



August 2, 2017

Ms. Sonia Fernandez
Department of Ecology
Toxic Cleanup Program, NWRO
3190 160th Avenue SE
Bellevue, Washington 98008

Re: Interim Action Work Plan and Response to Ecology Comments
Claremont Village Shopping Center
4821 and 4925 Evergreen Way
Everett, Washington
VCP Number NW2961

Dear Ms. Fernandez:

Apex Companies, LLC (Apex), is pleased to submit the enclosed *Interim Action Work Plan* for the Claremont Village Site. The Site is owned by Phillips Edison and Company (PECO) and is located at Snohomish County parcel 00581900000101 in Everett, Washington. Site investigation and remediation at the Site are being conducted under the oversight of the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP). The Ecology VCP number for the Site is NW2961.

Ecology Comment 1: *A gasoline station was formerly located at Snohomish County tax parcel numbers 005819000008302 and 00581900000830, the current location of a Les Schwab tire store. Because the source of the contamination on these parcels is likely a result of the former gasoline station and its associated underground storage tanks and a former waste oil tank; a separate contaminated site will need to be created for this release. Please submit to Ecology available information regarding the closure of this gas station. This opinion letter does not address the above-mentioned parcels as the associated reports and UST closure information need to be reviewed prior to providing an opinion. This opinion letter addresses the releases from the current and former dry cleaners located on parcel number 00581900000101.*

- **Response:** Noted. The attached RI Work Plan addresses parcel 00581900000101 only. We will work with Ecology to enroll parcels 005819000008302 and 00581900000830 under a separate VCP number.

Ecology Comment 2: *Groundwater at the Site has not been adequately characterized. The groundwater flow direction has not been determined, therefore it is not known if the grab groundwater samples collected from the soil borings are downgradient of a potential Site source. Additional groundwater characterization is needed to determine if Site groundwater has been impacted.*

- **Response:** Previous grab groundwater sampling at the Site, including to the east (GW-1, collected at the location of OBS-1 on Figure 2) and west (B-2) of Bella Cleaners, and to the west of Wild Birds Unlimited (B-1) has not shown the presence of dry cleaning related chemicals in groundwater. PCE was detected in one groundwater sample, collected east of the Wild Birds Unlimited facility, but at a concentration significantly below the relevant MTCA screening level for unrestricted use. While we understand Ecology's interest in understanding groundwater flow, the lack of significant detections in previous sampling suggests that groundwater has not been impacted. Therefore, we propose moving forward with addressing soil concerns by implementing SVE as an interim action without conducting additional groundwater

characterization. If Ecology requires further site characterization in the future to evaluate the Site for final closure, we will address those items at that time.

Ecology Comment 3: *Additional soil characterization is necessary to identify and delineate the source of the high PCE concentrations in soil vapor beneath Bella Cleaners. A grab surface soil sample and a soil sample collected at 36 inches below the slab both indicated that contamination with PCE is present beneath the building. However, both samples were below the applicable MTCA Method A cleanup level. The surface sample had a concentration of 0.013 milligrams per kilogram (mg/kg) and the sample at 36 inches below ground surface (bgs) contained 0.027 mg/kg of PCE. Another soil sample collected approximately 40 feet to the east at a depth of 2 feet bgs contained 0.063 mg/kg of PCE (above the MTCA Method A cleanup level). It is possible that PCE concentrations increase with depth. The elevated PCE concentration in soil vapor (220,000 micrograms per cubic meter) collected about 15 feet to the east of the surface soil sample suggests a source of PCE is present.*

- **Response:** Bella Cleaners is an active facility and access beneath the facility is limited due to the presence of immobile equipment and active site operations. During previous attempts to advance explorations, refusal was encountered at depths less than 3 feet. As noted in our response to Comment 2, we propose immediately moving forward with implementing SVE as an interim action without further site characterization. We anticipate conducting additional soil sampling as part of future confirmation sampling to evaluate the effectiveness of the interim action and prepare the Site for closure.

Ecology Comment 4: *Additional vapor intrusion sampling events should be completed at the Wild Birds Unlimited under different building conditions and seasons. A building survey should be completed prior to indoor air sampling to identify any potential contributors to contaminants detected in the indoor air.*

- **Response:** As noted in previous comments, we propose immediate implementation of SVE as an interim action. We plan to complete the additional vapor intrusion sampling after the interim action to evaluate effectiveness.

Ecology Comment 5: *At this time, Ecology cannot concur with the selected cleanup action and feasibility study as the Site has not been fully characterized. A cleanup action cannot be selected without a clear understanding of the extent and location of soil impacts and potential groundwater impacts.*

- **Response:** Noted – we acknowledge that Ecology cannot concur with the proposed cleanup action as a final remedy. As previously noted, we propose implementing the cleanup action proposed in the attached work plan as an interim action, with the expectation that Ecology will require additional investigation before approval of a final remedy and/or site closure.

Ecology Comment 6: *Upon completion of the Site characterization activities, a Remedial Investigation (RI) report that summarizes all previous investigations and shows the nature and extent of contamination in all media must be provided. Please provide the anticipated date of the RI submittal.*

- **Response:** As previously noted, we propose utilizing the currently available Site data to implement SVE as an interim action. We expect that Ecology will require additional site investigation to concur with a final remedy. Prior to establishing the final remedy, we plan on submitting an RI report that includes the results of historical investigations, IRM actions, and post-IRM site investigation results.

Ecology Comment 7: Ecology's recommended RI report format consolidates all pertinent Site historical information, collected soil and groundwater data, and completed soil cleanup data. See the following Ecology we page for RI report format and content requirements: <http://www.ecy.wa.gov/programs/tcp/policies/checklists.html>.

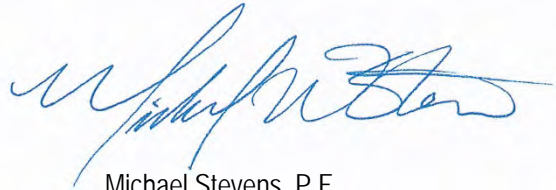
- **Response:** Noted.

If you have any questions, please contact the undersigned at (503) 924-4704.

Sincerely,



Chris Sheridan
Project Geologist



Michael Stevens, P.E.
Senior Associate Engineer

ENCLOSURE

Interim Action Work Plan, Claremont Village Shopping Center, Everett, Washington



*Interim Action Work Plan
Claremont Village Shopping Center
Everett, Washington*

Prepared for:
Phillips Edison & Company

August 2, 2017
PECO_2016-22



***Interim Action Work Plan
Claremont Village Shopping Center
Everett, Washington***

**Prepared for:
Phillips Edison & Company**

**August 2, 2017
PECO_2016-22**

A handwritten signature in blue ink, appearing to read 'Chris Sheridan', written over a horizontal line.

*Christopher Sheridan
Project Geologist*



*Mike Stevens, P.E.
Senior Associate Engineer*

Table of Contents

| | |
|--|---|
| 1.0 INTRODUCTION | 1 |
| 2.0 BACKGROUND | 1 |
| 2.1 Site Description and Physical Setting..... | 1 |
| 2.2 Site History | 1 |
| 2.3 Previous Investigations..... | 2 |
| 3.0 INTERIM CLEANUP ACTION..... | 4 |
| 3.1 Permitting and Design | 4 |
| 3.2 Worker and Public Safety | 5 |
| 3.3 Proposed Interim Action | 5 |
| 3.4 Handling of Investigation-Derived Waste..... | 6 |
| 4.0 QUALITY ASSURANCE AND QUALITY CONTROL..... | 6 |
| 5.0 REPORTING..... | 6 |
| 6.0 REFERENCES | 7 |

Figures

- 1 Site Location Map
- 2 Site Plan and Historical Explorations
- 3 Estimated Zone of Influence

Appendices

- A Historical Information
- B Apex Standard Operating Procedures

1.0 Introduction

Apex Companies, LLC (Apex) prepared this work plan for implementing an interim cleanup action at the Claremont Village Site (the Site; Figures 1 and 2). The purpose of the interim cleanup action is to mitigate potential risks from vapor intrusion and to initiate cleanup of the Site.

The Site is owned by Phillips Edison and Company (PECO) and is located at the Claremont Village shopping center located at 4805 to 4933 Evergreen Way in Everett, Washington. Apex prepared this report following the requirements for Remedial Investigation under WAC 173-340-350 and for Interim Actions under WAC 173-340-430. Site activities are being conducted under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program. The Ecology Facility/Site identification (F/SID) for the site is 3183, the Ecology VCP site identification number is NW2961, and the Ecology Cleanup Site ID number is 12634.

2.0 Background

The following sections describe the physical setting and history of the Site. Historical data including logs of exploration drilling and historical analytical data are included in Appendix A.

2.1 Site Description and Physical Setting

The Site is located east of Evergreen Way between 50th Street Southeast to the south and Wilmington Avenue to the north (Figures 1 and 2). The vicinity is largely developed for commercial, retail, and residential land uses. One main multi-tenant building is associated with the Site, though two other two single-tenant ground lease buildings, currently occupied by Les Schwab Tire and Chase Bank, are associated with the development. The Site buildings are surrounded by parking areas and drive lanes. Landscaped areas are found throughout the Site.

2.2 Site History

The Site was undeveloped prior to construction of the shopping center in the early 1950s (Apex, 2014a). Portions of the Site have been redeveloped throughout its history. The Site has been occupied by a variety of retail and commercial tenants, including a currently operating dry cleaner, and a historical dry cleaner. An automotive service facility, currently occupied by Les Schwab Tires, historically operated adjacent and north of the Site from approximately 1953 through the early 1970s. The main multi-tenant shopping center building is located along the eastern property boundary. Historically, other buildings have occupied portions of the western parking lot of the Site. These historical buildings are no longer located at the Site. While some previous investigations of the Site have incorporated the parcel with the former automotive service

station, at the request of Ecology, the service station parcel is not included in the VCP for the main Site development (VCP No. NW2961).

2.3 Previous Investigations

Limited subsurface investigations have been conducted at the current and former dry cleaners (4821 and 4925 Evergreen Way) and at the adjacent facility currently occupied by Les Schwab (4805 Evergreen Way).

According to prior investigations, a dry cleaner operated in the tenant space at 4821 Evergreen Way from at least 1962 through 1975 and dry cleaning operations have been ongoing at the tenant space at 4925 Evergreen Way by Bella Cleaners since 1994.

Four underground storage tanks (USTs) of unknown size were reportedly removed from the adjacent facility currently occupied by Les Schwab at 4805 Evergreen Way in December 1986. The USTs were reportedly associated with a historical gasoline station at the Site that operated from approximately 1953 through the early 1970s. In December 1995, three soil borings were advanced in the vicinity of the former USTs. Soil samples collected from the borings showed no detected concentrations of petroleum hydrocarbons.

A previous Phase I ESA (Apex, 2014a) identified the following Recognized Environmental Conditions (RECs) related to the dry cleaners and the adjacent former fueling station located adjacent to the Site:

1. **Current and Former Dry Cleaners.** Two dry cleaning facilities were identified – one current dry cleaner (Bella Cleaners) and one former dry cleaner (currently occupied by Wild Birds Unlimited) that operated from approximately 1962 through 1975. While limited subsurface investigation had been conducted at each of the two dry cleaning facilities, data gaps were identified in the previous investigations that warranted the determination that these facilities constituted an REC. Additional investigation was recommended.
2. **Use of PCE.** Bella Cleaners continues to use PCE in a closed-loop dry cleaning system at the Site. PCE is a known hazardous substance that can migrate significant distances in soil and/or groundwater if released to the subsurface. The continued use of the hazardous solvent was considered an REC.
3. **Former Fueling Station.** The Phase I ESA identified a former gasoline fueling station located adjacent and north of the Site, at the current location of the Les Schwab facility. The former station had operated from approximately 1953 through the early 1970s. Four associated former USTs of unknown size had been removed from the Site. Additionally, a closure report for a former 300-gallon waste oil UST at the former station identified the presence of residual contamination in soil above applicable Ecology Model Toxics Control Act (MTCA) cleanup levels (Ecology, 2007). Compounds detected in a sample below the former waste oil tank were above the cleanup levels and included oil (6,500 to 7,700 milligrams per kilogram [mg/kg]), lead (318 mg/kg), and PCE (0.08 mg/kg).

Based on the Phase I ESA, Apex conducted Phase II site investigation activities in September 2014 (Apex, 2014b). Investigation activities targeted the three tenant spaces of concern and included advancing five exploratory borings (B-1 through B-5) to depths ranging from 55 to 65 feet below ground surface (bgs) for purposes of collecting soil and groundwater samples, collecting three subsurface soil vapor samples (from depths of approximately five feet bgs), and collecting four sub-slab vapor samples. Groundwater at the time of sampling ranged from 50.4 to 60.9 feet bgs. The historical sample locations are shown on Figure 2. Analytical results did not show soil or groundwater concentrations above MTCA Method A screening levels for unrestricted land use. However, several volatile organic compounds (VOCs), including PCE and trichloroethylene (TCE), were detected in subsurface soil vapor and sub-slab vapor at concentrations above MTCA Method B screening levels. The elevated VOC concentrations were detected in sub-slab vapor collected beneath the current and former dry cleaning facilities and in sub-slab vapor near the Les Schwab facility. The maximum concentration and screening level exceedance was a concentration sub-slab of PCE of 220,000 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) or 685-times the current MTCA Method B screening level in vapor from beneath the Bella Cleaners facility.

Based on the elevated VOC concentrations in sub-slab vapor, the Site was entered into Ecology's Voluntary Cleanup Program (VCP; Facility No. 3183; VCP Number NW2961) in April 2015.

In September 2015, Apex conducted a Tier II vapor intrusion assessment (Apex, 2015) at several tenant spaces at the Site. While concentrations of PCE and/or TCE were detected in indoor air samples collected in every tenant space that was sampled, concentrations were below the relevant MTCA screening levels. It should be noted that because Bella Cleaners was actively using PCE for site operations at the time of sampling, indoor air in the dry cleaners was not sampled. Other VOCs that were detected above screening level values (SLVs) were determined to be a result of operational (e.g., benzene in the Les Schwab Tire facility) or laboratory contamination. However, sub-slab sampling that was conducted concurrently with the indoor air sampling showed PCE and/or TCE concentrations above the relevant screening levels for vapor intrusion beneath every tenant space sampled. Results of the assessment indicated that while an immediate risk to human health was not identified, sub-slab conditions show a potential for future risks if Site conditions change.

In June and July 2016, Apex conducted a soil vapor extraction (SVE) extraction pilot test (Apex, 2016a). The test included installing one SVE extraction pilot test (SVE-1), located adjacent and to the east of the existing dry cleaning facility (Bella Cleaners), and an SVE observation well (OBS-1) located approximately 18-feet to the east of the extraction well. During the test, which utilized a 1-horsepower blower, air flow extraction rate was measured from SVE-1, while vacuum pressure was measured in both test wells. The results of the pilot test showed that the radius of influence (ROI) was approximately 42 feet, suggesting that SVE would be effective at the Site. Figure 3 shows the ROI near Bella Cleaners based on the results of the SVE pilot test (Apex, 2016a).

In December 2016, Apex completed a Feasibility Study (FS) and Cleanup Action Plan (CAP; Apex, 2016b). The FS evaluated several potential remedial alternatives and identified soil vapor extraction as the alternative most effective and protective of human health. The FS/CAP report was submitted to Ecology for review. Ecology responded with several comments in a letter dated April 26, 2017. In general, Ecology's comments included requests to:

1. Limit future actions for VCP no. NW2961 to parcel 0058190000101 and enroll parcel 00581900008302 and 0058190000830 into a separate VCP listing;
2. Complete additional groundwater characterization since the groundwater flow direction has not been determined;
3. Complete additional soil characterization beneath the Bella Cleaners to identify the source for high soil gas concentrations;
4. Complete a building survey to identify potential indoor air contaminant sources and conduct additional vapor intrusion sampling events at the Wild Birds Unlimited facility under different building and weather conditions; and
5. Submit an RI report.

3.0 Interim Cleanup Action

As discussed in Section 2.3, multiple possible cleanup alternatives have been considered (Apex, 2016b). Based on our current understanding of Site conditions and the results of a previous pilot test, SVE has been determined to be the most feasible interim action.

To address potential risks to occupational workers from existing sub-slab vapor concentrations, we propose moving forward with implementing the cleanup action at the Bella Cleaners facility as an *interim* action. Implementing SVE as an interim cleanup action will immediately mitigate vapor intrusion to indoor air at the Bella Cleaners facility while the system is in operation and will remove or degrade potential unidentified PCE source concentrations in soil. We expect that additional site investigation will be required for Ecology to approve a final remedy.

In summary, the interim cleanup action will consist of the following components:

3.1 Permitting and Design

The permitting and design phase will include the following elements:

- Obtaining required permits (or confirming that none are required) - We do not anticipate that the discharge concentrations will require treatment according to the requirements of the Northwest

Clean Air Agency (NWCAA). Monitoring of discharge vapor concentrations will be used to verify this assumption.

- Preparing engineered plans for the SVE system. The pilot test showed an approximate ROI of 42-feet. Therefore, we anticipate that the design at each facility will include about three to four SVE points. Figure 3 shows the ROI near Bella Cleaners based on the results of the SVE pilot test (Apex, 2016a).
- Establishing operations and maintenance (O&M) procedures; and
- Establishing system performance monitoring requirements.

After system construction, Apex will prepare an SVE System O&M Manual which will include system as-builts, O&M procedures, system performance requirements, and copies of any permits that are identified.

3.2 Worker and Public Safety

The Site-specific HASP will be updated if needed. Subcontractors will be required to prepare a similar HASP for their work on the project. The work will be coordinated with PECO and the commercial tenants to minimize disrupting operation.

3.3 Proposed Interim Action

The proposed interim action includes the following sequence of remedial activities which will be initially completed at the Bella Cleaners facility:

- Site Preparation – This will include identifying underground utilities, potential construction hazards, subcontractor procurement, preparing a health and safety plan, and coordinating a power drop for the future system.
- Installation of Permanent Sub-Slab Vapor Monitoring Points – This will include installation of at least one permanent sub-slab vapor point in each of the affected tenant spaces.
- Installation of SVE Wells – One SVE well has previously been installed east of Bella Cleaners (SVE-1). We anticipate installation of three to four SVE wells at each facility. The specific number of wells, screen length, and other details of the SVE wells to be installed will be determined during the design phase.
- Trenching for SVE Piping – This includes trenching and subsequent installation of SVE piping and backfilling/ surface rehabilitation.
- Installation of SVE System – This includes construction and calibration of the mobile SVE system, as well as placement and connection of the system.

-
- System Operation and Maintenance – This includes operating the SVE system, maintaining the system, and completing verification sub-slab sampling.
 - Site Rehabilitation – This includes rehabilitating the Site after system operation is complete.

Near Bella Cleaners, the SVE system would utilize the existing wells installed to conduct the SVE pilot test (SVE-1 and OBS-1) and additional wells as needed to cover the treatment area. The system will be designed as a mobile system to allow it to be subsequently operated at the Wild Birds Unlimited facility.

3.4 Handling of Investigation-Derived Waste

IDW may consist of soil cuttings from drilling, decontamination water, sampling materials (e.g., sample tubing), and personal protective equipment (PPE). Soil and water IDW will be placed in properly labeled drums and stored at a pre-approved location on the Site, pending receipt of chemical data to be used for profiling the waste for disposal. Based on the results, IDW will be transported to an appropriate facility for disposal or treatment. It is expected that a contained-in determination will be required for the waste. Sampling materials and PPE will be disposed of as solid waste.

4.0 Quality Assurance and Quality Control

Quality assurance/quality control (QA/QC) procedures will be used throughout this project.

A chain-of-custody form will be used to record possession of samples and to document analyses requested. Each time the sample bottles or samples are transferred between individuals, both the sender and receiver sign and date the chain-of-custody form. When a sample shipment is transported to the laboratory, a copy of the chain-of-custody form is included in the transport container (e.g., ice chest).

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of blanks, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries, and blank spike duplicate recoveries to evaluate the analytical results.

5.0 Reporting

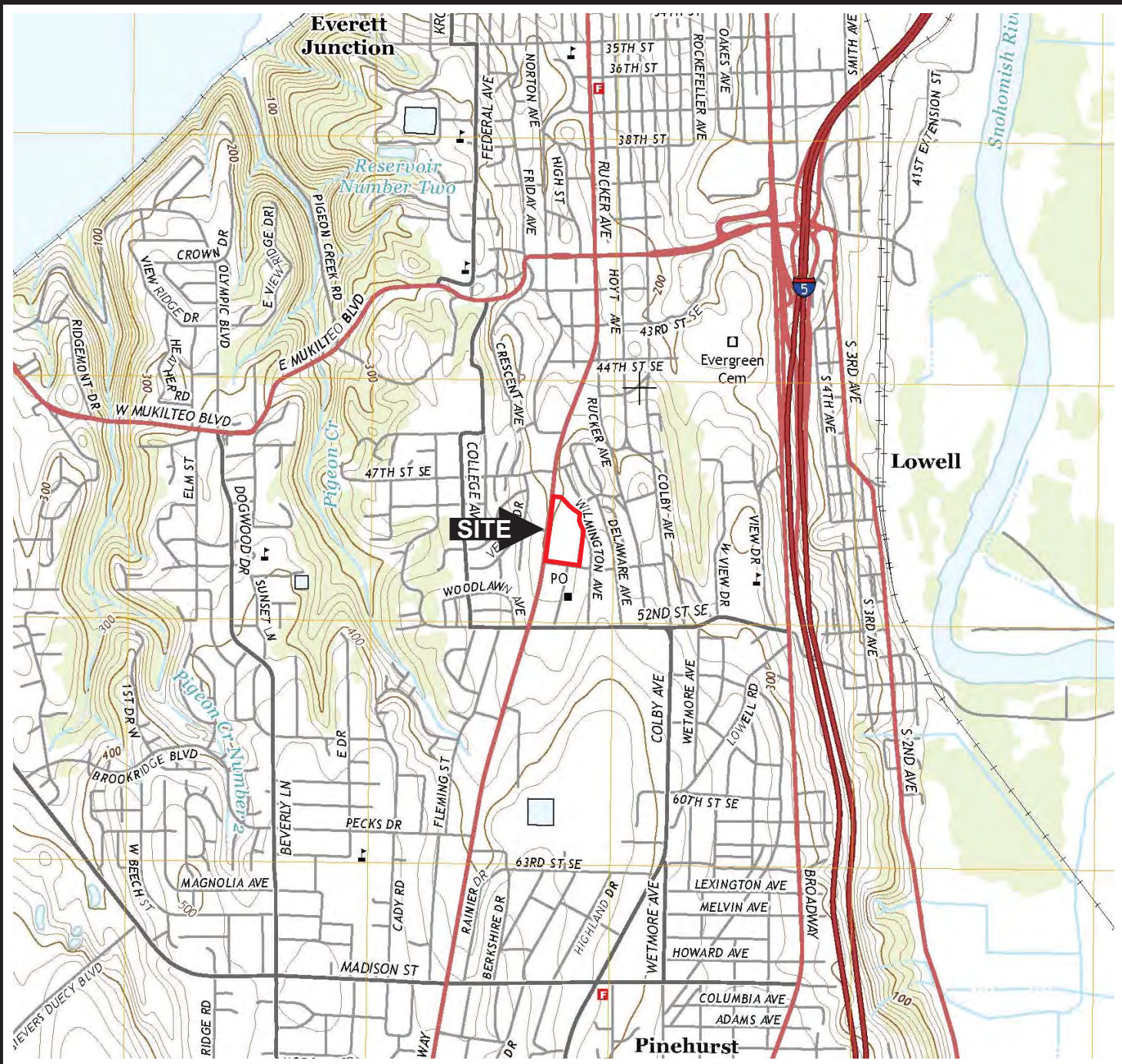
As discussed in Section 3.1, Apex will prepare an SVE System O&M Manual which will include as-built engineering plans, O&M procedures, and system monitoring requirements. Approximately 6 to 12 months after installation and operation of the SVE system, Apex will prepare an Interim Cleanup Action status report presenting the results of system monitoring and recommending potential modifications.

6.0 References

- Apex Companies, LLC (Apex), 2014a. *Phase I Environmental Site Assessment, Claremont Village Shopping Center, 4805-4933 Evergreen Way, Everett, Washington 98203*. August 22, 2014.
- Apex, 2014b. *Phase II Environmental Site Assessment, Claremont Village Shopping Center, 4805-4933 Evergreen Way, Snohomish County, Everett, Washington*. November 3, 2014.
- Apex, 2015. *Tier II Vapor Intrusion Assessment, Claremont Village Shopping Center, Everett, Washington*. November 19, 2015.
- Apex, 2016a. *Soil Vapor Extraction Pilot Test Results, Claremont Village Shopping Center, 4805-4933 Evergreen Way, Everett, Washington*. July 20, 2016.
- Apex, 2016b. *Feasibility Study and Cleanup Action Plan, Claremont Village Shopping Center, 4805-4933 Evergreen Way, Everett, Washington 98203*. December 5, 2016.
- Washington State Department of Ecology (Ecology), 2007. *Model Toxics Control Act Statute and Regulation*. Publication No. 94-06. Revised: November 2007.
- Ecology, 2009. *Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*. October 2009, updated April 6, 2015.

Figure 1
Site Location Map

Claremont Village Shopping Center
4821/4925 Evergreen Way
Everett, Washington

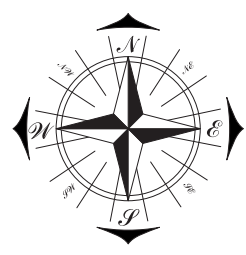


3015 SW First Avenue
Portland, Oregon 97201
Telephone: (503) 924-4704
Fax: (503) 943-6357
www.apexcos.com

Everett, Washington

United States Department of the Interior
Geological Survey
7.5-Minute Series Topographic Map
Contour Interval: 20 feet
Scale: 1 inch = 24,000 feet
Date: 2014

| |
|---------------------------------|
| Project: RI Work Plan |
| Client: Phillips Edison |
| Apex Job #: PECO_2015-42-002 |
| Date: July 2017 |



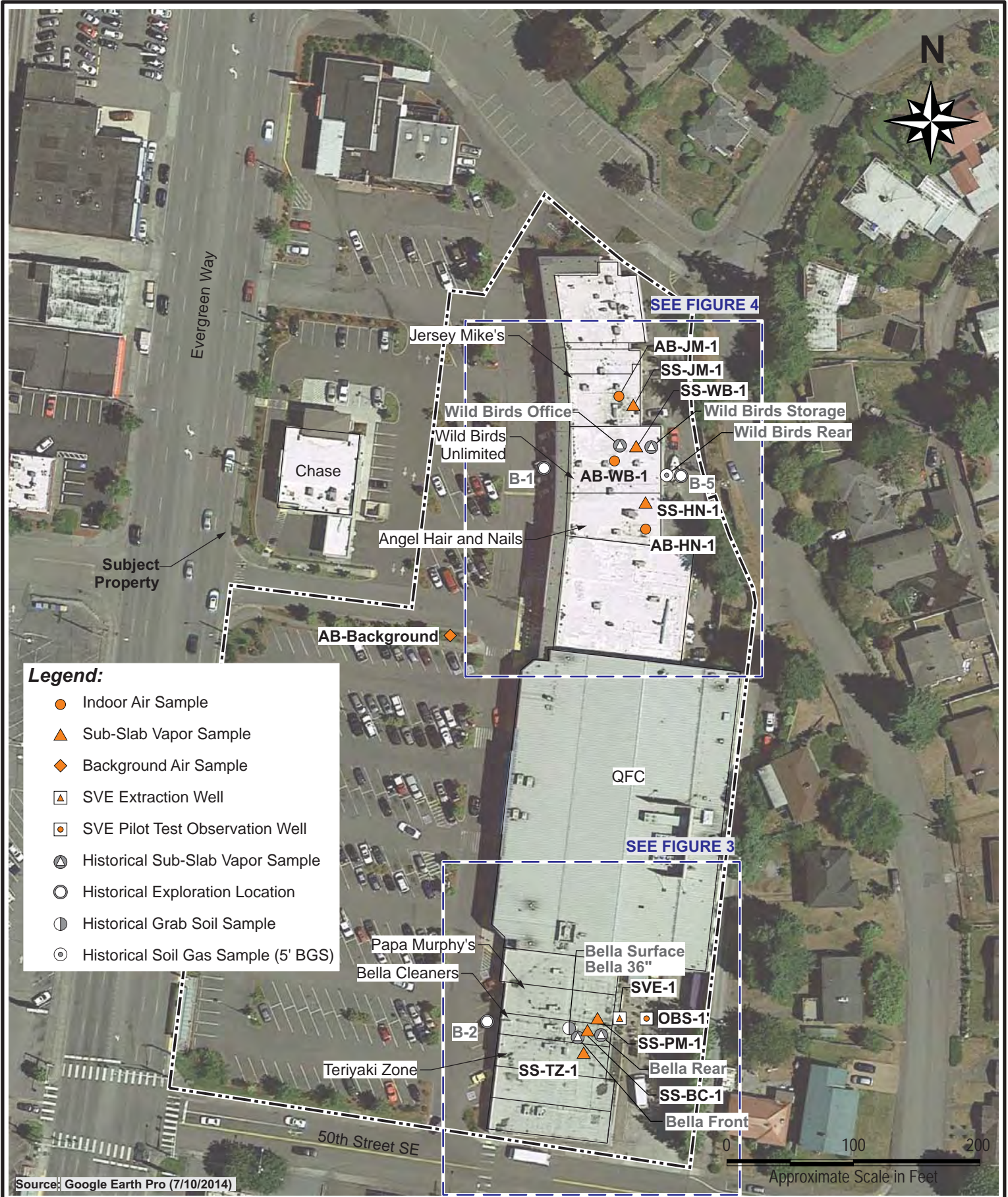


Figure 2:

**Site Plan and
Historical Explorations**

**Claremont Village Shopping Center
RI Work Plan**

4821/4925 Evergreen Way
Everett, Washington

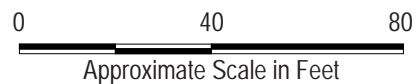




Legend:

- SVE Extraction Well
- ▲ SVE Pilot Test Observation Well

● Estimated Zone of Influence



Source: Google Earth Pro (7/10/2014)

Figure 3:

Estimated Zone of Influence

**Claremont Village Shopping Center
RI Work Plan**

**4821/4925 Evergreen Way
Everett, Washington**



Appendix A

Historical Information

Table A-1
Analytical Results – Soil
Claremont Village Shopping Center
Everett, WA

| Analyte | Soil | | | | | | | | | | | | | Method A Soil Cleanup Levels for Unrestricted Land Use |
|---|-------------|-------------|-----------|-------------|-----------|-----------|-------------|-------------|-----------|---------------|-----------|-------------|-----------|--|
| | B-1-10 | B-1-35 | B-1-60 | B-2-15 | B-2-40 | B-2-60 | B-5-20 | B-5-45 | B-5-60 | Bella Surface | Bella 36" | SVE-1-2 | OB-1-48.5 | |
| | 9/17/2014 | 9/17/2014 | 9/17/2014 | 9/18/2014 | 9/18/2014 | 9/18/2014 | 9/19/2014 | 9/19/2014 | 9/19/2014 | 9/18/2014 | 9/18/2014 | 4/4/2016 | 4/5/2016 | |
| <i>Total Petroleum Hydrocarbons (mg/kg)</i> | | | | | | | | | | | | | | |
| TPH-G | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 100 |
| TPH-D | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2,000 |
| TPH-O | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2,000 |
| <i>Volatile Organic Compounds (µg/kg)</i> | | | | | | | | | | | | | | |
| Acetone | <10 | <10 | <10 | 14 | <10 | <10 | <10 | <10 | <10 | 15 | <10 | <1,470 | <1,450 | -- |
| n-Butylbenzene | 0.34 | <0.26 | <0.26 | <0.26 | <0.27 | <0.26 | <0.26 | <0.26 | <0.26 | <0.3 | <0.27 | <73.5 | <72.7 | -- |
| cis-1,2-Dichloroethene | <0.24 | <0.24 | <0.24 | <0.24 | <0.24 | <0.24 | 0.35 | <0.24 | <0.24 | <0.28 | <0.25 | <36.7 | <36.4 | -- |
| Naphthalene | 2.7 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.2 | <1.0 | <147 | <145 | 5,000 |
| Tetrachloroethene (PCE) | 2.1 | <0.28 | <0.28 | 1.0 | <0.29 | <0.28 | 11 | 0.45 | <0.28 | 17 | 27 | 63.2 | 40 | 50 |
| 1,2,4-Trimethylbenzene | 1.9 | 0.51 | <0.21 | 0.38 | <0.22 | <0.21 | <0.21 | <0.21 | <0.21 | <0.25 | <0.22 | <73.5 | <72.7 | -- |
| 1,2,3-Trimethylbenzene | 1.1 | <0.29 | <0.29 | <0.29 | <0.30 | <0.29 | <0.29 | <0.29 | <0.29 | <0.34 | <0.30 | -- | -- | -- |

Notes:

1. µg/kg = Micrograms per kilogram (ppb).
2. mg/kg = Milligrams per kilogram (ppm).
3. Bold values are detected above laboratory reporting limits.
4. < = Non detect, concentration less than the laboratory reporting limit
5. Highlighted values exceed the Method A soil cleanup levels for unrestricted land use.
6. MTCA screening levels from Washington State Department of Ecology *Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, dated October 2009 (updated April 6, 2015).

Table A-2
Analytical Results – Groundwater
Claremont Village Shopping Center
Everett, WA

| Analyte | Groundwater | | | | Method A or B Groundwater Cleanup Levels for Unrestricted Land Use ⁵ |
|--|-------------|-----------|-------------|----------|--|
| | B-1 | B-2 | B-5 | GW-1 | |
| | 9/17/2014 | 9/18/2014 | 9/19/2014 | 4/5/2016 | |
| <i>Total Petroleum Hydrocarbons (µg/L)</i> | | | | | |
| TPH-G | -- | -- | -- | -- | 1000 |
| TPH-D | -- | -- | -- | -- | 500 |
| TPH-O | -- | -- | -- | -- | 500 |
| <i>Volatile Organic Compounds (µg/L)</i> | | | | | |
| Acetone | <10 | <10 | <10 | <20 | 7,200 |
| Chloroform | <0.32 | <0.32 | <0.32 | <1.00 | 1.4 |
| Tetrachloroethene (PCE) | <0.37 | <0.37 | 0.39 | <0.50 | 5 |

Notes:

1. µg/l = Micrograms per liter (ppb).
2. Bold values are detected above laboratory reporting limits.
3. < = Non detect, concentration less than the laboratory reporting limit.
4. The lowest Method B cleanup level was used if Method A levels are not available.
5. MTCA screening levels from Washington State Department of Ecology *Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, dated October 2009 (updated April 6, 2015).

Table A-3
Analytical Results – Soil Vapor
Claremont Village Shopping Center
Everett, Washington

| Analyte | Wild Birds - Rear | MTCA Method B Sub-Slab Vapor Screening Levels | | Maximum Ratio of Carcinogen Exceedance | Maximum Ratio of Non-Carcinogen Exceedance |
|--|-------------------|---|--------|--|--|
| | | C | NC | | |
| Date Sampled | 9/19/2014 | | | | |
| <i>Volatile Organic Compounds (µg/m³)</i> | | | | | |
| Acetone | 64 | -- | -- | -- | -- |
| Benzene | 3.5 | 11 | 457 | -- | -- |
| Bromodichloromethane | <1.3 | 2.3 | -- | -- | -- |
| Carbon disulfide | 2.5 | -- | 10,667 | -- | -- |
| Chloroform | 26 | 3.6 | 1,493 | 7.2 | -- |
| Chloromethane | <0.41 | -- | 1,371 | -- | -- |
| Cyclohexane | 7.9 | -- | -- | -- | -- |
| Ethanol | 34 | -- | -- | -- | -- |
| Ethylbenzene | 2.0 | -- | 15,238 | -- | -- |
| 4-Ethyltoluene | 1.1 | -- | -- | -- | -- |
| Trichlorofluoromethane (Freon 11) | 1.6 | -- | 10,667 | -- | -- |
| Dichlorodifluoromethane (Freon 12) | 8.4 | -- | 1,524 | -- | -- |
| 1, 1, 2-Trichlorotrifluoroethane (Freon 113) | <1.5 | -- | -- | -- | -- |
| Heptane | 12 | -- | -- | -- | -- |
| n-Hexane | 14 | -- | 10,667 | -- | -- |
| Methylene chloride | <0.69 | 8,333 | 9,143 | -- | -- |
| 2-Butanone (MEK) | 22 | -- | 76,190 | -- | -- |
| Methyl methacrylate | 4.1 | -- | 10,667 | -- | -- |
| Naphthalene | 5.1 | 2.4 | 46 | 2.1 | -- |
| 2-Propanol | 6.6 | -- | -- | -- | -- |
| Propene | 28 | -- | -- | -- | -- |
| Styrene | 1.1 | -- | 15,238 | -- | -- |
| 1,1,2,2-Tetrachloroethane | 8.2 | 1.4 | -- | 5.7 | -- |
| Tetrachloroethylene (PCE) | 2,100 | 321 | 610 | 6.5 | 3.4 |
| Toluene | 9.8 | -- | 76,190 | -- | -- |
| 1,1,1-Trichloroethane (TCA) | 1.2 | -- | 76,190 | -- | -- |
| Trichloroethylene (TCE) | 1.4 | 12 | 30 | -- | -- |
| 1,2,4-Trimethylbenzene | 4.9 | -- | 107 | -- | -- |
| 1,3,5-Trimethylbenzene | 1.4 | -- | 27 | -- | -- |
| Total Xylenes | 10.5 | -- | 460 | -- | -- |

Notes:

1. µg/m³ = Micrograms per cubic meter.
2. Bold values are detected above laboratory reporting limits.
3. Highlighted values exceed one or more applicable screening level.
4. Vapor screening levels are shown for vapor just below the building (subslab) and for soil vapor at a depth of 15-feet below ground surface (bgs). Samples were collected at an approximate depth of 5-feet bgs
5. < = Non detect, concentration less than the laboratory reporting limit.
6. MTCA Method B screening levels from Washington State Department of Ecology *Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, dated October 2009 (updated April 6, 2015).
7. C = Carcinogenic screening level (SL).
8. NC = Non-carcinogenic SL.

Table A-4
Analytical Results – Sub Slab Vapor
Claremont Village Shopping Center
Everett, Washington

| Analyte | Subslab Vapor | | | | | | | | | | MTCA Method B Sub-Slab Vapor Screening Levels | | Maximum Ratio of Carcinogen Exceedance | Maximum Ratio of Non-Carcinogen Exceedance |
|--|--------------------|-------------------|-------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|---|-----------|--|--|
| | WILD BIRDS STORAGE | WILD BIRDS OFFICE | BELLA FRONT | BELLA BACK | SS-BC-1 | SS-PM-1 | SS-TZ-1 | SS-WB-1 | SS-HN-1 | SS-JM-1 | C | NC | | |
| | Date Sampled | 9/17/2014 | 9/17/2014 | 9/18/2014 | 9/18/2014 | 9/17/2015 | 9/17/2015 | 9/17/2015 | 9/17/2015 | 9/17/2015 | 9/17/2015 | 9/17/2015 | | |
| <i>Volatile Organic Compounds (µg/m³)</i> | | | | | | | | | | | | | | |
| Acelone | 7.6 | 18 | 430 | 16 | -- | 97.5 | 94.6 | 334 | 71.3 | 56.8 | -- | -- | -- | -- |
| Benzene | <0.64 | <0.64 | <16 | <0.64 | 2.30 | 6.47 | 2.23 | 2.43 | 7.19 | 3.12 | 11 | 457 | -- | -- |
| Bromodichloromethane | <1.3 | <1.3 | <34 | 1.7 | -- | -- | -- | -- | -- | -- | 2.3 | -- | -- | -- |
| Carbon disulfide | <0.62 | 1.3 | <16 | <0.62 | -- | 1.05 | <0.622 | <0.622 | <0.622 | 0.722 | -- | 10,667 | -- | -- |
| Carbon tetrachloride | -- | -- | -- | -- | 0.432 | <1.26 | <1.26 | <1.26 | <1.26 | <1.26 | 14 | 1,524 | -- | -- |
| Chloroform | 2.9 | 28 | <24 | 58 | 1.79 | 16.2 | 13.7 | 4.21 | 1.89 | <0.973 | 3.6 | 1,493 | 16 | -- |
| Chloromethane | <0.41 | <0.41 | <10 | <0.41 | 0.803 | 0.540 | 0.723 | <0.413 | <0.413 | <0.413 | -- | 1,371 | -- | -- |
| Cyclohexane | <0.69 | 1.1 | <17 | 0.72 | -- | 18.0 | 2.86 | 5.14 | 15.4 | <0.689 | -- | -- | -- | -- |
| 1,1-Dichloroethene | -- | -- | -- | -- | <0.0793 | <0.793 | <0.793 | <0.793 | <0.793 | <0.793 | 52 | -- | -- | -- |
| 1,4-Dioxane | -- | -- | -- | -- | -- | <0.721 | <0.721 | 1.23 | <0.721 | <0.721 | -- | -- | -- | -- |
| Ethanol | 6.2 | 6.8 | 94 | 12 | -- | 1,510 | 761 | 153 | 85.6 | 227 | -- | -- | -- | -- |
| Ethylbenzene | <0.87 | <0.87 | <22 | <0.87 | 1.27 | 1.18 | 1.25 | <0.867 | 1.04 | 0.979 | -- | 15,238 | -- | -- |
| 4-Ethyltoluene | <0.98 | <0.98 | <25 | <0.98 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Trichlorofluoromethane (Freon 11) | 2.2 | 2.5 | <28 | 2.1 | -- | 3.72 | 2.60 | 1.94 | 2.31 | 1.50 | -- | 10,667 | -- | -- |
| Dichlorodifluoromethane (Freon 12) | 22 | 18 | <43 | 4.7 | -- | 12.3 | 7.81 | 16.0 | 29.3 | 2.41 | -- | 1,524 | -- | -- |
| 1, 1, 2-Trichlorotrifluoroethane (Freon 113) | <1.5 | <1.5 | <18 | 4.4 | -- | <1.53 | <1.53 | <1.53 | <1.53 | <1.53 | -- | -- | -- | -- |
| Heptane | <0.82 | <0.82 | <20 | <0.82 | -- | 13.5 | 3.41 | 6.30 | 17.5 | 1.21 | -- | -- | -- | -- |
| n-Hexane | <0.71 | 1.6 | <18 | <0.71 | -- | 20.4 B | 4.89 B | 6.88 B | 20.9 B | 1.41 | -- | 10,667 | -- | -- |
| Isopropylbenzene | -- | -- | -- | -- | -- | <0.983 | <0.983 | 1.86 | <0.983 | <0.983 | -- | -- | -- | -- |
| Methylene chloride | <0.69 | 3.2 | <17 | 3.2 | -- | <0.694 | 0.745 | 0.951 | <0.694 | <0.694 | 8,333 | 9,143 | -- | -- |
| 2-Butanone (MEK) | <3.7 | <3.7 | 97 | 13 | -- | 7.30 | 49.1 | 32.7 | 9.17 | 8.21 | -- | 76,190 | -- | -- |
| 4-Methyl-2-pentanone (MIBK) | -- | -- | -- | -- | -- | <5.12 | 5.78 | <5.12 | <5.12 | <5.12 | -- | -- | -- | -- |
| Methyl methacrylate | <0.82 | <0.82 | <20 | <0.82 | -- | <0.819 | <0.819 | 8.90 | 6.94 | 2.20 | -- | 10,667 | -- | -- |
| Naphthalene | <3.3 | <3.3 | <83 | <3.3 | -- | <3.30 | 4.08 | <3.30 | <3.30 | <3.30 | 2.4 | 46 | 1.7 | -- |
| 2-Propanol | <3.1 | <3.1 | <77 | 3.7 | -- | <3.07 | 6.20 | 46.8 | 9.10 | 3.69 | -- | -- | -- | -- |
| Propene | <0.69 | <0.69 | <17 | 3.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Styrene | <0.85 | <0.85 | <21 | <0.85 | -- | <0.851 | 0.977 | <0.851 | <0.851 | <0.851 | -- | 15,238 | -- | -- |
| 1,1,2,2-Tetrachloroethane | <1.4 | <1.4 | <34 | <1.4 | -- | -- | -- | -- | -- | -- | 1.4 | -- | -- | -- |
| Tetrachloroethylene (PCE) | 2,600 | 810 | 220,000 | 2,000 | 1,360 | 1,270 | 2,770 | 2,510 | 1,780 | 623 | 321 | 610 | 685 | 361 |
| Toluene | <0.75 | 2.5 | <19 | <0.75 | -- | 9.85 | 4.74 | 3.97 | 13.1 | 21.3 | -- | 76,190 | -- | -- |
| 1,1,1-Trichloroethane (TCA) | 1.2 | 1.2 | <27 | <1.1 | <0.109 | <1.09 | <1.09 | <1.09 | <1.09 | <1.09 | -- | 76,190 | -- | -- |
| Trichloroethylene (TCE) | 1.1 | <1.1 | 46 | 4.5 | 6.93 | 13.5 | 7.19 | <1.07 | 1.75 | <1.07 | 12 | 30 | 3.8 | 1.5 |
| 1,2,4-Trimethylbenzene | <0.98 | <0.98 | <25 | <0.98 | -- | 2.72 | 3.30 | 2.27 | 1.71 | 3.51 | -- | 107 | -- | -- |
| 1,3,5-Trimethylbenzene | <0.98 | <0.98 | <25 | <0.98 | -- | <0.982 | 1.01 | <0.982 | <0.982 | 1.13 | -- | 27 | -- | -- |
| 2,2,4-Trimethylpentane | -- | -- | -- | -- | -- | <0.934 | <0.934 | <0.934 | <0.934 | 2.65 | -- | -- | -- | -- |
| Total Xylenes | <2.6 | <2.6 | <65 | <2.6 | -- | 6.29 | 5.96 | 3.446 | 5.27 | 6.65 | -- | 460 | -- | -- |

Notes:

1. µg/m³ = Micrograms per cubic meter.
2. Bold values are detected above laboratory reporting limits.
3. Highlighted values exceed one or more applicable screening level.
4. Vapor screening levels are shown for vapor just below the building (subslab) and for soil vapor at a depth of 15-feet below ground surface (bgs). Samples were collected at an approximate depth of 5-feet bgs.
5. < = Non detect, concentration less than the laboratory reporting limit.
6. MTCA Method B screening levels from Washington State Department of Ecology *Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, dated October 2009 (updated April 6, 2015).
7. C = Carcinogenic screening level (SL).
8. NC = Non-carcinogenic SL.

Table A-5
Analytical Results – Indoor Air
Claremont Village Shopping Center
Everett, Washington

| Analyte | AB-WB-1 | AB-HN-1 | AB-JM-1 | AB-Background | MTCA Method B Indoor Air Screening Levels | | Maximum Ratio of Carcinogen Exceedance | Maximum Ratio of Non-Carcinogen Exceedance |
|---|--------------|--------------|--------------|---------------|---|------|--|--|
| | 9/17/2015 | 9/17/2015 | 9/17/2015 | 9/17/2015 | C | NC | | |
| <i>Volatile Organic Compounds ($\mu\text{g}/\text{m}^3$)</i> | | | | | | | | |
| Benzene | 0.381 | 0.620 | 0.387 | 0.191 | 0.32 | 14 | 1.2 | -- |
| Carbon tetrachloride | 0.427 | 0.756 | 0.393 | 0.380 | 0.42 | 46 | 1.8 | -- |
| Chloroform | <0.0973 | 4.58 | <0.0973 | <0.0973 | 0.11 | 45 | 42 | -- |
| Chloromethane | 0.870 | <0.0620 | 0.894 | 1.17 | -- | 41 | -- | -- |
| 1,4-Dichlorobenzene | <0.120 | <0.120 | <0.120 | 0.498 | 0.23 | 366 | 2.2 | -- |
| Ethylbenzene | 1.02 | 1.92 | 0.970 | 0.149 | 457 | -- | -- | -- |
| 1,1,2,2-Tetrachloroethane | 0.193 | <0.137 | <0.137 | <0.137 | 0.34 | -- | -- | -- |
| Tetrachloroethylene | 0.287 | 0.443 | 0.554 | <0.136 | 9.6 | 18 | -- | -- |
| Trichloroethylene | 0.289 | <0.107 | <0.107 | <0.107 | 0.37 | 0.91 | -- | -- |

Notes:

1. $\mu\text{g}/\text{m}^3$ = Micrograms per cubic meter.
2. Bold values are detected above laboratory reporting limits.
3. C = Carcinogenic screening level (SL).
4. NC = Non-carcinogenic SL.
5. Highlighted values indicate that indoor air concentration is above at least one relevant screening levels.
6. Maximum Exceedance Ratio = Maximum detected concentration / Minimum SL concentration.
7. MTCA Method B screening levels from Washington State Department of Ecology *Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*, dated October 2009 (updated April 6, 2015).

Sample Descriptions

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, and grain size, and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:

MAJOR CONSTITUENT with additional remarks; color, moisture, minor constituents, density/consistency.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits and push probe explorations is estimated based on visual observation and is presented parenthetically on test pit and push probe exploration logs.

| SAND and GRAVEL | Standard Penetration Resistance in Blows/Foot | SILT or CLAY | Standard Penetration Resistance in Blows/Foot | Approximate Shear Strength in TSF |
|-----------------|---|----------------|---|-----------------------------------|
| <u>Density</u> | | <u>Density</u> | | |
| Very loose | 0 - 4 | Very soft | 0 - 2 | <0.125 |
| Loose | 4 - 10 | Soft | 2 - 4 | 0.125 - 0.25 |
| Medium dense | 10 - 30 | Medium stiff | 4 - 8 | 0.25 - 0.5 |
| Dense | 30 - 50 | Stiff | 8 - 15 | 0.5 - 1.0 |
| Very dense | >50 | Very Stiff | 15 - 30 | 1.0 - 2.0 |
| | | Hard | >30 | >2.0 |

Moisture

| | |
|-----------|--|
| Dry | Little perceptible moisture. |
| Sl. Moist | Some perceptible moisture, probably below optimum. |
| Moist | Probably near optimum moisture content. |
| Wet | Much perceptible moisture, probably above optimum. |

Minor Constituents

| Minor Constituents | Estimated Percentage |
|--------------------------------|----------------------|
| Not identified in description | 0 - 5 |
| Slightly (clayey, silty, etc.) | 5 - 12 |
| Clayey, silty, sandy, gravelly | 12 - 30 |
| Very (clayey, silty, etc.) | 30 - 50 |

Sampling Symbols

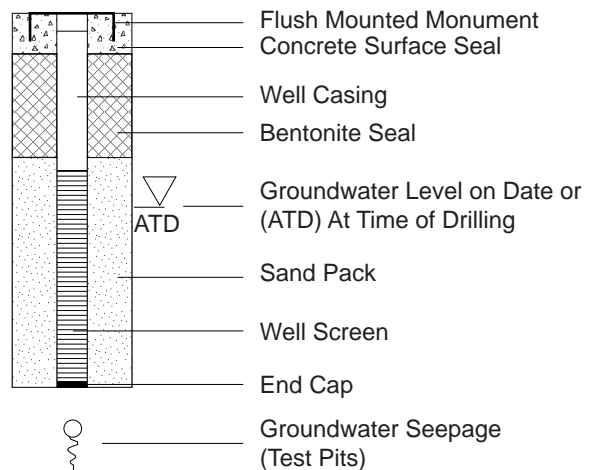
BORING AND PUSH-PROBE SYMBOLS

| | |
|-----|--|
| | Recovery |
| | No Recovery |
| | Temporarily Screened Interval |
| PID | Photoionization Detector Reading |
| W | Water Sample |
| | Sample Submitted for Chemical Analysis |
| NS | No Sheen |
| SS | Slight Sheen |
| MS | Moderate Sheen |
| HS | Heavy Sheen |
| BF | Biogenic Film |

TEST PIT SOIL SAMPLES

| | |
|--|-------------|
| | Grab (Jar) |
| | Bag |
| | Shelby Tube |

Groundwater Observations and Monitoring Well Construction



Key to Exploration Logs

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-01**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 17, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **60.65'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description |
|-------------|------------------------|----------------------|-----|-------|--|
| 0 - 3.5 | Hand Auger | | <5 | NS | Asphalt concrete (3") over SAND (Fill) with cobbles. |
| 3.5 - 5 | | | <5 | NS | SAND; brown/tan, moist, medium-grained. |
| 5 - 10 | | B-01-10 | <5 | NS | SAND with gravel; moist, medium-grained, (90% sand, 10% gravel). |
| 10 - 15 | | | <5 | NS | |
| 15 - 20 | | | <5 | NS | SAND with silt and gravel; moist, medium-grained, well-graded, (80% sand, 10% silt, 10% gravel). |
| 20 - 25 | | | <5 | NS | Fine SAND with some gravels; moist, well-graded. |
| 25 - 30 | | | <5 | NS | |
| 30 - 35 | | B-01-35 | <5 | NS | Fine sand with silt and gravel; moist, well-graded, (80% sand, 10% silt, 10% gravel). |



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-01**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 17, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **60.65'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description | |
|-------------|------------------------|----------------------|-----|-------|---|----|
| | | | <5 | NS | Coarse SAND with silt; gray, moist, well-graded, dense, (80% sand, 20% silt fines). | |
| 45 | | | <5 | NS | Coarse silty SAND; gray, moist, well-graded, (70% sand, 20% silt). | 45 |
| 50 | | | <5 | NS | | 50 |
| 55 | | | <5 | NS | Becomes poorly graded. | 55 |
| 60 | | B-01-60 | <5 | NS | Becomes wet. | 60 |
| 65 | | | | | Bottom of Boring at 65.0' BGS. | 65 |
| 70 | | | | | | 70 |
| 75 | | | | | | 75 |



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-02**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 18, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **60.33'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description |
|-------------|------------------------|----------------------|-----|-------|---|
| 0 | Hand Auger | | | | Asphalt concrete (3") over SAND (Fill) with cobbles. |
| 5 | | | <5 | NS | SAND with silt; light brown, dry, (70% coarse sand, 20% fine sand, 10% silt). |
| 10 | | | <5 | NS | Becomes brown to light gray. |
| 15 | B-02-15 | | <5 | NS | Silty SAND; light brown and medium gray, moist, well-graded, (80% medium/coarse sand, 20% silt). |
| 20 | | | <5 | NS | |
| 25 | | | <5 | NS | Medium coarse SAND with silt; light gray, moist, well-graded, (70% coarse sand, 20% fine sand, 10% silt). |
| 30 | | | <5 | NS | |
| 35 | | | <5 | NS | |



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-02**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 18, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **60.33'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description | |
|-------------|------------------------|----------------------|-----|-------|--|---|
| | | B-02-40 | <5 | NS | Coarse SAND with silt; brown and medium gray, moist, well-graded, medium dense, with trace organics, (85% sand, 15% silt fines). | |
| 45 | | | <5 | NS | | |
| 50 | | | <5 | NS | Silty fine SAND; gray, moist, poorly graded, (70% sand, 30% silt). | |
| 55 | | | <5 | NS | Coarse SAND; gray, moist, medium dense, poorly graded, with trace fines/silts, (>90% sand, <10% silt). | |
| 60 | | B-02-60 | <5 | NS | Silty SAND, medium brown, wet, medium dense, (70% sand, 30% silt). | ▽ |
| 65 | | | | | Bottom of Boring at 65.0' BGS. | |
| 70 | | | | | | |
| 75 | | | | | | |



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-03**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 18, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **51'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description |
|-------------|------------------------|----------------------|-----|-------|---|
| | | | | | Topsoil. |
| | Hand Auger | | | | Sand (Fill); moist, medium-grained. |
| 5 | | | <5 | NS | Coarse SAND with silt; brown/gray, moist, medium dense, with trace gravel and trace organics, (80% sand, 20% silt). |
| 10 | | | <5 | NS | Silty SAND; brown, moist, well-graded, medium dense. |
| 15 | | | <5 | NS | |
| 20 | | B-05-20 | <5 | NS | Medium coarse SAND with silt; gray/brown, moist, (85% sand, 15% silt). |
| 25 | | | <5 | NS | Becomes very dense. |
| 30 | | | <5 | NS | Fine SAND with silt; medium gray, moist, (90% sand, 10% silt). |
| 35 | | | <5 | NS | |



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-03**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 18, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **51'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description |
|-------------|------------------------|----------------------|-----|-------|---|
| 45 | | B-03-40 | <5 | NS | Coarse SAND; medium gray, moist, well-graded. |
| 50 | | B-02-50 | <5 | NS | |
| 55 | | | <5 | NS | |
| | | | | | Bottom of Boring at 55.0' BGS. |





Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-04**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 19, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **50.41'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description |
|-------------|------------------------|----------------------|-----|-------|--|
| 0 | Hand Auger | | | | SAND (Fill) with cobbles. |
| 5 | | | <5 | NS | Coarse SAND with gravel; brown, slightly moist, well-graded, (80% sand, 20% gravel). |
| 10 | | B-04-10 | <5 | NS | |
| 15 | | | <5 | NS | Silty fine SAND; brown, slightly moist, well-graded, trace gravel, (>80% sand, <20% silt). |
| 20 | | | <5 | NS | Silty SAND; brown to gray, slightly moist, well-graded, (80% sand, 20% silt). |
| 25 | | | <5 | NS | Becomes very dense. |
| 30 | | B-04-30 | <5 | NS | Silty SAND; gray, moist, poorly graded, (80% sand, 20% silt). |
| 35 | | | <5 | NS | Fine silty SAND; gray, slightly moist, well-graded, (70% sand, 30% silt). |



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-04**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 19, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

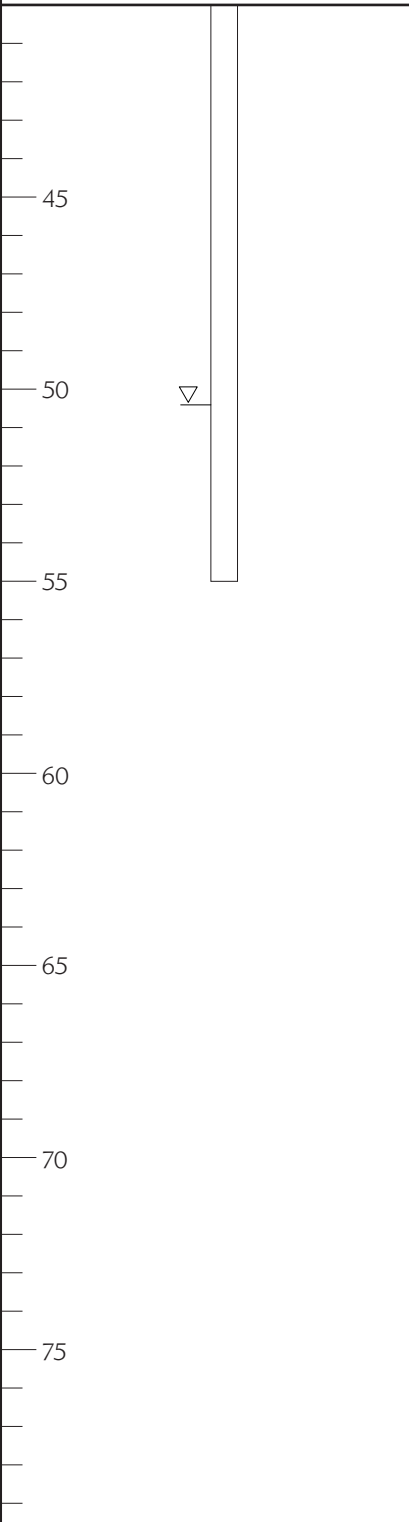
Sampler Type: **Split Spoon**

Depth to Water (ATD): **50.41'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description |
|-------------|------------------------|----------------------|-----|-------|---|
| 45 | | | <5 | NS | Silty SAND; brown to gray, slightly moist, poorly graded, (80% sand, 20% silt). |
| 45 | | | <5 | NS | |
| 50 | | B-04-50 | <5 | NS | Coarse SAND with silt; gray/brown, wet, poorly graded, (85% sand, 15% silt). |
| 55 | | | <5 | NS | Bottom of Boring at 55.0' BGS. |





Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-05**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 19, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **60.92'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description |
|-------------|------------------------|----------------------|-----|-------|--|
| 0 | Hand Auger | | | | Asphalt concrete over SAND (Fill) with cobbles. |
| 5 | | | <5 | NS | Gravelly SAND; brown, moist, well-graded, (80% sand, 20% gravel). |
| 10 | | | <5 | NS | |
| 15 | | | <5 | NS | Silty SAND; brown, moist, well-graded, (75% sand, 15% silt). |
| 20 | | B-05-20 | <5 | NS | |
| 25 | | | <5 | NS | Silty fine SAND; brown/gray, moist, poorly graded, (70% sand, 30% silt). |
| 30 | | | <5 | NS | Fine SAND; brown, moist, poorly graded. |
| 35 | | | <5 | NS | |



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **B-05**

Project Number: **PECO_2014-107**

Logged By: **C. Clough**

Date: **September 19, 2014**

Site Conditions: **Light Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Hollow Stem**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **60.92'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description | |
|-------------|------------------------|----------------------|-----|-------|---|--|
| | | | <5 | NS | Fine SAND with silt; gray, slightly moist, poorly graded, (80% sand, 20% silt). | |
| 45 | | B-05-45 | <5 | NS | | |
| 50 | | | <5 | NS | Silty SAND; brown to gray, slightly moist, well-graded, (80% sand, 20% silt). | |
| 55 | | | <5 | NS | | |
| 60 | | B-05-60 | <5 | NS | Becomes wet. | |
| 65 | | | | | Bottom of Boring at 65.0' BGS. | |
| 70 | | | | | | |
| 75 | | | | | | |

Sample Descriptions

Classification of soils in this report is based on visual field and laboratory observations which include density/consistency, moisture condition, and grain size, and should not be construed to imply field nor laboratory testing unless presented herein. Visual-manual classification methods of ASTM D 2488 were used as an identification guide.

Soil descriptions consist of the following:

MAJOR CONSTITUENT with additional remarks; color, moisture, minor constituents, density/consistency.

Density/Consistency

Soil density/consistency in borings is related primarily to the Standard Penetration Resistance. Soil density/consistency in test pits and push probe explorations is estimated based on visual observation and is presented parenthetically on test pit and push probe exploration logs.

| SAND and GRAVEL | Standard Penetration Resistance in Blows/Foot | SILT or CLAY | Standard Penetration Resistance in Blows/Foot | Approximate Shear Strength in TSF |
|-----------------|---|----------------|---|-----------------------------------|
| <u>Density</u> | | <u>Density</u> | | |
| Very loose | 0 - 4 | Very soft | 0 - 2 | <0.125 |
| Loose | 4 - 10 | Soft | 2 - 4 | 0.125 - 0.25 |
| Medium dense | 10 - 30 | Medium stiff | 4 - 8 | 0.25 - 0.5 |
| Dense | 30 - 50 | Stiff | 8 - 15 | 0.5 - 1.0 |
| Very dense | >50 | Very Stiff | 15 - 30 | 1.0 - 2.0 |
| | | Hard | >30 | >2.0 |

Moisture

| | |
|-----------|--|
| Dry | Little perceptible moisture. |
| Sl. Moist | Some perceptible moisture, probably below optimum. |
| Moist | Probably near optimum moisture content. |
| Wet | Much perceptible moisture, probably above optimum. |

Minor Constituents

| Minor Constituents | Estimated Percentage |
|--------------------------------|----------------------|
| Not identified in description | 0 - 5 |
| Slightly (clayey, silty, etc.) | 5 - 12 |
| Clayey, silty, sandy, gravelly | 12 - 30 |
| Very (clayey, silty, etc.) | 30 - 50 |

Sampling Symbols

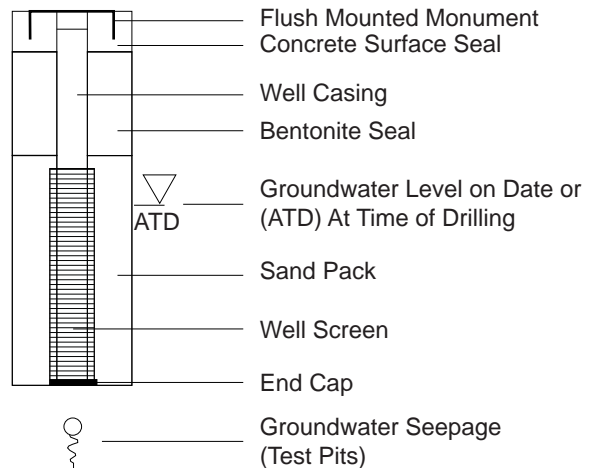
BORING AND PUSH-PROBE SYMBOLS

| | |
|-----|--|
| | Recovery |
| | No Recovery |
| | Temporarily Screened Interval |
| PID | Photoionization Detector Reading |
| W | Water Sample |
| | Sample Submitted for Chemical Analysis |
| NS | No Sheen |
| SS | Slight Sheen |
| MS | Moderate Sheen |
| HS | Heavy Sheen |
| BF | Biogenic Film |

TEST PIT SOIL SAMPLES

| | |
|--|-------------|
| | Grab (Jar) |
| | Bag |
| | Shelby Tube |

Groundwater Observations and Monitoring Well Construction



Key to Exploration Logs

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **SVE-1**

Project Number: **PECO_2016-22**

Logged By: **C. Sheridan**

Date: **April 6, 2016**

Site Conditions: **Clear**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **HSA**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **Not Encountered**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description | |
|-------------|------------------------|----------------------|-----|-------|--|--|
| 0 | | | | | <p>SAND with silt and trace angular gravel; brown, dry, medium-grained.</p> <p>Air-knife to 7.5'.</p> <p>Becomes dry to moist.</p> | |
| 5 | SVE-I-2 | <5 | NS | | | |
| 10 | SVE-I-5 | <5 | NS | | | |
| 15 | SVE-I-10 | <5 | NS | | | |
| 20 | SVE-I-15 | <5 | NS | | | |
| 25 | | <5 | NS | | | |
| 30 | | <5 | NS | | | |
| 35 | | <5 | NS | | | |
| 40 | | <5 | NS | | | |

Bottom of Boring at 40.0' BGS.



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **OB-1**

Project Number: **PECO_2016-22**

Logged By: **C. Sheridan**

Date: **April 5, 2016**

Site Conditions: **Rain**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Geoprobe**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **57.32'**

Surface Elevation: **--**

Boring Details and Notes:

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description | Boring Details and Notes |
|---------------------------------------|------------------------|----------------------|--|--|---|--------------------------|
| 5 10 15 20 25 30 35 | | | <5 <5 <5 <5 <5 <5 <5 | NS NS NS NS NS NS NS | <p>SAND with some medium-grained silt, trace angular gravel; brown, moist, loose.</p> <p>Air-knife to 6.0'</p> <p>Increase silt to sand with silt.</p> <p>Fine-grained.</p> | |



Apex Companies, LLC
3015 SW First Avenue
Portland, Oregon 97201

Claremont Village Shopping Center
4805-4933 Evergreen Way
Everett, Washington

Boring Number: **OB-1**

Project Number: **PECO_2016-22**

Logged By: **C. Sheridan**

Date: **April 5, 2016**

Site Conditions: **Clear**

Drilling Contractor: **Cascade Drilling**

Drilling Equipment: **Geoprobe**

Sampler Type: **Split Spoon**

Depth to Water (ATD): **57.32'**

Surface Elevation: **--**

Boring Details and Notes:

Lithologic Description

| Depth, feet | Core Interval/Recovery | Laboratory Sample ID | PID | Sheen | Lithologic Description | | | |
|-------------|------------------------|----------------------|-----|-------|--------------------------------|--|--|--|
| 45 | | | <5 | NS | Fine SAND; brown, dry, loose. | | | |
| 75 | | OB-1-48.5 | 75 | NS | | | | |
| 55 | | | <5 | NS | | | | |
| 60 | | | <5 | NS | | | | |
| 65 | | | | | Bottom of Boring at 65.0' BGS. | | | |

Bentonite Seal

Appendix B

Apex Standard Operating Procedures

1. PURPOSE AND SCOPE

This Standard Operating Procedure (SOP) describes the methods for collecting soil vapor samples. Samples for soil gas are collected with temporary or permanent purpose-specific sampling equipment installed to the desired depth in vadose soil. The samples are generally obtained using these procedures for the purpose of determining concentrations of chemicals by laboratory analysis. This procedure is applicable to all Ash Creek Associates (ACA) soil vapor sampling activities.

This SOP was developed using the following resources:

- American Petroleum Institute (API), Collecting and Interpreting Soil Gas Samples for the Vadose Zone, Publication Number 4741, November 2005
- USEPA, OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Pathway from Groundwater and Soils, EPA530-D-02-004, November 2002
- Commonwealth of Massachusetts, Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430, Office of Research and Standards, Department of Environmental Protection, April, 2002

2. EQUIPMENT AND MATERIALS

The following materials are necessary for this procedure:

- Traffic cones, measuring tape, Teflon tape, wrenches, and buckets/drums
- Sampling equipment (vapor sampling assembly with gauges and valves) and laboratory-supplied sample containers and flow controllers (as specified in the project-specific work plan for time-weighted samples)
- Leak detection equipment (helium tank, two-stage regulator, and gas flow control valve, and helium leak detector)
- Purge pump
- Field documentation materials
- Decontamination materials
- Personal protective equipment (as required by project Health and Safety Plan)

3. METHODOLOGY

For soil gas sampling, follow steps (a) through (e).

(a) Probe Installation Procedure – Soil Gas Only (Conducted by Drilling Subcontractor):

The installation of a permanent or temporary vapor probe is completed with direct-push equipment in accordance with the procedures described in SOP 2.4. Vapor point construction details, including probe screen, annular material, and seal specifications, are project specific and will be provided in the project work plan.

(b) Assembly and Attachment of Sampling Equipment:

The sampling valve assembly is attached to the sample container (e.g., Summa canister) and flow controller. All valves are kept closed. The valve assembly is connected to the vapor monitoring point using flexible tubing (sealed with compression fittings at both ends).

(c) Leak Detection:

Prepare the Helium pressurization assembly (Helium tank [40 cu.ft], two stage regulator, tubing, gas flow meter, and flow control valve). Ensure that the assembly fittings are tight and perform preliminary leak detection on this assembly with the flow control valve closed.

The Teflon tubing extending from the two stage regulator is attached to the leak detection leg of the sampling assembly using a Swage-Lok fitting (see attached Figure). Secure all fittings, and make sure both the Summa canister and the vapor point are closed/off. Turn on the Helium gas and use the regulator to set the pressure to approximately 10 pounds per square inch (psi). Open the gas flow control valve on the helium pressurization assembly, and open the corresponding valve on the leak detection leg of the sampling assembly. Helium gas should now be flowing through the sampling train.

Using the Helium Leak Detector (Laco Technologies Model LHHLD-2002 or similar) to test each fitting on the sampling train, all Teflon lines, and the connections to the Summa canister, sampling regulator, and to the vapor point. To test these points, activate the Helium Leak Detector, which will take about one minute to calibrate, and hold slightly above each fitting for a minimum of 10 seconds per fitting. The Helium Leak Detector must be able to detect Helium concentration that is a minimum of 25 ppm. If helium is detected, tighten the fittings and repeat testing. Allow a few moments to zero the leak detector and allow the residual Helium to clear from the area. If tightening the fittings does not suffice to eliminate leaks, Teflon tape may be used to seal leaking fittings.

(d) Purging:

Once all fittings and connections have passed the leak detection testing, the secondary valve to the leak detection leg should be shut off, closing off the Helium gas to the system. The Helium pressurization assembly should then be disconnected and a purge pump should be attached to the leak detection leg of the sampling train. Ensuring that the vapor point valve is open, use the purge pump to void the residual vapor from the sampling assembly and vapor point. Once the purge has been completed, close off the leak detection leg valve. The vapor point can now be sampled according to section (e) below.

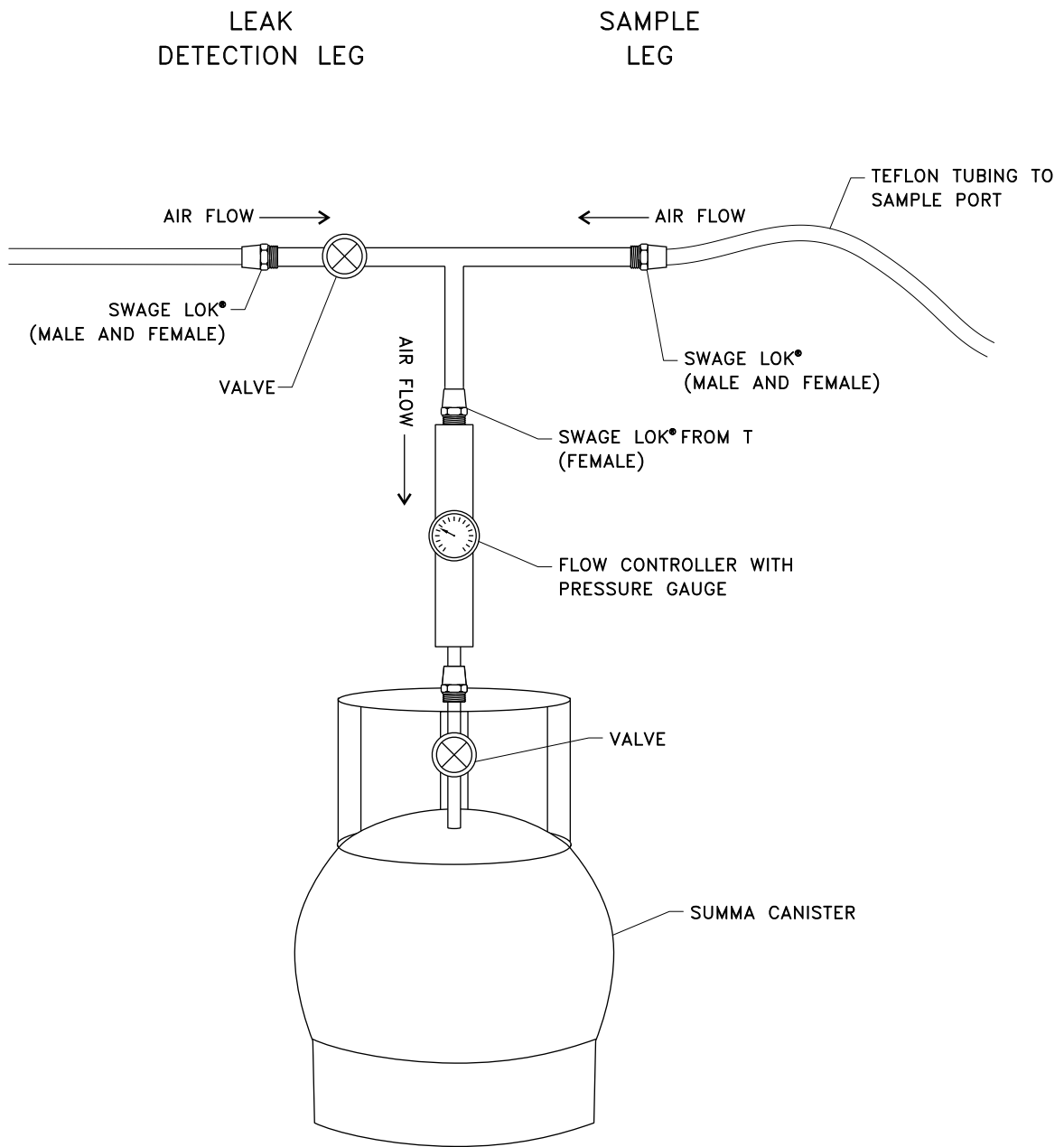
(e) Sample Collection:

The valve on the sample container is opened (verifying that the control valve on the sampling assembly is closed), so that the initial container pressure can be measured and recorded. The control valve can then be slowly opened to allow collection of the sample. Return to the sampler prior to the programmed sample duration so that some vacuum remains in the container (a vacuum of between 1 and 5 inches of Hg). The sample container valve is then closed, the sampling assembly is disconnected, and the sampling container is processed for shipment to the analytical laboratory.

(f) Data Recording:

Record the following:

- In a field log notebook or sampling event form, record project name, sample date, sampling location, results of leak detection, canister serial number, initial vacuum reading, final pressure reading, and sampling time.
- Current weather conditions (temperature, barometric pressure, humidity, sunny/cloudy, wind).
- Date and amount of most recent prior rainfall.
- Maintain records of all field procedures, including any leak testing, purging, and sampling for each sampling location.



Typical Vapor Sampling Manifold



Ash Creek Associates, Inc.
Environmental and Geotechnical Consultants

Project Number

SOP 2.6

Figure

August 2009

1

1. PURPOSE AND SCOPE

This Standard Operating Procedure (SOP) describes the methods for collecting ambient air vapor samples. Samples from ambient air are collected with laboratory-supplied canisters with flow control valves. The samples are generally obtained using these procedures for the purpose of determining concentrations of chemicals by laboratory analysis. This procedure is applicable to Apex Companies, LLC (Apex) ambient air vapor sampling activities.

This SOP was developed using the following resources:

- American Petroleum Institute (API), Collecting and Interpreting Soil Gas Samples for the Vadose Zone, Publication Number 4741, November 2005
- USEPA, OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Pathway from Groundwater and Soils, EPA530-D-02-004, November 2002
- Commonwealth of Massachusetts, Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430, Office of Research and Standards, Department of Environmental Protection, April, 2002

2. EQUIPMENT AND MATERIALS

The following materials are necessary for this procedure:

- Laboratory-supplied sample containers and flow controllers (as specified in the work plan for time-weighted samples)
- Barricades and straps for outdoor sample placement
- Field documentation materials

3. METHODOLOGY

For ambient vapor sampling, follow steps (a) through (d).

(a) Eliminate or Identify Confounding Sources:

Prior to sampling, potential sources of target or interfering compounds should be identified and removed if possible. The specific methods for this task are site specific and should be developed in the work plan using the resources listed above in Section 1.

(b) Place Sample Canister:

Place the sample canister at the location identified by the work plan. In general, the canister should be placed in the lowest occupied level at a height of 2 to 5 feet above the floor or ground. Canisters should be protected from disturbance during the sampling period.

(c) Sample Collection:

Record the initial container pressure (initial vacuum should be approximately 30 inches of Hg). Slowly open the control valve to allow collection of the sample. Return to the sampler prior to the programmed sample duration so that some vacuum remains in the container (the target finishing vacuum is between 0.5 and 1 inches of water). Close the sample container valve and process the sampling container for shipment to the analytical laboratory.

(d) Data Recording:

Record the following:

- In a field log notebook or sampling event form, record project name, sample date, sampling location, canister serial number, initial vacuum reading, final pressure reading, and sampling time.
- Current weather conditions (temperature, barometric pressure, humidity, sunny/cloudy, wind).
- Maintain records of all field procedures, including any leak testing, purging, and sampling for each sampling location.