10, Electrical Safety
Excavation and Trenching	Task performed by Subcontractor, Observation by SoundEarth	General site safety	08-07, General Site Safety Requirements
		Unsecure/uncontrolled Site	08-08, Site Security and Overall Site Control
		Traffic/mobile equipment	08-18, Traffic and Moving Equipment Hazards
		General site safety	08-16, Overhead Hazards
		Chemicals	08-17, Sample Collection
		Underground utilities and features	08-19, Underground Services Location and Protection
		Unstable ground	08-20, Unstable Ground
		Chemicals	08-06, Chemical Hazard Controls Table 1, Chemical Hazards
		Confined spaces	08-09, Confined Space Awareness
		Emergency	08-02, Emergency Response Plan
		General site safety	08-07, General Site Safety Requirements

Tasks	Role	Hazard	References
…continued		Heat stress/hypothermia	08-13, Temperature Extremes
		Noise	08-15, Noise and Hearing Protection
		Overhead electric utilities	08-10, Electrical Safety
		Powered tools and equipment	08-10, Electrical Safety
		General site safety	08-07, General Site Safety Requirements
		Unsecure/uncontrolled Site	08-08, Site Security and Overall Site Control
		Traffic/mobile equipment	08-18, Traffic and Moving Equipment Hazards
		General site safety	08-16, Overhead Hazards
		Chemicals	08-17, Sample Collection
		Underground utilities and features	08-19, Underground Services Location and Protection
		Unstable ground	08-20, Unstable Ground

FIGURES



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DATE: 11/01/12
DRAWN BY: BLR
CHECKED BY: CER
CAD FILE: 0914-004_VIC

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA ST
CITY, STATE: SEATTLE, WASHINGTON

FIGURE B-1
PROPERTY LOCATION MAP

4/28/2013

P:\0914 LENNAR SHELL\0914-004 RIFSCAP\TECHNICAL\CAD\HASP\0914-004_VIC_F.DWG

6/20/2014

LEGEND

- PARCEL BOUNDARY
- GROUND SURFACE ELEVATION
- SKS SHELL PROPERTY
- HULING AND KENNEDY PROPERTIES
- 6126600755 — PARCEL NUMBER

PARKING LOT
RBB OFFICE BUILDING
VACANT
BANK OF AMERICA
JIFFY LUBE
N
40TH AVENUE SOUTHWEST
BELLA MENTE EARLY LEARNING
SOUTHWEST EDMUNDS STREET
MASONIC LODGE
HULING BODY SHOP
6126600755
OFFICE
KENNEDY
6126600780
6126600465
KENNEDY
6126600485
SOUTHWEST ALASKA STREET
VACANT
RETAIL STORE
KENNEDY FUNERAL HOME
VACANT FORMER GASOLINE SERVICE STATION (30 TO 35-FOOT EXCAVATION)
3922 SOUTHWEST ALASKA STREET
PARKING LOT
HULING CHEVROLET GARAGE
SHOWROOM
HULING
6126600555
SKS SHELL
SKS SHELL
6126600495
FAUNTLEROY WAY SOUTHWEST
FAUNTELEROY TERRACE CONDOMINIUM
CAPITAL LOANS
PARKING LOT
CONSIGNED FURNITURE
FORMER GASOLINE SERVICE STATION
LES SCHWAB PROPERTY
BP - ARCO PROPERTY (CURRENT SHELL)
4580 FAUNTLEROY WAY SOUTHWEST

280 285 280 285 280 275 279 275 275 270 270

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\HASP\0914-0 04 SP HASP B-2 F.DWG

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DATE:	12/27/12
DRAWN BY:	BLR/JQC/NAC
CHECKED BY:	CER
CAD FILE:	0914-004_FIG2_SP

PROJECT NAME:	SKS SHELL PROPERTY
PROJECT NUMBER:	0914-004
STREET ADDRESS:	3901 SOUTHWEST ALASKA STREET
CITY, STATE:	SEATTLE, WASHINGTON

REGION:

0 30 60 120
APPROXIMATE SCALE IN FEET

FIGURE B-2
PROJECT AND SITE LOCATION PLAN

WWW.SOUNDEARTHINC.COM

6/20/2014

LEGEND

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- HISTORICAL FEATURES
- H — HYDRAULIC HOIST
- UST — UNDERGROUND STORAGE TANK

SINGLE-FAMILY RESIDENCE 1930s - 1980s

PARKING LOT

SINGLE-FAMILY RESIDENCE 1930s - 1980s

RBB OFFICE BUILDING

SINGLE-FAMILY RESIDENCE 1930s - 1980s

SINGLE-FAMILY RESIDENCE 1909 - 1984 (GAS HEAT)

SINGLE-FAMILY RESIDENCE 1908 - 1970 (STOVE HEAT)

SINGLE-FAMILY RESIDENCE 1920 - 1989 (OIL HEAT)

VACANT

SINGLE-FAMILY RESIDENCE 1921 - 1981 (OIL HEAT)

USED CAR LOT 1960s - 1970s

BANK 1981 - PRESENT

BANK OF AMERICA

PRINTING FACILITY 1928 - 1972

JIFFY LUBE

USED CAR LOT 1950 - 1986

AUTO LUBRICATION 1988 - PRESENT

N

40TH AVENUE SOUTHWEST

BELLA MENTE EARLY LEARNING

VACANT LOT 1930s - 1950s

YWCA 1962 - 1990

SOUTHWEST EDMUNDS STREET

VACANT LOT 1930s - 1940s

MASONIC TEMPLE PARKING LOT 1951 - PRESENT

MASONIC TEMPLE 1951 - PRESENT (OIL HEAT)

MASONIC LODGE

TRENCH DRAIN

OFFICE

PAINT STORAGE

PAINT BOOTH

HULING BODY SHOP

SINGLE-FAMILY RESIDENCE 1917 - 1929

AUTO BODY SHOP 1964 - 2008

WASH AREA

PARKING LOT 1965 - 2005

PORTABLE OFFICE BUILDING 1995 - PRESENT

USED CAR LOT 1936 - 2010

OFFICE 1946 - 1995

OFFICE 1952 - 1969

VACANT

AUTO SALES AND SERVICE 1929 - 1957 (OIL BURNING FURNACE)

GROCERY STORE 1958 - 1972

HANCOCK FABRICS 1976 - 2007

SCHUCKS AUTO SUPPLY 1986 - 2007

FORMER 500-GALLON WASTE OIL UST

HOIST REMOVED

BOILER ROOM AND OIL/WATER SEPARATOR

DEALERSHIP AND SERVICE GARAGE 1952 - 2008

HULING CHEVROLET GARAGE

SHOWROOM

FORMER 1,000-GALLON HEATING OIL UST

WASTE OIL AST AND OIL/WATER SEPARATOR

FORMER 2,500-GALLON GASOLINE UST

RETAIL STORE

REPAIR GARAGE 1959 - 1983

SALES OFFICE 1983 - 1990

INSURANCE OFFICE 1950s

COFFEE SHOP 1953 -1983

EXISTING HEATING OIL UST

FUNERAL HOME 1941 - PRESENT

KENNEDY FUNERAL HOME

SERVICE STATION 1934 - PRESENT

SKS SHELL

CANOPY PRESENT SINCE 1995

8,000-GALLON UST

1930s-ERA PUMP ISLAND

1960s-1980s-ERA CANOPY AND PUMPS

12000-GALLON USTs

10,000-GALLON UST

LOCATION OF TWO REMOVED 4,000-GALLON USTs

SKS SHELL PROPERTY

SOUTHWEST ALASKA STREET

FORMER USTs

VACANT

AUTO REPAIR FACILITY AND GASOLINE SERVICE STATION 1936 - 1957

FORMER PUMP ISLAND AND UST

FAUNTLEROY WAY SOUTHWEST

VACANT LOT 1930s - 1940s

USED CAR LOT 1953 - 1980

PARKING LOT

FAUNTLEROY TERRACE CONDOMINIUM

CONDOMINIUM 1980 - PRESENT

PARKING LOT 1950s - 1970s

VACANT LOT 1930s - 1940s

CAPITAL LOANS

PLUMBING SHOP 1950 - 1968

AUTO PARTS STORE 1969 - 1986

CAPITOL LOANS 1996 - PRESENT

USED CAR OFFICE 1956 - 1969

SINGLE-FAMILY RESIDENCE 1929 - 1950

PARKING LOT

SINGLE-FAMILY RESIDENCE 1914 - 1968 (OIL HEAT)

SINGLE-FAMILY RESIDENCE 1914 - 1990 (OIL HEAT)

SINGLE-FAMILY RESIDENCE 1929 - 1966

CONSIGNED FURNITURE

AUTOMOTIVE SALES 1959 - 2008 (REPAIR SHOPS CONSTRUCTED 1961 AND 1967)

SINGLE-FAMILY RESIDENCE 1914 - 1959 (OIL HEAT)

WEST SEATTLE PRODUCE

USED CAR SALES 1965 - 2008

GASOLINE SERVICE STATION 1953 - 1961

LES SCHWAB PROPERTY

LOCATION OF 1929-VINTAGE PUMPS

GASOLINE SERVICE STATION 1925 - 1952 (HYDRAULIC HOIST)

GASOLINE SERVICE STATION 1952 - PRESENT

BP - ARCO PROPERTY (CURRENT SHELL)

ANY UTILIDORE

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DATE: 12/27/12
DRAWN BY: BLR/JQC/NAC
CHECKED BY: CER
CAD FILE: 0914-004_FIG3_HF

PROJECT NAME: SKS SHELL PROPERTY
PROJECT NUMBER: 0914-004
STREET ADDRESS: 3901 SOUTHWEST ALASKA STREET
CITY, STATE: SEATTLE, WASHINGTON

REGION:

0 30 60 120
APPROXIMATE SCALE IN FEET

FIGURE B-3
CURRENT AND HISTORICAL FEATURES

P:\0914 LENNAR SHELL\0914-004 RIFS\CAP\TECHNICAL\CAD\HASP\0914-0 04 HF HASP B-3 F.DWG

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ATTACHMENT A

ACKNOWLEDGMENT AND AGREEMENT FORM

ACKNOWLEDGMENT AND AGREEMENT FORM

I acknowledge that I have reviewed a copy of the Health and Safety Plan for this project, that I understand it, and that I agree to comply with all of its provisions. I also understand that I could be prohibited by the Site Manager/Health and Safety Officer or other SoundEarth personnel from working on this project if I fail to comply with any aspect of this Health and Safety Plan:

Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*
Name	*Signature*	*Company*	*Date*

ATTACHMENT B

DAILY HEALTH AND SAFETY BRIEFING LOG

DAILY HEALTH AND SAFETY BRIEFING LOG

Date: _____ **Start Time:** _____

Sites Discussed: _____

_____

_____

_____

Subjects Discussed: _____

_____

_____

_____

_____

ATTENDEES

Print Name	Signature

Meeting Conducted by _____ **Date Signed**_____

ATTACHMENT C

HOSPITAL ROUTE

Google

Drive 6.1 mi, 11 min

Directions from **4755 Fauntleroy Way SW** to **Swedish First Hill Emergency Room**

4755 Fauntleroy Way SW

Seattle, WA 98116

Head **north** on **Fauntleroy Way SW** toward **SW Alaska St**

0.4 mi / 1 min

Take exit **164A** from **I-5 N**

5.3 mi / 8 min

2. Continue onto **West Seattle Bridge**

2.7 mi

3. Keep **left** at the fork, follow signs for **Vancouver B C** and merge onto **I-5 N**

1.4 mi

4. Take exit **164A** for **Dearborn St** toward **James St/Madison St**

1.1 mi

5. Follow signs for **James St**

0.2 mi

Continue on **James St**. Drive to **Minor Ave**

0.4 mi / 1 min

6. Turn **right** onto **James St**

0.2 mi

7. Turn **left** onto **Boren Ave**

302 ft

8. Take the 1st **right** onto **Cherry St**

318 ft

9. Take the 1st **left** onto **Minor Ave**

Destination will be on the right

72 ft

Swedish First Hill Emergency Room

700 Minor Ave, Seattle, WA 98104

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

ATTACHMENT D

UTILITY LOCATE TICKET