Remedial Investigation Report

Former Plaid Pantry Store #112

1002 W. Fourth Plain Boulevard

Vancouver, Washington

Washington Department of Ecology VCP Site ID SW1314

Prepared For

Plaid Pantries, Inc.
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EES Project #1179-01

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1 INTRODUCTION

EES Environmental Consulting, Inc. (EES) has prepared this Remedial Investigation (RI) Report on behalf of Plaid Pantries, Inc. (Plaid) for the Plaid Pantry #112 retail gasoline station located at 1002 West Fourth Plain Boulevard in Vancouver, Washington (Property, Figure 1).

In accordance with Washington Administrative Code (WAC) 173-340, the purpose of this RI is to present data that adequately characterize the Site for the purpose of developing and evaluating cleanup action alternatives. Specifically, the RI achieves the following objectives:

- Characterizes the nature, extent, and magnitude of contamination for potentially affected media (i.e., soil, soil vapor, and groundwater) using data from field investigations;
- Presents a detailed Conceptual Site Model; and
- Identifies the applicable cleanup regulations and standards for affected media.

1.1 GENERAL SITE INFORMATION

The Property is located at the northwest corner of the intersection of West Fourth Plain Boulevard and Kauffmann Avenue in Vancouver, Washington (Figure 1). The coordinates for the Site are 45°38'26.07" longitude and -122°40'52.58" latitude. The Property's Clark County Identification Number is 101800, and is located in the southwest quarter of Section 22, Township 2N, Range 1E. The 0.26-acre Property is developed with a single commercial building and a retail gasoline station. Building tenants include Plaid Pantry, which operates a convenience store and retail fueling station, and a Domino's Pizza Restaurant (Figure 2a).

Following confirmation of a fuel release in 2011, Plaid conducted remedial investigation and interim cleanup activities and enrolled in the Washington Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) to facilitate Site characterization and cleanup. The following Ecology identification numbers have been assigned to the Site:

- Cleanup Site Identification Number 11759;
- UST Facility Site Identification Number 9158935; and
- Voluntary Cleanup Program (VCP) Site Identification Number SW1314.

The Ecology Project Manager for this project is Aaren Fiedler (360-407-6300). The Property is owned by 1002 West Fourth Plain Blvd LLC, and the Property owner representative is Richard Piacentini (206-448-1975). This report was prepared on behalf of Plaid Pantries, Inc. (Beaverton, Oregon), and the Plaid representative is Jonathan Polonsky (503-646-4246). Plaid's consultant is Paul Ecker of EES Environmental Consulting in Portland, Oregon (503-847-2740).

1.2 SITE HISTORY

Available information indicates that first development of the Property occurred before 1951, but details regarding Site occupants and Property use before that time are not known (PNG 2011). Between 1951

and 1978, the Property was developed with a commercial building. Site occupants during this period of operation included a gasoline service station, an auto repair shop, an auto detailing and upholstery shop, a dry cleaner, a barber shop, a dairy, a wood furniture refinishing shop, and a second-hand store. The nature and volume of fuel and other products used and stored at the Property by others have not been determined. According to the Property owner's representative, a building and two underground fuel storage tanks (USTs, 3,000- and 5,000-gallon capacity) were removed from the Property prior to site redevelopment in the early 1980s. EES has not identified the location of the former USTs at the Property.

Plaid has operated a retail gasoline station and a convenience store at the Property since site redevelopment in 1982. The fueling system includes two 12,000-gallon USTs and one 10,000-gallon underground tank, as registered with Ecology (see Section 1.1). Site features and underground utilities/infrastructure are illustrated on Figures 2a/2b.

Only gasoline is known to have been stored and dispensed at the Property during operation of the Plaid fueling system. Leaded gasoline may have been dispensed at the site during phase-out of that product in the 1980s. EES understands that Plaid did not store or dispense other hydrocarbons such as diesel fuel, bulk motor oil, or other solvents at any time during its facility operations.

Plaid has operated a leak detection system during site fueling operations as required by Ecology. No releases from the fueling system are known or suspected to have occurred during Plaid's period of operation between 1982 and the time of this report (Section 2.1).

Gasoline impacts were first confirmed in soils surrounding a previously unknown UST that was discovered south of the current fuel dispenser island during initial site assessment activities conducted by Plaid in 2011. The identified gasoline release (source) area is located on the Property and appears to be associated with historical fueling infrastructure that pre-dates Plaid's operations at this Property. Other prior releases may have occurred on the Property, although no releases from the Plaid fueling system are known to have occurred. Soil impacts are present beyond the Property boundary to the south, extending beneath a limited portion of the adjacent sidewalk and Fourth Plain Boulevard roadway. Collectively, the area affected by gasoline contamination originating at the subject Property is designated as the Site.

Historical documentation is provided in Appendix A.

1.3 SITE USE

The Property is developed with a single commercial building that is currently occupied by two tenants separately operating the Plaid convenience store and Domino's carry-out pizza restaurant (Figure 2a). In addition, a fueling station occupies the southern portion of the Property.

The subject Property is zoned as Light Industrial (LI), while surrounding tax parcels are also zoned as Light Industrial (LI) or Community Commercial (CC). The intent and function of these zoning types, as described in Title 20 of the City of Vancouver Municipal Code, is listed below.

- Light Industrial - The Light Industrial zone is intended to provide appropriate locations for combining certain industries including industrial service, manufacturing, research/development, warehousing activities, and general office uses and limited retail. Current zoning prohibits residential use at the Property or elsewhere in the LI zone.
- Community Commercial - The Community Commercial zone is intended to provide for retail goods and services purchased regularly by residents of several nearby neighborhoods. The zone also accommodates offices, institutions, and housing. Housing is allowed above the ground floor in this area.

There are no known future land use changes for the subject Property.

2 FIELD INVESTIGATIONS

2.1 PREVIOUS INVESTIGATIONS

Results of Site characterization and interim cleanup tasks conducted to date by Plaid are summarized below and on Tables 1 through 7, and illustrated on Figures 2 through 8. Supporting details are provided under separate cover.

2.1.1 INITIAL SITE ASSESSMENT - 2011

In preparation for Plaid's planned UST system upgrades, PNG Environmental, Inc. (PNG) conducted an initial assessment at the planned excavation areas on the subject Property in September 2011 (PNG 2011). PNG advanced a total of six soil borings to depths of 40 feet below ground surface (bgs) at various locations surrounding the existing Plaid fueling system. No groundwater was encountered in the six borings. Results of the 2011 investigation included the following (see Table 1):

- Gasoline, benzene, and other gasoline constituents were identified at concentrations exceeding MTCA Method A soil cleanup criteria at boring B-5 located south of the existing Plaid fuel dispensing area, near the southern Property margin. Gasoline impacts were identified at depths between approximately 6 and 12.5 feet during the 2011 assessment, with no indications of gasoline impacts observed below this zone of shallow soil contamination.
- Oil-range petroleum hydrocarbons were identified at a depth of nine feet bgs in boring B-2 located north of the Plaid fueling area. Identified oil concentrations were below Ecology's default MTCA Method A soil cleanup levels. The source(s) of the identified oil impacts at boring B-2 have not been determined.
- No chlorinated or other non-fuel volatile organic compounds (VOCs) were identified among soil samples collected during this initial assessment.

2.1.2 FUEL SYSTEM UPGRADES AND ABANDONED TANK DECOMMISSIONING - 2012

Plaid conducted fuel system upgrades at the Property in January and February 2012. During this work, an abandoned and previously unknown underground fuel tank was encountered immediately south of the Plaid fuel dispenser island near boring B-5 and adjacent to the public right-of-way, where soil contamination was previously identified (PNG 2011). The location of the abandoned underground tank

is shown on Figure 2a. The approximately 1,000-gallon steel tank was empty except for residual water and sludge. The tank was not used or known to exist by Plaid or the Property owner, and no specific information concerning the tank's prior use or contents was obtained. Laboratory analyses of tank sludge contents following decommissioning indicated the presence only of gasoline-range petroleum hydrocarbons (see Tables 1 through 3).

Plaid's contractor notified Ecology and decommissioned the tank by removal in February 2012. Upon removal, corrosion and pitting were observed on tank surfaces. Obvious soil contamination surrounded the tank and accessible discolored soils were excavated and disposed of at a subtitle D landfill under permit by Plaid's contractor. Approximately 13 cubic yards of contaminated soil were excavated from the tank area, although the extent of excavation was limited by Plaid's existing fueling system infrastructure and the adjacent public sidewalk to the south. The final excavation area measured approximately six feet by ten feet, and six feet deep.

Based on the identification of relatively high gasoline and related fuel constituent contamination remaining in soils near the abandoned tank, and in an effort to take advantage of Plaid's exposed piping infrastructure during the system upgrade and decommissioning time period, Plaid installed one 10-foot deep, two-inch diameter well (SVE-1) for future soil vapor extraction (SVE) testing, and five additional "place-holder" monuments intended to facilitate future assessment activities (Section 2.1.3). These place-holder locations consisted of small flush-mounted steel vaults placed in locations surrounding the former fuel tank and determined by Plaid's contractor to be isolated from subsurface fuel system piping and other underground Plaid infrastructure.

Confirmatory analytical testing results indicated that residual soil impacts at depths between three and 10 feet bgs exceeded MTCA Method A cleanup levels for gasoline and benzene. No chlorinated solvents or other non-gasoline VOCs were identified in residual tank contents or among confirmatory post-excavation soil samples collected from areas surrounding the former tank.

2.1.3 Supplemental Site Assessment - 2012

In August 2012, EES conducted site assessment activities to further evaluate potential gasoline impacts in soil and soil vapor on the Property and south of the Property boundary in the adjacent Fourth Plain Boulevard right-of-way (EES 2012). A total of 13 soil borings (B-7 through B-16, and SVE-2 through SVE-5) and 10 soil vapor borings (S-1 through S-4, S-6, S-7, S-9 through S-11, and S-13) were advanced at the locations shown on Figures 3 through 6. After drilling, four of the 13 soil borings were completed as SVE test wells SVE-2 through SVE-5, and soil vapor samples were collected from each of the newly installed SVE wells. Findings from the 2012 assessment (Tables 1 through 4) included the following:

- Gasoline and related constituents were identified in soil at concentrations exceeding MTCA Method A cleanup levels at the Plaid fuel pump area, extending beyond Property margins to the south beneath the public sidewalk and Fourth Plain Boulevard right-of-way. Identified gasoline impacts in soil beneath the public right-of-way did not appear to be in direct contact with known underground utility infrastructure based on site characterization data and information provided by the City of Vancouver.

- Soil vapor data were generally consistent with identified gasoline impacts to soil, with the greatest vapor concentrations centered at the Plaid fuel dispenser island area and extending to the south. Gasoline-related soil vapor concentrations attenuated laterally with distance from this gasoline source area.
- Non-gasoline volatile organic compounds including tetrachloroethene (PCE) and other chlorinated compounds were detected in the 14 soil vapor samples (Table 4). Of these compounds, PCE and/or carbon tetrachloride were detected in three samples at concentrations exceeding MTCA Method B soil gas screening levels. The greatest PCE concentrations were detected at shallow soil vapor extraction wells SVE-3 and SVE-5. Plaid is not known or suspected to have used or managed chlorinated solvents during its site operations. The source of PCE impacts has not been identified.

2.1.4 Soil Vapor Extraction Pilot Test - 2012

EES performed a preliminary soil vapor extraction (SVE) pilot test in October 2012 to evaluate the performance and potential effectiveness of this technology to address identified soil impacts (EES 2013). The test utilized a five-well array installed at the fuel distribution island area during August 2012, including three "shallow-zone" wells screened at depths between 5 and 10 feet (SVE-1, SVE-3, SVE-5), and two "deep-zone" wells (SVE-2, SVE-4) screened at 15- to 20-foot depths (Figure 2c). The findings of the pilot test demonstrated that SVE was likely to be an effective remedial technology and source control for identified contaminants based on observed conditions and performance.

2.1.5 Interim Remedial Action - 2013 to Present

Based on the results of the 2012 SVE pilot test, EES installed and began operating an SVE system at the Property in September 2013 (EES 2014, 2018). The SVE system applies a vacuum to the five-well array (SVE-1 through SVE-5) to remediate gasoline source zone impacts near the southern Property margin. The SVE system's observed zone of influence is shown on Figure 2c. The SVE system has operated without major problems since full-time system startup in September 2013, with the exception of an intentional shutdown in 2015-2016 to evaluate perched groundwater conditions (discussed in Section 2.1.7). Within the SVE treatment zone, gasoline and related constituent vapors continue to be removed from the subsurface at concentrations indicating generally diminishing residual impacts and mass removal rates. Source-area soil treatment effectiveness is summarized in Sections 2.1.6 and 2.1.9.

2.1.6 Supplemental Site Investigation - 2015

In 2015, EES conducted supplemental site investigation activities to assess potential gasoline vapor intrusion, to develop Site-specific MTCA Method B soil cleanup levels, and to evaluate source-area soil treatment effectiveness. The initial vapor intrusion assessment was conducted to evaluate potential vapor impacts and migration pathways approaching the Property building and in utility corridors south of the Property beneath the adjacent sidewalk and Fourth Plain Boulevard roadway.

In support of this assessment, vapor monitoring wells were installed in shallow soils and utility trench backfill materials across the Site, and five soil borings (B-16 through B-20) were advanced in the known

gasoline source area in order to calculate Site-specific soil cleanup levels (discussed in Section 4.1.1) and to evaluate SVE treatment effectiveness. A total of 21 soil gas samples were collected from Site vapor monitoring wells (B-17, B-18, S-27 through S-31), temporary shallow soil gas borings (S-14, S-15, S-16, S-18, S-20 through S-24, and S-26), and utility trench backfill locations (S-17, S-19, S-25, and S-32). Sample locations and analytical results are shown on Figures 4b through 7, and summarized below.

- In the historic gasoline source-zone area undergoing active SVE treatment, soil gas concentrations of gasoline and benzene were measured at concentrations of up to 8,600 and 140 micrograms per cubic meter (ug/m^3), respectively, indicating significant contamination reductions in the source area.
- Soil data collected at source-area borings B-19 and B-20 indicated significant contaminant reduction in the treatment area due to active soil vapor extraction, with 2015 concentrations less than MTCA Method B cleanup levels (CUL) within this zone. For example, pre-treatment (2012) gasoline and benzene concentrations were measured at location Pit-E/6 at up to 64,200 and 93 mg/kg, respectively, compared to post-treatment (2015) concentrations measured at co-located boring B-20 at up to 475 mg/kg gasoline and no detectable benzene.
- South of the Property boundary and beyond the zone of current SVE influence, gasoline contamination was measured in soil at levels exceeding 20,000 mg/kg. However, gasoline-related volatile constituents (BTEX compounds) were not detected in corresponding off-Property soils.
- The greatest soil gas impacts were measured south of the source-zone treatment area and beyond the southern Property margin below the adjacent sidewalk and West Fourth Avenue roadway, where residual soil impacts remain at relatively high concentrations. In this right-of-way area, the highest vapor levels of gasoline (4,900,000 ug/m^3 at well B-17) and benzene (120 ug/m^3 at boring S-15) were measured beyond the observed SVE influence zone. Soil and vapor impacts beneath the West Fourth Plain Boulevard roadway diminish before reaching the roadway centerline based on sampling data (Figures 4b and 5).
- North of the source-area, soil gas data collected in shallow soils indicate that gasoline and constituent soil vapors diminish with proximity to the Property building. Benzene concentrations up to 100 ug/m^3 were measured at temporary soil gas boring S-21 located adjacent to the building, slightly exceeding Ecology's default MTCA Method B soil gas screening level of 10.7 ug/m^3.
- Gasoline and related constituents were not detected in utility trench backfill soil gas samples at concentrations that exceeded MTCA Method B soil gas screening levels. Based on these results, elevated levels of site contaminants do not appear to be present in Site utility trenches, and therefore are not likely migrating into the subject Property building via these potential preferential pathways.

2.1.7 PERCHED GROUNDWATER EVALUATION - 2016

Plaid's operating SVE system includes application of vacuum to five well locations in the known gasoline release area near the southern Property margin, and SVE has operated continuously and without major problems since fulltime start-up in September 2013. Until late 2015, site characterization data indicated

that recoverable groundwater had not been encountered to maximum exploration depths up to 40 feet, and identified gasoline releases at the Site were not expected to have been in contact with or otherwise to have impacted local groundwater. EES first observed water in one of the Site's SVE wells during monitoring activities in November 23, 2015. This observation triggered monthly evaluation of groundwater conditions at the Plaid Site using these SVE wells. Groundwater monitoring continued through February 2016 (EES 2016).

Perched groundwater was observed in various Site wells during the period between November 2015 and February 2016. EES shut down the Site's SVE system during this time and collected monthly groundwater samples from existing Site wells to evaluate potential gasoline impacts. Only one of the Site wells (SVE-5) consistently yielded adequate water for sampling. Recoverable groundwater was also available at well S-28 during the December 23, 2015 monitoring event. Among the six groundwater samples analyzed during the monitoring period, no gasoline or related constituents were identified.

Although seasonal perched groundwater within 20 feet of the ground surface has been confirmed at this Site, water conditions during the monitoring period were highly variable within the well network and recoverable perched groundwater was only reliably identified at well SVE-5. Gasoline impacts at the Site appear limited to soil and soil vapor and have not been detected within seasonal perched groundwater, where present. The local static water table is anticipated at depths below 80 feet (discussed in Section 2.2.3).

Investigation findings to date indicate gasoline impacts to Site groundwater have not been detected and are not anticipated. EES re-started the Site's active SVE system in March 2016.

2.1.8 VAPOR INTRUSION ASSESSMENT - 2016

As directed by Ecology, EES and Plaid conducted a Vapor Intrusion Assessment (VIA) in 2016 to evaluate conditions for the Property building (EES 2017). EES used a phased or "tiered" approach for vapor intrusion evaluation as specified in Ecology guidance.

2.1.8.1 TIER 1 VAPOR INTRUSION ASSESSMENT

EES performed Tier 1 VIA sampling in June 2016. Sampling activities included the collection of five soil gas samples at locations immediately south of the existing Property building, as illustrated on Figures 6 and 7. Temporary soil gas borings S-33 through S-36 were advanced to terminal depths of five feet, with a fifth soil gas sample collected from existing vapor monitoring well S-31, which is screened from 5 to 10 feet bgs.

Gasoline, gasoline constituents, and chlorinated solvents were detected in several Tier 1 soil vapor samples. Benzene and PCE were detected at concentrations above MTCA Method B screening levels. Based on Tier 1 findings indicating exceedances of MTCA soil gas screening levels at several locations near the Property building, potential vapor intrusion could not be ruled out and a Tier 2 assessment was triggered as required under MTCA.

2.1.8.2 TIER 2 VAPOR INTRUSION ASSESSMENT

EES conducted Tier 2 VIA activities in September 2016 to further evaluate potential indoor air vapor intrusion to the Property building. A total of six outdoor air samples (A-4 through A-9), three indoor air samples (A-1 through A-3), and three sub-slab samples (A-1ss through A-3ss) were collected during the Tier II VIA, as shown on Figure 8. Indoor and outdoor barometric pressure measurements were also collected, indicating no discernable gradient between indoor and outdoor air pressure conditions during the sampling event.

Sub-slab gasoline and related constituent vapor concentrations (including benzene, EDB, and naphthalene) measured in September 2016 were either not detected or were measured at concentrations below MTCA soil gas screening criteria. Indoor air samples from the Plaid and Domino's building and outdoor air samples collected at the Property in September 2016 identified gasoline-related vapors at levels that in some cases marginally exceed Ecology screening criteria for indoor air. However, the sources of those vapors (1) do not appear to originate from under the building where no significant sub-slab vapors were identified, and (2) are likely associated with widespread ambient urban air quality and normal retail fueling operations at the Property. The results of the Tier 2 sampling are further discussed in Section 2.4.3.

2.1.9 ONGOING SVE OPERATIONS AND MONITORING

As an interim remedy, Plaid installed an SVE system in the gasoline source area in 2013 and has operated the system since that time. EES conducts monthly operations and maintenance, and quarterly monitoring of the SVE system to evaluate and adjust performance. SVE monitoring results are summarized in regular Interim Remedial Action Measure (IRAM) status reports (EES 2018). Since 2013 startup, cumulative removal of gasoline range hydrocarbons is estimated to be 198 pounds, or approximately 32 gallons. System emissions and performance during 2016 and 2017 are summarized on Table 4.

2.2 NATURAL CONDITIONS

General subsurface conditions including Site stratigraphy and regional hydrogeology are described below. Copies of Site boring logs are included for reference in Appendix B.

2.2.1 SITE AREA GEOLOGY

The majority of the Property is paved with asphalt and concrete, with gravel fill extending to approximately one foot below the paved surface. Subgrade fill is underlain by fine-grained native soil consisting of brown silt and sandy silt, grading to silty sand and extending to depths ranging between 13.5 and 20 feet bgs. The soil is composed of varying amounts of low plastic fines and fine sand. The fine-grained soil is underlain by sands and gravels extending to maximum depths explored of approximately 40 feet bgs. The sand is brown to gray and fine to coarse grained. Observed gravels are sub-round to sub-angular, with cobbles up to three inches in diameter. Groundwater at the Site has not been encountered at terminal exploration depths up to 40 feet.

According to the *Geologic Map of the Vancouver Quadrangle, Washington and Oregon* (Phillips 1987), the site vicinity is depicted as being underlain by Holocene to upper Pleistocene-aged alluvial deposits, which are described as medium to fine sand and silt on the floodplains of the Columbia River. The unit is typically less than 50 feet thick; but locally up to 165 feet thick. This mapped alluvial unit is consistent with EES stratigraphic observations to date.

The subject Property is located on alluvial terrace deposits above the Columbia River, at an elevation of approximately 90 to 95 feet above mean sea level (MSL).

2.2.2 SITE SURFACE WATER

Stormwater appears to be collected and infiltrated at a dry well in the southwest portion of the paved Property and is therefore expected to be isolated from shallow impacted soil present at the site. Vicinity runoff is collected by municipal catch basins and routed into a west-flowing combined sewer located beneath the adjacent Fourth Plain Boulevard. According to the City of Vancouver, this combined sewer discharges to the local waste water treatment facility.

2.2.3 SITE HYDROGEOLOGY

Groundwater has not been encountered on the Property at maximum exploration depths up to 40 feet. To confirm local and regional groundwater conditions, EES previously reviewed available well log information published by Ecology's Water Resources Department (EES 2014).

- Based on the results of the database review, wells in the Site vicinity appear to be screened in the regional aquifer at depths below approximately 100 feet, with first water expected at similar depths. Findings of this well search are consistent with our observation that groundwater was not encountered within 40 feet of the Property ground surface.
- For reference, the Columbia River stage at Vancouver, Washington averages less than 10 feet MSL (USACOE 2004). Compared to Property ground surface elevations ranging between 90 and 95 feet MSL, the water table surface is likely present at depths of 80 feet or greater beneath the subject Property.
- The local water table is expected to flow to the west or southwest following local topography and towards the nearby Columbia River.
- No beneficial groundwater use appears likely within 0.25-mile of the Site. The primary local and regional drinking water supply is from the Troutdale Gravel Aquifer (TGA), which is present among deeper confined water-bearing sands and gravels below the alluvial water table, and the TGA is therefore typically encountered at depths well below 100 feet.

Based on these multiple lines of evidence, and as previously discussed with Ecology, groundwater is not anticipated within 80 feet bgs in the Site vicinity.

2.3 SITE DRAINAGE AND UNDERGROUND UTILITIES

EES reviewed available information regarding the construction, location, and orientation of utility corridors in the vicinity of the Site. Identified Site utilities are described below and shown on Figure 2b.

- Stormwater runoff and surface drainage generally flow to the west-southwest at the Property. Surface runoff in this area is collected by a catch basin in the southwest portion of the Property's parking lot that discharges to an apparent onsite drywell. According to the City of Vancouver Public Works Department, stormwater is likely contained onsite via the drywell. Any Site surface runoff that leaves the Property will likely flow into the West Fourth Plain Boulevard and enter a catch basin array connected to the City's sanitary sewer system.
- Each tenant space at the Property building is served by individual sanitary sewer connections at approximately 1.5 to 2 feet depth that flow to the south. The two sewer lines merge on the Property, then discharge to a 12-foot deep, west-flowing municipal sewer line located beneath West Fourth Plain Boulevard.
- Municipal tap water is supplied to the Property building from a four-foot deep City main that runs west along Kauffman Avenue. Water laterals serve both Property building tenants from the City main. The depth of the two laterals is likely shallower than four feet based on the depth of the City mainline.
- Other identified underground utilities that are present at the Site include electrical power, fiber optic, and natural gas, all of which are likely located within three to four feet of the ground surface. Two unknown underground utilities were identified below the West Fourth Plain roadway; however, City representatives and private locators could not determine their construction, depth, or intended use. Electrical power supply to the on-Site building is overhead; however, an underground power line serves the fuel pump island and store sign (located at the southeast corner of the Property).

Site utilities do not appear to be in direct contact with identified gasoline contamination based on available data (Figures 4b and 5).

2.4 SITE CHARACTERIZATION AND ANALYTICAL RESULTS

This report section describes Site characterization and laboratory analytical testing results of soil, soil gas, air, and perched groundwater samples collected during the RI, between 2011 and 2018. Since active SVE operations were initiated in August 2013, contaminant concentrations in soil have been reduced within the treatment area of the Site, as shown on Figure 5.

Based on the limited vertical extent of soil contamination identified (initially as deep as 13 feet bgs, and reduced to a maximum of 11 feet bgs following SVE operations) and groundwater depths at the Site of greater than 80 feet, groundwater is not expected to be impacted by the gasoline release originating at the Property. Note that shallow perched groundwater has been periodically observed at Site SVE wells but was not found to be contaminated and the deeper, permanent water table and therefore is not considered a Site media of concern (see Section 2.4.4).

Site media were evaluated for gasoline and related common constituents including benzene, toluene, ethylbenzene, xylenes, methyl tertiary butyl ether (MTBE), 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC), naphthalene, and lead; chlorinated solvents including tetrachloroethylene (PCE), trichloroethylene (TCE), carbon tetrachloride, and 1,1,1-trichoroethane (1,1,1-TCA), and 2-butanone. These chemicals are considered Site contaminants of interest (COI) and were evaluated during this RI.

Analytical testing results are summarized in Tables 1 through 7 and are compared to MTCA Method A and B cleanup levels, where appropriate. Gasoline concentrations in on-Property soil are compared to the Site's TPH-specific MTCA Method B cleanup levels, as described in Section 4.1.1. Laboratory analytical testing results were attached to all interim RI status reports previously submitted to Ecology (Section 2.1) and have been electronically uploaded to the Department's Environmental Information Management (EIM) system. Supporting laboratory documentation is available upon request.

2.4.1 SOIL

Laboratory analytical testing data are evaluated with respect to contaminant occurrence and likely movement at the Site. Current soil conditions are discussed below, including the most recent soil sampling results collected from the SVE treatment area in 2015. Contaminant concentrations originally observed in the source area during 2011 and 2012 have been treated and reduced during subsequent SVE operations, and are not representative of current soil conditions, and therefore are not included in this discussion. The supplemental RI data were shared with Ecology in various work plan documents, status reports, and email communications submitted between August 2015 and April 2018. Comprehensive soil analytical results are included in Tables 1 through 3. Figure sets 4 and 5 illustrate the lateral and vertical extent of gasoline impacts in soil at the Site.

Based upon laboratory testing results, gasoline and related constituent impacts in soil appear to originate from the abandoned UST, extending to the south beneath the West Fourth Plain Boulevard right-of-way (Figure sets 4 and 5). No gasoline releases are known to have occurred during Plaid's operations, nor have any impacts been identified within the Plaid fueling area.

The following data discussion includes a comparison of Site soil concentrations to both MTCA Method A and Method B cleanup levels. Proposed Site cleanup levels and cleanup implications are discussed in Section 4.

2.4.1.1 GASOLINE IN SOIL

Gasoline was measured in Site soil at concentrations initially as high as 64,200 mg/kg in the source area, and was limited to depths between approximately three and 13 feet below ground surface. However, source area soils have subsequently been treated by active SVE operations, with a maximum gasoline concentration of 475 mg/kg observed in the source treatment zone in 2015. Within the Property's source area, residual gasoline concentrations in soil currently achieve MTCA Method B cleanup criteria as detailed in Section 4.1. Gasoline measured in 2012 at the western margin of the source area (1,730 mg/kg at nine feet depth in B-7) has not been re-evaluated since SVE implementation beginning in 2013 but is expected to have diminished based on SVE operations (to be verified).

The greatest remaining gasoline concentrations in Site soils were identified south of the active treatment zone within the adjacent right-of-way, where a maximum concentration of 20,400 mg/kg was measured at a depth of six feet. Although source-area SVE operations appear to have resulted in some reduction of gasoline impacts extending beyond the adjacent Property boundary, residual gasoline

contamination in this small portion of the right-of-way currently exceeds MTCA Method A and B soil cleanup criteria at depths between approximately three and 11 feet (Figure 5).

2.4.1.2 Benzene in Soil

Benzene was co-located with residual gasoline in approximately half of the soil samples analyzed, within the same source area (Table 1). Detected benzene concentrations initially ranged up to 93 mg/kg prior to SVE treatment.

- During previous investigations on the Property, three of the 12 samples collected in 2011 and 2012 where benzene was detected had concentrations above the MTCA Method B soil cleanup level (18.2 mg/kg). These three samples were limited to the gasoline source area on the Property. Since that time, active SVE treatment has diminished benzene in contaminant source area soils to concentrations below analytical detection limits such that soil samples collected in September 2015 indicated that the MTCA Method A and B cleanup levels are satisfied in the gasoline source area on the Property.
- Among numerous soil samples collected south of the Property boundary, benzene concentrations at six locations exceeded the MTCA Method A soil cleanup level of 0.03 mg/kg, with a maximum concentration of 3.7 mg/kg. However, all identified off-Property benzene concentrations are below MTCA Method B soil cleanup criteria (18.2 mg/kg).

2.4.1.3 Other Gasoline Constituents in Soil

In accordance with MTCA criteria (Table 830-1 in WAC 173-340-900), soil samples were tested for gasoline-related constituents including toluene, ethylbenzene, xylenes, MTBE, EDB, EDC, naphthalene, and lead.

- Toluene, ethylbenzene, xylenes, and/or naphthalene were detected in approximately 15 to 30 percent of the soil samples analyzed.
  - Remaining on-Property constituent concentrations are all below their respective MTCA Method A soil cleanup levels.
  - At three off-Property boring locations (B5, B7, and B11), one or more constituent concentrations exceed MTCA Method A soil cleanup levels, but all are below Method B CULs.
- EDB, EDC, and MTBE were not detected in any of the soil samples analyzed.
- Lead was detected in all 16 samples analyzed but at concentrations that were below the MTCA Method A cleanup level (no MTCA Method B CUL is established for lead). The observed lead concentrations (2.4 to 24 mg/kg) are consistent with published data for naturally occurring background lead in Clark County, Washington (Ecology 1994).

2.4.1.4 Non-Gasoline Contaminants of Interest in Soil

Per MTCA requirements (Table 830-1 in WAC 173-340-900), non-gasoline contaminants were tested for in residual tank sludge and surrounding soils, as described below. Diesel and oil were not detected in

tank sludge. Note that diesel and oil are not known or suspected to have been stored or sold by Plaid at the Property. No non-gasoline COIs were detected in tank sludge.

- Where diesel was detected in 10 of the 39 soil samples (up to 2,660 mg/kg), the analytical laboratory indicated that all such detections were due to overlap from degraded gasoline range hydrocarbons and not related to typical diesel. With regard to heavy oil, detections were identified in two soil samples at concentrations up to 116 mg/kg, far below the MTCA Method A CUL of 2,000 mg/kg.
- PAHs were analyzed in tank sludge and in soil sample Pit Floor/6, where the greatest (flagged) diesel detection was reported. No PAHs were detected in either sample except for naphthalene, which in this case is regarded as a gasoline constituent (discussed in Section 2.4.1.3).
- PCE, TCE, carbon tetrachloride, 1,1,1-TCA, and 2-butanone were not detected in the abandoned tank sludge or in any of the 77 Site soil samples analyzed.
- Polychlorinated biphenyl (PCB) analytical testing was performed on tank sludge but was not performed on Site soil. No PCBs were detected in the tank liquids, and therefore are not anticipated in Site soils.

2.4.2 SOIL GAS

A total of 43 soil gas samples have been collected from subsurface soils located in and around the source area, and from utility trench backfill materials at the Site. The greatest gasoline impacts were observed near the UST source area, although SVE operations have significantly reduced contaminant mass and vapor concentrations in this area based on data collected after several years of treatment. Residual soil gas impacts remain in the right-of-way area south of the source area, beyond the influence of SVE treatment, where gasoline contamination remains in soil.

Soil gas sampling activities most recently included a Tier 1 and 2 VIA to determine whether a vapor intrusion condition may exist at the Property's existing commercial building (EES 2017). Although benzene and gasoline constituents are present in soil gas at the Site, these vapors appear to originate from residual contaminated soils initially located at the gasoline source area, diminish rapidly with distance from the residual source, and do not appear to create unacceptable vapor intrusion conditions in close proximity to or beneath the current Property building or in Site utility trench backfill locations.

Gasoline-range hydrocarbon and benzene concentrations detected in soil gas are summarized on Tables 4 and 5, and illustrated on Figure 6). Findings are summarized below.

2.4.2.1 GASOLINE IN SOIL GAS

The Site's greatest gasoline soil vapor concentrations currently appear to be centered south of the source area and extending beyond the SVE zone of influence beneath the West Fourth Plain Boulevard right-of-way where concentrations measured in 2015 exceeded 10,000 ug/m^3 at B-17, B-18, and S-15 (see Table 4 and Figures 6 and 7). Soil gas concentrations generally attenuate by three to four orders of magnitude in samples collected further from the source area and near/below the current Property

building (Figure 7). Anomalously high gasoline soil gas concentrations observed in 2015 near the store building at S-21 were subsequently evaluated and determined not to represent a vapor intrusion concern (Section 2.4.3). This data demonstrates significant vapor attenuation laterally from the source area as expected for an old, degraded gasoline source within fine-grained soils. MTCA Method B soil gas screening levels have been established for gasoline as indicated on Table 4.

Note that SVE implementation since 2013 has mitigated gasoline impacts within the source area. SVE monitoring and operational data is submitted to Ecology on a regular basis and is available upon request.

2.4.2.2 Benzene in Soil Gas

Prior to SVE operation, benzene was initially detected in source area soil gas samples at concentrations up to 82,000 ug/m^3. SVE operations have greatly reduced vapor concentrations within the source area treatment zone as summarized in Table 4. The greatest benzene soil vapor concentrations currently appear to be associated with untreated soils south of the source area where concentrations were measured up to 500 ug/m^3 in 2015. Vapors attenuate rapidly by up to three orders of magnitude near/below the Property building (Figure 7 and Section 2.4.3).

- Benzene concentrations adjacent to the Property building were below the MTCA Method B soil gas screening level of 32.1 ug/m^3 in five of six samples. Sub-slab vapor concentrations collected below the Property building were below the MTCA Method B screening level in all three samples.
- Further south of the Property building at locations in close proximity to the gasoline source area, benzene concentrations measured in soil gas samples exceeded the MTCA Method B screening level.
- Benzene was detected at one of seven utility trench vapor sample locations, at a concentration of 5.9 ug/m^3, which is far below the MTCA Method B screening level of 32.1 ug/m^3.

2.4.2.3 Other Gasoline Constituents in Soil Gas

Soil gas samples have been tested for other gasoline COIs including toluene, ethylbenzene, xylenes, naphthalene, MTBE, EDB, and EDC. Similar to the gasoline and benzene results, gasoline constituent vapor concentrations were historically highest in the source area, but have diminished with SVE treatment and are now below MTCA Method B cleanup criteria.

2.4.2.4 Non-Gasoline Contaminants of Interest in Soil Gas

Chlorinated solvents including PCE, TCE, and carbon tetrachloride, and 2-butanone in soil gas were identified at various locations across the Site with no discernable source area or pattern. These non-gasoline contaminants have not been used by Plaid and are not associated with Plaid fueling operations. PCE and/or carbon tetrachloride have been detected at various locations across the Site at concentrations above the MTCA Method B soil gas screening level.

2.4.3 SUB-SLAB/INDOOR/OUTDOOR AIR

A total of three sub-slab, three indoor air, and six outdoor air samples were collected at the Property as part of a Tier II Vapor Intrusion Assessment (EES 2017). Based on the findings of the Tier 2 VIA, no evidence of gasoline-related vapor intrusion from subsurface contaminants into building ambient indoor air has been identified. Gasoline and related constituents, and chlorinated solvent concentrations detected in sub-slab vapor, and indoor and outdoor air are summarized on Table 5 and illustrated on Figure 8.

2.4.3.1 GASOLINE IN SUB-SLAB/INDOOR/OUTDOOR AIR

Gasoline was detected in all three indoor air samples at concentrations ranging between 530 and 980 ug/m^3 and in three of six outdoor air samples at concentrations ranging between 64 and 350 ug/m^3, but was not detected in any of the three sub-slab vapor samples. All three indoor air gasoline concentrations exceeded the newest MTCA Method B cleanup level of 140 ug/m^3 for indoor air (Ecology 2018). Among the three indoor air samples, the two measured in the Plaid building space exceeded the EPA referenced value used by Ecology as an indoor air background screening concentration of 594 ug/m^3. MTCA does not provide a numeric outdoor air screening level for gasoline.

2.4.3.2 BENZENE IN SUB-SLAB/INDOOR/OUTDOOR AIR

Benzene was detected in two of the three sub-slab vapor samples at laboratory-estimated concentrations up to 5.0 ug/m^3, which is less than the MTCA Method B soil gas screening level of 10.7 ug/m^3. Benzene was detected in all three indoor air samples at concentrations ranging from 0.93 to 1.5 ug/m^3; all three results exceeded the MTCA Method B cleanup level of 0.321 ug/m^3 but were within range of typical background concentrations (up to 4.7 ug/m^3), as published by Ecology and EPA (Ecology 2018 and EPA 2011, 2012). Benzene was detected in four of six outdoor air samples at concentrations ranging from 0.30 to 3.3 ug/m^3, exceeding indoor air concentrations. Among these detected values, benzene concentrations in outdoor air samples A-7 (1.2 ug/m^3, located at the entry to the Plaid store) and A-9 (3.3, ug/m^3, located near the roadway intersection at the southeastern corner of the Property) appear typical of ambient urban air conditions of 0.98 ug/m^3 in the Vancouver area (SWCAA 2007).

2.4.3.3 OTHER GASOLINE CONSTITUENTS IN SUB-SLAB/INDOOR/OUTDOOR AIR

Gasoline constituents were identified in indoor and outdoor air samples as expected for an urban environment, and were generally not found in sub-slab vapors. Naphthalene was identified in indoor air at concentrations up to 0.36 ug/m^3 which are within the expected range of indoor air background levels (0.18 to 1.7 ug/m^3) specified by Ecology. EDB was measured in one of three indoor air samples at an estimated concentration of 0.022 ug/m^3; above the MTCA Method B screening level of 0.00417 ug/m^3. EDB has not been detected in any other sub-slab or soil gas samples collected across the Property.

2.4.3.4 Non-Gasoline Contaminants of Interest in Sub-Slab/Indoor/Outdoor Air

PCE, TCE, 2-Butanone, carbon tetrachloride, and 1,1,1-TCA were either not detected in sub-slab vapor, indoor air, or outdoor air samples at concentrations exceeding MTCA Method B screening/cleanup levels. Carbon tetrachloride was detected in the three indoor air and six outdoor air samples at relatively uniform concentrations ranging up to 0.54 ug/m^3, which is within the typical range of urban background concentrations of 0.15 to 0.68 ug/m^3 (EPA 2011). The source of non-gasoline volatiles in Site soil gas has not been confirmed, but is not attributed to Plaid's current or historical retail gasoline fueling operations at this Property.

2.4.4 Groundwater

With the exception of seasonal perched water encountered in SVE monitoring wells between November 2015 and March 2016 (discussed in Section 2.1.7), groundwater has not been encountered and is not anticipated on the Property within 80 feet of the ground surface. Gasoline and related contaminants were not detected in perched water samples collected from the SVE wells (Table 7). Based on the limited vertical extent of soil contamination remaining within 11 feet of the ground surface, groundwater is not expected to be impacted by the gasoline release originating at the Property and is not regarded as a medium of concern for this Site.

2.4.5 Site Characterization Summary

Site characterization findings are summarized below with respect to applicable MTCA criteria.

- Gasoline impacts identified at the Site originate from historic fueling operations that occurred prior to Plaid site development in 1982. No releases from the Plaid UST system are known to have occurred.
- Gasoline contamination originates in vadose-zone soils at depths extending to 11 feet bgs, with impacts extending beyond Property boundaries to the south into the West Fourth Plain Boulevard right-of-way.
- Contaminant characteristics indicate degraded gasoline, with diminished constituent concentrations. Among 14 representative soil samples collected within 15 feet of the subject Property ground surface, gasoline and related constituent concentrations in soil are currently below MTCA Method B cleanup levels in all cases. In the right-of-way area south of the Property boundary beyond the zone of SVE influence and at depths between approximately three and 11 feet, gasoline and related constituent concentrations in soil exceed MTCA cleanup criteria. In this adjacent right-of-way area, gasoline concentrations were present in 2015 at concentrations up to 20,400 mg/kg, compared to the Method A and generic Method B cleanup levels of 30 mg/kg and 1,500 mg/kg respectively, and also exceeding the calculated Method B TPH cleanup level of 2,619 mg/kg. Implications for soil cleanup, including the Method B cleanup level calculated using fractionated total petroleum Site data, are discussed in Sections 4 and 5 of this RI report.
- Gasoline and related vapors are present in vadose-zone soils at the Site based on sampling in and around the contaminant core (Figures 4 through 7).

- Soil gas data collected from the area of untreated soils to the south of the gasoline source area exhibits corresponding elevated vapor concentrations that exceed Tier 1 vapor intrusion screening criteria. Potential future building/infrastructure construction near those portions of the Property should consider vapor intrusion issues, although since those impacts are generally limited to the right-of-way area, no such buildings or vapor intrusion issues are anticipated.
- Soil gas samples collected near the Property building exceed Tier 1 screening criteria for gasoline-related vapor intrusion. However, subsequent Tier 2 vapor assessment indicates no discernable vapor intrusion conditions inside the Property building.
- Non-gasoline VOCs were identified in Site soil gas and several indoor air/outdoor air samples collected in 2016. The source is unknown and not attributed to Plaid operations, and not identified in any soils nor suspected to be commingled at the gasoline source area that is the subject of this report.

- The water table is present at depths below 80 feet, and is far below the base of identified soil contamination at 11 feet bgs. Contaminants leaching from soil to groundwater are not anticipated at this Site. No Site-related groundwater impacts are known or suspected, and groundwater is not regarded as a medium of concern.

3 CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) is a required element of the RI and Site cleanup planning. The CSM evaluates current and reasonably likely future Site conditions, and identifies potential sources of hazardous substances, potentially affected media, and potential migration and exposure pathways for anticipated human and ecological receptors.

3.1 HUMAN EXPOSURES

A summary diagram of the CSM is provided as Figure 9. Only complete pathways can result in exposure. Complete exposure pathways must include each of the following components:

- A source and mechanism of contaminant release.
- An exposure route by which contact can occur.
- A receptor.

At a typical retail gasoline station, releases from the USTs and fuel delivery system are the primary release mechanisms by which COIs may be transferred from the source to affected media. A secondary release mechanism includes vapor migration from soil into indoor and outdoor air. The media potentially affected by primary and secondary release mechanisms include soil and soil vapor. As indicated in Sections 2.4 and 4.3, groundwater at the Site is not known or suspected to be impacted by the Property's gasoline release(s).

Potential human receptors were identified for the Site based on current and reasonably likely future land use. Current Light Industrial site zoning does not permit residential use at the subject Property. Although current Community Commercial zoning allows for limited types of residential land use at

nearby properties, it is anticipated that the subject Property will retain its commercial character. Where COIs extend beyond Property margins beneath the adjacent sidewalk and roadway to the south, only limited infrequent construction, excavation, and maintenance use and exposures are anticipated.

Under MTCA, typical commercial and/or residential land use requires the most protective cleanup levels (termed unrestricted land use) normally be applied, based on assumptions for a "reasonable maximum exposure scenario." An alternative set of default cleanup levels utilizing industrial exposure assumptions exist under MTCA, but these values likely cannot be applied for the Site because zoning codes allow for non-industrial usage.

Soil cleanup levels for this Site are based on the published unrestricted land use scenario (MTCA Methods A and B). Modified Method B TPH cleanup levels were also developed by Plaid using Ecology's fractionated TPH data model and based on current and reasonably likely site-specific occupational (non-residential) exposure conditions. Current and potential future human receptors include:

- Commercial/Occupational Workers at Site businesses: employees/workers.
- Retail Store Customers: periodic retail store shoppers and Domino's Pizza patrons.
- Construction Workers: personnel temporarily working at the Site during maintenance or construction activities.
- Trench or Excavation Workers: personnel conducting activities that involve excavation and/or trenching for utility work.
- Roadway Maintenance: personnel working during roadway maintenance activities at the adjacent West Fourth Plain Boulevard right-of-way (re-paving, short-term shallow excavations, etc.).

Identified complete exposure pathways are limited to occupational/commercial scenarios, based on the following qualitative evaluation:

- Potential exposure of current and future commercial/occupational workers and retail store customers to COIs via inhalation of volatile compounds in indoor air originating from subsurface soil.
    - Commercial workers at the Site are currently limited to Plaid store workers and workers at the adjacent carry-out pizza restaurant. Plaid store workers are excluded from Ecology's vapor intrusion considerations due to ongoing fueling operations (Ecology 2009).
    - The soil vapor assessment conducted in 2016 indicates gasoline-related vapors appear limited to the source area and are unlikely to approach the current Property building or identified underground utility features at concentrations exceeding published screening criteria.
- Potential exposure of current and future commercial/occupational workers and retail customers to COIs via ingestion, dermal contact, and inhalation of fugitive dust from shallow

soil. This exposure pathway is very unlikely due to pavement covering the Property soils, and the lack of near-surface Site contaminants accessible for physical disturbance.

- Potential exposure of future construction workers to COIs via ingestion, dermal contact, and inhalation of shallow "surface" soils up to three feet in depth.
- Potential exposure of future trench and/or excavation workers to COIs via ingestion, dermal contact, and inhalation of fugitive dust from subsurface soil extending to 15 feet depth.
- Potential exposure of roadway maintenance workers to COIs via ingestion, dermal contact, and inhalation of fugitive dust from shallow "surface" soil up to three feet in depth.

These exposure pathways are considered in development of Site cleanup levels.

3.2 ECOLOGICAL RECEPTORS

No ecological receptors are known or suspected at the Site based on the results of a simplified terrestrial ecological evaluation (TEE), as described in Section 4.4.

4 PROPOSED CLEANUP STANDARDS

In accordance with MTCA regulations (WAC 173-340) and published Ecology Guidance (2009, 2011, 2015), EES evaluated Site cleanup standards as summarized below.

4.1 GENERAL

The goal of facility cleanup will be to achieve a No Further Action (NFA) or alternative regulatory closure determination for cleanup of gasoline contamination throughout the Site. Recent communications with Ecology indicate that a full NFA cannot be issued until all Site contaminants are remediated, including gasoline, and also non-gasoline halogenated solvent vapors not attributable to Plaid's operations and not commingled with the gasoline release. Since Plaid's cleanup obligation is limited to Site-related gasoline impacts and not other contaminants, the Department has indicated its willingness to issue a "Partial Sufficiency" determination upon Plaid's successful remediation of the gasoline release. This RI does not propose Site cleanup of non-gasoline contaminants, which will be the responsibility of other parties.

Based on a review of available options to approach Site cleanup under MTCA, Plaid intends to use the Method B unrestricted use criteria to address direct contact to residual gasoline impacts present in Site soil, including impacts extending beneath the adjacent right-of-way (leaching to groundwater is not a complete exposure pathway at this Site). Under this approach, Ecology's published Model Remedy guidance (2015; revised 2017) confirms that two options are available for selecting and implementing a protective soil TPH cleanup:

- **Option 1:** Analyze samples using the EPH/VPH methods, and then follow the procedures specified in Figure 8.1 of Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Ecology 2016) to determine a direct contact TPH cleanup level using the fractionated data. EES

used this Ecology model to calculate a Site-specific TPH cleanup level of 2,619 mg/kg (see Section 4.1.1). ***The calculated TPH soil cleanup level of 2,619 mg/kg is selected for this Site.***

- **Option 2:** Apply the generic TPH cleanup level of 1,500 mg/kg. The 1,500 mg/kg level applies to situations where only TPH-Gx is present or for mixtures that include TPH-Gx. This level does not affect the Method A cleanup level of 2,000 mg/kg for diesel range organics/heavy oils, or the 4,000 mg/kg level for mineral oil if TPH-Gx is not present or is a limited portion of the mixture.

The calculated TPH cleanup level of 2,619 mg/kg for soil direct contact is applicable to Site conditions, where only gasoline is present (other non-gasoline COIs are not commingled with the gasoline source, and gasoline impacts in soil are isolated from the water table). In addition to addressing TPH, Method B soil cleanup levels must be determined for related constituents using the provisions contained in WAC 173-340-740(3). Ecology's Cleanup Level and Risk Calculations (CLARC) website provides compound-specific Method B direct contact levels for unrestricted use (summarized for the Site in Section 4.1.1 of this RI Report).

After contaminated soil is remediated throughout the Site (including the right-of-way), confirmation testing must be performed to document that the Method B direct contact cleanup levels have been met at the point of compliance and the vapor intrusion pathway has been evaluated and adequately addressed. At that point, Plaid will request a Partial Sufficiency determination from Ecology and no environmental covenant for any portion of the site, including the right-of-way, would be necessary.

The use of Method B unrestricted use cleanup criteria is established under MTCA, most recently clarified in Ecology's 2017 revision to the Model Remedies publication (2015). However, Ecology notes that "the model remedy process does not apply to situations where contamination will remain off the source property above the Method A levels for unrestricted use." In other words, use of the streamlined Model Remedies requires that only Method A cleanup levels may be utilized to achieve MTCA cleanup compliance for the right-of-way. Because the Model Remedy requires the use of Method A CULs for a portion of the Site, Plaid will not utilize the Model Remedy approach and intends to use Model B cleanup criteria for unrestricted use of the entire Site, including the right-of-way.

4.1.1 Soil Cleanup Levels

The table below summarizes the MTCA cleanup levels for indicator compounds detected in soil at the Site based on MTCA's Required Testing for Petroleum Releases (Table 830-1, WAC 173-340-900). The source of these numeric cleanup levels is Ecology's CLARC database (revised August 2015).

MTCA Method B Soil Cleanup Levels for Gasoline (mg/kg)

CONTAMINANT	MTCA METHOD B SOIL CLEANUP LEVEL	PLAID PROPERTY MAXIMUM REMAINING CONCENTRATION IDENTIFIED IN SOIL	CITY RIGHT-OF-WAY MAXIMUM RESIDUAL CONCENTRATION IDENTIFIED IN UNTREATED SOIL
Individual Substances			
Benzene	18.2	0.80	3.7
Toluene	6,400	Not detected (<0.86)	23
Ethylbenzene	8,000	2.1	78
Xylenes	16,000	12	411
Naphthalene	1,600 (nc)	0.30	57
Total Lead	3,000 (gw)	12	24
Total Petroleum Hydrocarbons			
Gasoline Range Organics	1,500* **2,619****	1,730	20,400

Notes:
nc = non-cancer endpoint
gw = groundwater protection
*1,500 mg/kg generic TPH cleanup level from Model Remedies Publication 15-09-043 (rev. Dec. 2017)
****The selected Method B TPH soil cleanup level (2,619 mg/kg) was calculated for gasoline in soil using MTCA methodology (see Section 4.1.1.1).**
Non-gasoline contaminants (PCE, TCE, carbon tetrachloride, 2-Butanone, and 1,1,1,-trichloroethane) were not identified in Site soil, not commingled with the gasoline source, and are therefore eliminated as soil COIs.

4.1.1.1 Calculated Method B TPH Cleanup Levels

EES calculated a Site-specific MTCA Method B CUL for TPH as gasoline in soil using the fractionated analytical approach (Ecology 2007, 2011). The following lines of evidence support development of this Site-specific Method B cleanup level:

- Site gasoline impacts including TPH fraction have been delineated within vadose-zone soils extending between approximately three and 11 feet bgs. Deeper impacts are not known or suspected.
- Groundwater at the Site is present at depths exceeding 80 feet and is not expected to be affected by gasoline release(s) originating at the Property. Although the calculated Site-specific median soil cleanup level exceeds the 1,000 mg/kg residual saturation screening level published for weathered gasoline (Table 745-1 in WAC 173-340-900), the calculated cleanup level remains protective of groundwater due to the limits of soil contamination and significant depth to groundwater at this Site.

- Although no residential use of the Site is anticipated, the MTCA-approved TPH fractionation approach used in developing this cleanup level is regarded as protective of unrestricted Site use. Current and reasonably likely future land use at the Site is non-residential as described in Sections 3 and 4.2, indicating extra levels of protectiveness are incorporated into this cleanup level for unrestricted use.

The Site-specific MTCA Method B soil cleanup level for TPH was calculated using the MTCATPH calculator (version 11.1 [2007]). In order to provide representative data for contaminated soil, four samples (B-16(6), B-17(9), B-18(3), and B-18(9)) were collected from the most highly-contaminated portions of the Site and analyzed using the EPH and VPH analytical method and evaluated using the MTCATPH calculator to derive a cleanup level. The most stringent clean-up level was selected for each sample. The final cleanup value is derived by calculating the median of the four cleanup levels. Based on these parameters, ***the Site-specific MTCA Method B cleanup level for gasoline in soil is 2,619 mg/kg***. The MTCATPH calculation details are provided in Appendix C.

4.1.2 VAPORS (INDOOR AIR AND SOIL GAS)

Published Ecology guidance describes the rationale and process for evaluating subsurface vapor conditions with respect to potential indoor air vapor intrusion (Ecology 2009, 2011). MTCA standard Method B cleanup levels for indoor air are published in the 2015 CLARC Data Tables, along with sub-slab soil gas screening levels establishing protective attenuation factors. The sub-slab soil gas screening levels are not strictly intended for use to govern contaminant cleanup, but are evaluated as a first step to determine whether subsequent indoor air sampling and mitigation are necessary. In cases where the sub-slab/soil gas data are below MTCA Method B screening criteria, the vapor intrusion pathway can generally be ruled out. The table below summarizes the MTCA cleanup levels for indoor air and screening levels for soil gas for indicator compounds detected in soil at the Site.

MTCA Method B Air CULs and Sub-Slab Soil Gas Screening Levels for Gasoline

PARAMETER	INDOOR AIR		OUTDOOR AIR	SOIL GAS		
	CLEANUP LEVEL ($\mu g/m^3$)	MAXIMUM CONCENTRATION IDENTIFIED ($\mu g/m^3$)	MAXIMUM CONCENTRATION IDENTIFIED ($\mu g/m^3$)	SUB-SLAB SOIL GAS SCREENING LEVEL ($\mu g/m^3$)	BUILDING SUB-SLAB: MAXIMUM CONCENTRATION IDENTIFIED ($\mu g/m^3$)	SOIL SOURCE AREA: MAXIMUM CONCENTRATION IDENTIFIED*** ($\mu g/m^3$)
Individual Substances						
Benzene	0.32	1.5	3.3	10.7	5.0 J	103
Toluene	2,290 (nc)	8.5	18	76,200 (nc)	25	1,002
Ethylbenzene	457 (nc)	0.64	1.9	15,200 (nc)	Not detected (<16)	164
Xylenes	45.7 (nc)	2.7	12	1,520 (nc)	Not detected (<32)	1,569
Naphthalene	0.0735	0.36	0.84	2.45	Not detected (<5.2)	74
Total Petroleum Hydrocarbons						
Gasoline Range Organics	140	980	350	NA	Not detected (<1,500)	316,432

Notes:
Non-gasoline VOCs are not attributed to Plaid operations and therefore are not considered Site COIs.
J = laboratory qualifier; concentration estimated
NA = not available (not published in CLARC)
nc = non-cancer endpoint
NE = not evaluated
*** = 2016-2017 SVE average

4.2 RISK CHARACTERIZATION SUMMARY

The Conceptual Site Model is presented in Section 3 and illustrated on Figure 9. RI and CSM conclusions indicate the following human health receptor scenarios for this Site.

4.2.1 PROPERTY RECEPTORS

Potential contaminant exposures on the Property are attributed to incidental ingestion of soil and inhalation of volatiles intruding into indoor air from gasoline-contaminated soils (Figure sets 4 through 8). Current and future occupational workers, store/restaurant customers, and future construction and excavation workers were identified as potential Property receptors.

- Representative soil contaminant concentrations at the Property are uniformly below MTCA Method B CULs and therefore, no unacceptable direct contact human health impacts are anticipated on the subject Property.
- Soil vapor intrusion represents a potential indirect contaminant exposure pathway. Tier 1 and Tier 2 VIA findings indicate that although measured soil gas concentrations for some COIs at locations adjacent to the Property building are above MTCA Method B screening criteria, sub-slab vapor concentrations were below MTCA Method B screening criteria. Similarly, some indoor air COI concentrations exceeded MTCA Method B CULs, but when these concentrations are adjusted for outdoor air concentrations, then they are below or similar to regional background concentrations, indicating that under current Property use conditions no vapor intrusion concerns are anticipated for the Property's commercial/restaurant building (Tables 5 and 6).
- If Site redevelopment occurs and new buildings are constructed at other Property locations near the gasoline contaminated soil source area, then potential vapor intrusion conditions and indoor air/inhalation exposures should be re-evaluated and anticipated as necessary. No VIA concerns are anticipated for the Property, including the source area, based on current SVE data.

4.2.2 Off-Property Receptors

Soil gasoline impacts originating at the Property extend beyond the Property boundary to the south, beneath a small portion of the adjacent West Fourth Plain Boulevard sidewalk/roadway. Potential contaminant exposures at the ROW are attributed to incidental ingestion and dermal contact with soil by (future) construction, excavation/trench workers, and roadway maintenance workers.

- Representative contaminant concentrations in the right-of-way exceed MTCA Method B soil CULs. However, no direct contact soil exposures are anticipated for any site receptor except potential future construction, excavation, and roadway maintenance work. Therefore, no unacceptable direct contact human health impacts are anticipated for any Site receptors except construction/excavation/maintenance work occurring in affected portions of the right-of-way.
- No buildings are anticipated or allowable within the right-of-way and therefore vapor intrusion is not applicable and has not been further evaluated for this portion of the Site.

4.3 POINTS OF COMPLIANCE

Points of compliance are the locations and media where Site cleanup levels identified in Section 4.1 must be attained. Points of compliance have been determined in accordance with the regulatory requirements contained within WAC 173-340-740(6).

4.3.1 Soil

Soil cleanup levels are based on human exposure via direct contact from soil. The standard soil point of compliance extends from the ground surface to a depth of 15 feet. RI characterization indicates that all representative on-Property data demonstrate compliance with MTCA Method B soil cleanup levels, while off-Property data exceeds the Method B TPH soil cleanup level of 2,619 mg/kg for gasoline at B-5, B-11, B-17, and B-18. Among 64 representative point of compliance soil samples collected at off-

Property locations within 15 feet of the ground surface, the only six samples exceed the calculated MTCA Method B gasoline cleanup level, representing 9% of the sample population (Table 1). These samples were collected south of the source area below the adjoining sidewalk and West Fourth Plain Boulevard right-of-way (Figure sets 4 and 5).

Other gasoline-related constituent concentrations (BTEX, etc.) also meet MTCA Method B cleanup criteria for soil points of compliance. These results indicate that current soil conditions based on direct contact exposures are adequately protective of human health, with the exception of TPH beneath a small portion of the right-of-way.

4.3.2 Other Soil-Related Exposure Pathways

Other soil-related potential Site exposure pathways were evaluated, as follows:

- Soil cleanup levels based on leaching (protection of groundwater) do not apply because Site soil impacts are limited to within approximately 11 feet of the ground surface, vicinity groundwater is present at depths greater than 80 feet bgs, and therefore Site soil impacts are isolated from groundwater by at least 70 feet of non-contaminated soils. Gasoline leaching from soil to groundwater is therefore determined to be an incomplete exposure pathway and eliminated from further consideration.
- Soil cleanup levels based on protection of ecological receptors (the "environment") do not apply because ecological receptors in significant numbers are not anticipated at or near the highly urbanized and developed Site and Site vicinity (see Section 4.4).
- Soil vapor intrusion (an indirect exposure pathway) was evaluated for the Property building under current conditions. Based on Tier 1 and Tier 2 findings, the vapor intrusion pathway for this building was evaluated and ruled out, as presented in Section 4.3.3.

4.3.3 Air

Ambient air is regarded under MTCA as a standard point of compliance (WAC 173-340-750). The Tier 2 VIA indicated no discernable vapor intrusion conditions were observed. Relatively low concentrations of various chemicals, including gasoline and non-gasoline volatiles, were identified in indoor and outdoor air at the subject Property, but the presence of these chemicals in air is not attributed to vapor intrusion originating from below the building.

- Sub-slab gasoline and related constituent vapor concentrations (including benzene, EDB, and naphthalene) measured in September 2016 were either not detected or were measured at concentrations below MTCA soil gas screening criteria. Where detected, the Tier 2 sub-slab concentrations of gasoline-related compounds were lower than Tier 1 soil gas concentrations measured adjacent to the building and closer to the gasoline source area, which would be expected as petroleum vapor concentrations degrade and diminish with increasing distance from the source area.
- PCE and other non-gasoline volatiles were generally not detected in Tier 2 sub-slab soil gas. Where detected at one of the three sub-slab locations, PCE (23 ug/m^3) was far below the corresponding MTCA soil gas screening level of 321 ug/m^3, and much diminished compared to

the maximum identified Tier 1 soil gas concentration (3,500 ug/m^3), representing other portions of the Site. The source of non-gasoline volatiles in Site soil gas has not been confirmed, but is not attributed to Plaid's current or past retail gasoline fueling operations at this Property.

- Indoor air samples from the Plaid and Domino's building and outdoor air samples collected at the Property in September 2016 identified gasoline and related vapors at levels that in some cases marginally exceed Ecology criteria for indoor air. However, the sources of those vapors (1) do not appear to originate from under the building where no significant sub-slab vapors were identified, and (2) are likely associated with widespread ambient urban air quality and normal retail store and fueling operations at the Property.
- Because this is a self-service fueling station, customers and employees frequently walk between the fueling area and the store interior, and fuel vapors are expected to be present both indoors and outside the store building. Building materials and retail inventory may also contribute to the observed air quality conditions. A neutral atmospheric pressure gradient between indoor and outdoor air was observed and indicates no obvious preferential airflow, although some slight vapor accumulation inside the building may occur based on the observed air sampling data.

Current literature indicates that concentrations of benzene, PCE, and other volatile contaminants in indoor and outdoor air in typical urban environments are comparable to concentrations measured at the Site during this Tier 2 VIA (Tables 5 and 6). Based on the findings of the Tier 2 VIA, no evidence of gasoline-related vapor intrusion from subsurface contaminants into the building ambient indoor air has been identified.

4.3.4 GROUNDWATER

As previously discussed with Ecology and evaluated during this RI, groundwater is not an affected media of concern at this Site. Where identified, gasoline-related contaminants are limited to the uppermost 11 feet of vadose-zone soils. Groundwater was not encountered at the Site and is not anticipated within 80 feet of the ground surface in this vicinity.

Gasoline-related contaminants are old and highly degraded, and leaching of these hydrocarbons from relatively shallow soil to the much deeper water table is determined to be an incomplete exposure pathway and eliminated from further consideration at this Site. Therefore, the groundwater point of compliance is not applicable for gasoline-related COIs at this Site.

4.4 TERRESTRIAL ECOLOGICAL EVALUATION

In accordance with Ecology's guidance and criteria in WAC 173-340-7492, EES conducted a simplified TEE to determine whether the Site poses a potential threat of significant adverse effects to terrestrial ecological receptors. Based on an exposure analysis, no further evaluation is necessary because the current or planned land use makes wildlife exposure unlikely, as supported by Table 749-1. A copy of this evaluation and Table 749-1 are included in Appendix D.

5 AREAS POTENTIALLY REQUIRING CLEANUP

Interim cleanup actions including source removal (2012) and source-area SVE (2013-present) have mitigated localized gasoline contamination on the subject Property and established protective conditions at this location that satisfy MTCA Method B criteria. Gasoline COI concentrations exceed MTCA cleanup levels immediately south of the Property boundary. Other non-gasoline impacts are present at the Site, but are not attributed to Plaid's operations. Further investigation and possible cleanup of non-gasoline Site contaminants will be the responsibility of other parties.

5.1 SOIL

Under current Site conditions, the soil point of compliance for gasoline appears adequately protective for ecological exposures, and for human direct and indirect contact on the subject Property. Potential future human exposures require soil cleanup in the adjacent right-of-way in order to achieve standard compliance criteria under MTCA. Based on the RI findings, Plaid proposes to apply the calculated MTCA Method B soil TPH direct contact cleanup level of 2,619 mg/kg as the basis for final "unrestricted use" cleanup planning and implementation. This TPH cleanup level was calculated using MTCA methodology and provides the most flexibility with regard to achieving MTCA compliance (Ecology 2011, 2015). Method B soil cleanup criteria for gasoline constituents are achieved throughout the site.

The basis for future soil cleanup will need to address the following unique factors:

- No actionable soil impacts exceeding MTCA Method B CULs remain within the point of compliance for developable portions of the Property, and therefore no remediation is required to address direct contact exposures in these areas.
- South of the Property boundary, MTCA Method B soil CUL exceedances for gasoline were identified beyond the influence of effective SVE treatment, below the southern adjoining sidewalk and West Fourth Plain right-of-way (Figures 10a and 10b). The identified exceedances are localized laterally and vertically, but exceed TPH direct contact cleanup levels for the soil point of compliance by nearly a factor of ten.
- Although identified soil impacts do not appear likely to present a vapor intrusion concern with regard to current Property building conditions, residual contaminated soils represent a continuing source of subsurface vapors that could indirectly impact indoor air quality if future Site building(s) were to be constructed above or near the source area. Soil cleanup and/or vapor control may be required for protection of indoor air based on future development planning (Section 5.2).

5.2 AMBIENT AIR

Indoor air conditions at the Site were evaluated during the Tier 2 VIA and do not require cleanup based on current Site characterization as completed under this RI. Soil gas data indicate residual soil contamination extending beneath the right-of-way represents a source of subsurface gasoline-related vapors that could potentially migrate to indoor air at concentrations exceeding ambient air CULs, if

future Site buildings were to be constructed near the source area. Mitigation of residual soil contamination under the right-of-way is expected to address potential vapor migration concerns.

Published Ecology guidance provides an approach for demonstrating soil concentrations are protective of the vapor intrusion pathway by virtue of being "not significantly higher" than concentrations established for groundwater protection. This approach appears to be a good option for final site cleanup. Ecology's recent "Implementation Memos" provide various options for demonstrating vapor intrusion protectiveness. In view of this site's unique setting, a combination of both Method B soil cleanup levels (in this case 2,619 mg/kg for TPH) and Method A groundwater cleanup levels (for volatiles) will be considered for demonstrating vapor intrusion and soil direct contact protectiveness. This approach would meet Ecology objectives by "providing justification that the remaining soil concentrations are *not significantly higher* than a concentration derived for the protection of groundwater in accordance with WAC 173-340-747," (Implementation Memo #18, bullet #2, page 11). Ecology further defines this criteria with respect to vapor intrusion by noting "benzene concentrations less than 3x the Method A cleanup level are *not significant*, provided that limited contaminant mass remains in the soil," (Implementation Memo No. 15, page 8). The cleanup goal for benzene in soil is therefore 0.03 mg/kg, with flexibility to allow up to 0.09 mg/kg for limited areas.

5.3 FINAL SITE CLEANUP PLANNING

Plaid intends to seek compliance with MTCA requirements for cleanup of gasoline-related Site contaminants originating at the subject Property. Because other non-gasoline contaminants are present at the Site, we acknowledge that final site cleanup cannot formally be achieved under MTCA by meeting only gasoline and related volatile constituent cleanup levels as proposed by Plaid. Future gasoline cleanup will therefore continue to be conducted as an Interim Action (WAC 173-340-430), for which no formal Feasibility Study would normally be required, particularly at this site, where SVE is demonstrated to be effective and implementable.

Based on successful and effective SVE operation at the Property and as supplemented by recent technology screening comparisons, EES believes that expansion of SVE components into the right-of-way provides a reasonable basis for Site remedy implementation. This interim remedial action is anticipated to remediate concentrations of COIs to below MTCA Method A cleanup levels in the right-of-way, further eliminating the need for a Feasibility Study or further cleanup actions for gasoline contamination on, beneath, and emanating from the Site.

6 CONCLUSIONS AND RECOMMENDATIONS

Site characterization is complete and indicates that actionable gasoline contamination is currently limited to soil and soil gas impacts extending beyond the southern Property boundary, beneath a portion of the adjacent sidewalk and West Fourth Plain Boulevard roadway. The source of these gasoline impacts appears to be from fueling operations conducted at the Property prior to Plaid's 1982 redevelopment. No releases are known or suspected to have occurred during operation of the Plaid

fueling system. Chlorinated solvent vapor impacts have been identified at this Site, but are not attributable to Plaid operations as discussed with and acknowledged by Ecology.

- The current extent of residual gasoline and related contaminants is limited to vadose-zone soils between approximately three and 11 feet in depth. Although the historical gasoline release occurred on the subject Property, source removal and SVE interim actions achieve the soil point of compliance for this primary source area. No significant gasoline impacts have been identified among underlying soils in the source area following interim actions.
- Based on Tier 1 and 2 assessment data, no vapor intrusion concerns are present with regard to current Property building conditions. However, soil gas concentrations are greater around the small core of residual soil contamination extending south of the Property, and future building construction (if allowable) near this area must consider potential vapor intrusion issues.
- Groundwater is anticipated at depths greater than 80 feet bgs, and therefore is not expected to be impacted by the gasoline release originating and limited to shallow soils at the Property. Because no gasoline impacts are known or suspected among vadose-zone soils within 70 feet of the water table, groundwater is therefore not regarded as a medium of concern for this Site.

Current soil conditions on the subject Property satisfy MTCA Method B cleanup levels for all contaminants of interest. South of the Property boundary and below a portion of the adjoining sidewalk and West Fourth Plain Boulevard right-of-way, gasoline contamination remains in soil at concentrations exceeding MTCA Method B cleanup levels for TPH as gasoline. These residual contaminated soils also represent a continuing source of subsurface vapors that although unlikely, could indirectly impact indoor air quality if future Site building(s) were to be constructed above or near the source area. Off-Property soils located south of the gasoline source area must be remediated to achieve full Site closure under MTCA.

In an effort to address MTCA cleanup requirements for the right-of-way gasoline contamination, Plaid will expand cleanup efforts in that area as feasible, seeking as a primary goal to achieve Method B unrestricted use criteria. Although groundwater is not an affected medium at the Site with respect to gasoline-related COIs, future right-of-way cleanup efforts will also seek to demonstrate vapor intrusion protectiveness if possible, by *not significantly* differing from the MTCA Method A groundwater cleanup levels for gasoline-related volatiles, as specified in published Ecology "Implementation Memo" guidance (2016, 2018). If Method B cleanup criteria are achieved but Method A criteria for gasoline-related volatiles are not, then other means will be employed to demonstrate vapor intrusion protectiveness.

We acknowledge that gasoline impacts below the right-of-way are not directly accessible for excavation, so expansion of the existing SVE system is intended to mitigate and address the localized right-of-way impacts. If MTCA Method A or B cleanup goals are not achievable in a reasonable restoration timeframe, then an environmental covenant may be necessary to establish protective conditions and achieve satisfactory right-of-way cleanup.

Non-gasoline contamination present at the Site has not been identified in Site soils, is not commingled with gasoline impacts, was not used or released by Plaid, and therefore is not Plaid's responsibility for cleanup. However, identified chlorinated solvents must ultimately be mitigated in order to achieve a No

Further Action determination for the Site. In lieu of a full NFA determination, Ecology has agreed to provide a Partial Sufficiency letter to Plaid once gasoline cleanup at the Site achieves compliance with MTCA requirements.

7 LIMITATIONS

EES has prepared this report for use by Plaid Pantries and its agents. This report may be made available to other parties and to regulatory agencies at the discretion of Plaid. This report is not intended for use by others and the information contained herein is not applicable to other Sites.

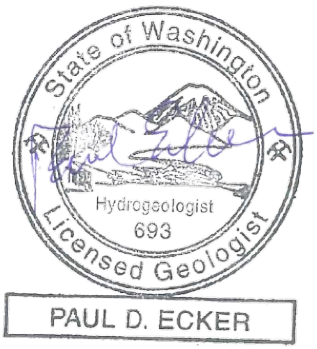
Our interpretation of subsurface conditions and risk criteria is based on field observations and chemical analytical data within the areas explored. Areas with contamination may exist in portions of the Site that were not explored or analyzed.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices and laws, rules, and regulations at the time that the report was prepared. No other conditions, expressed or implied, should be understood.

EES ENVIRONMENTAL CONSULTING, INC.

Chris Rhea, LG
Project Manager

Paul Ecker, LHG
Principal



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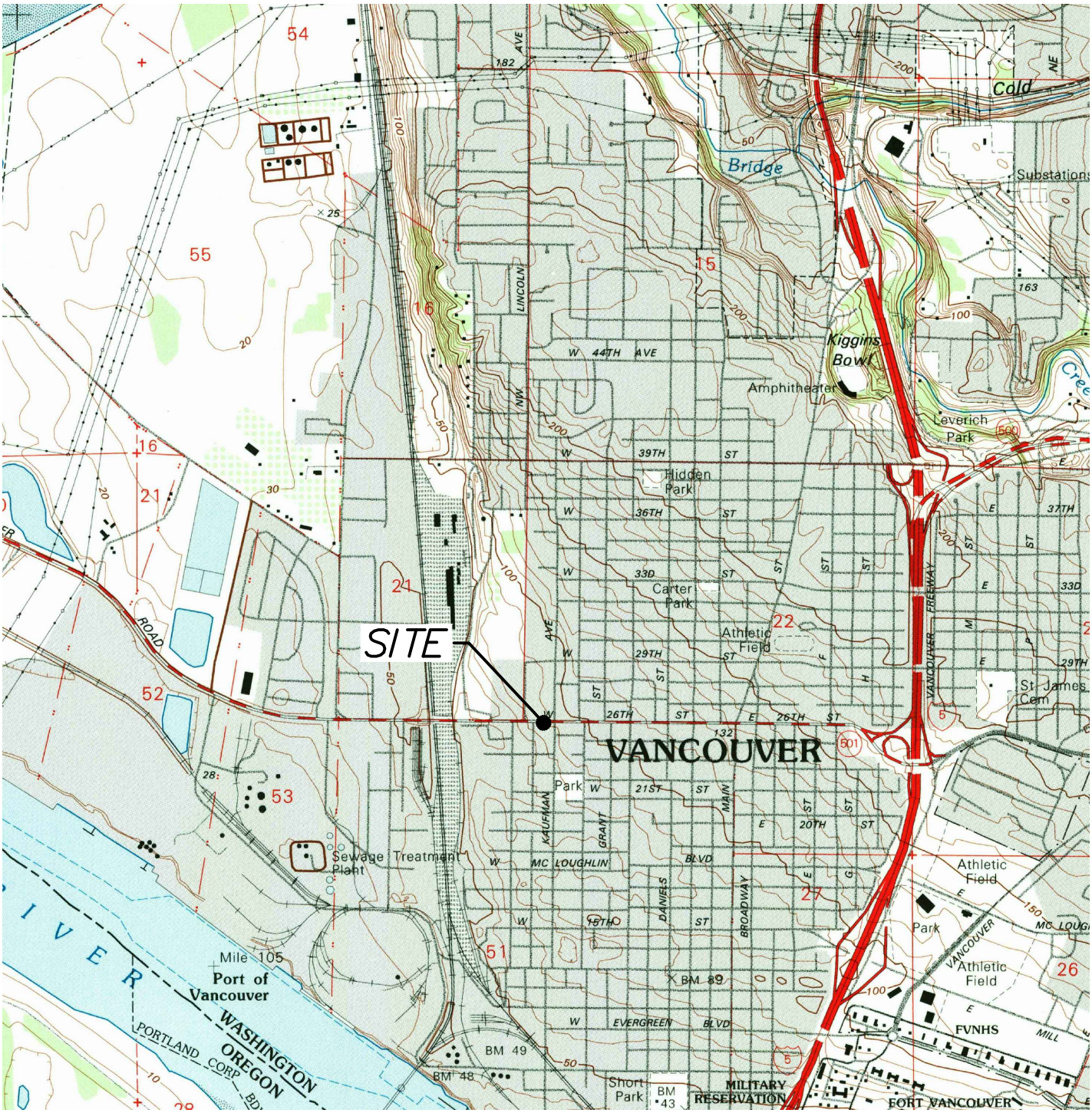
Figures



SOURCE:
USGS, VANCOUVER QUADRANGLE
WASHINGTON–OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)

N

APPROXIMATE SCALE IN FEET

0 1000 2000 4000

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VICINITY MAP

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
VANCOUVER, WA.

DATE:	4–20–18	PROJECT NO.
FILE:	1179–01	1179–01
DRAWN:	JJT	FIGURE NO.
APPROVED:	CR	1

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LEGEND

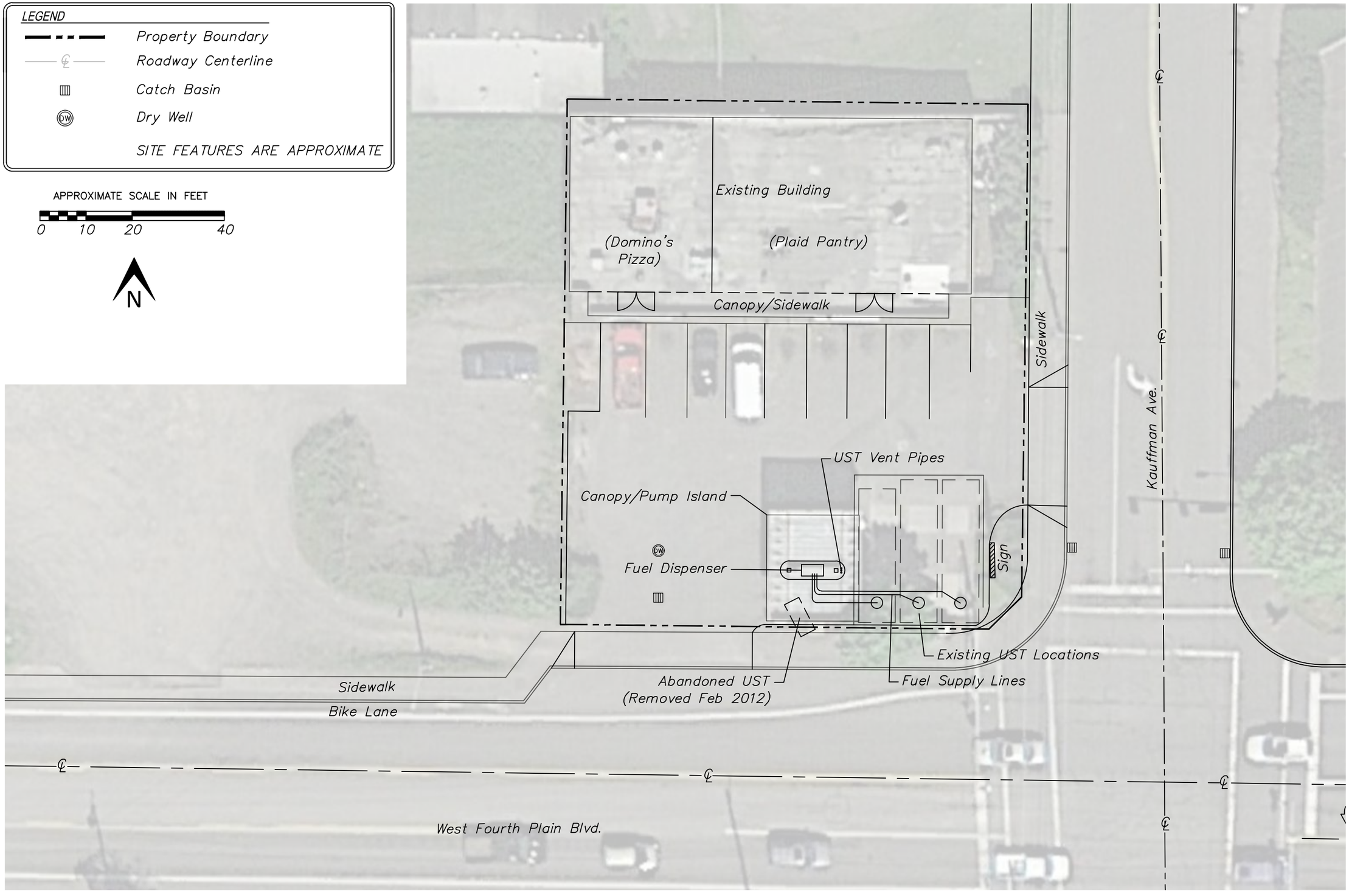
- Property Boundary
- Roadway Centerline
- Catch Basin
- Dry Well

SITE FEATURES ARE APPROXIMATE

APPROXIMATE SCALE IN FEET

0 10 20 40

N



DATE:	6-1-18
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179-01
FIGURE NO.	2A

SITE FEATURES

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
VANCOUVER, WA.

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LEGEND

- Property Boundary
- Roadway Centerline
- Catch Basin
- Dry Well
- W — Water Line
- SS — Sanitary Sewer & Flow Direction
- STRM — Storm Sewer & Flow Direction
- P — Power
- GAS — Natural Gas
- UNK — Unknown Utility
- FO — Fiber Optic
- Arrows Indicate Slope Direction Where Known
- Water Shutoff Valve
- Sewer Cleanout

Approximate Utility Depths Indicated Where Known (Feet)

SITE FEATURES ARE APPROXIMATE.

APPROXIMATE SCALE IN FEET

0 10 20 40

N

Existing Building

(Domino's Pizza)

(Plaid Pantry)

Canopy/Sidewalk

Sidewalk

Sign

Kaufman Ave.

West Fourth Plain Blvd.

1.0' SS -10"

1.3' SS

1.5' SS

8.1' SS

2.1' SS

1.4' P

2' SS

3.5' FO

4' UNK

12' SS

DATE:	6-1-18
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179-01
FIGURE NO.	2B

UTILITY LAYOUT

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LEGEND

- Property Boundary
- Roadway Centerline
- Catch Basin
- Dry Well
- Vault
- SVE–1 — Shallow SVE Well (Screened 5–10' bgs)
- SVE–2 — Deep SVE Well (Screened 15–20' bgs)
- S–28 — Utility Vapor Monitoring Well (Screened at Various Shallow Depths in Trench Backfill)
- B–17 — Shallow Vapor Monitoring Well (Screened 5–10' bgs)
- B–18 — Deep Vapor Monitoring Well (Screened 15–20' bgs)
- SVE — SVE Piping
- W — Water Line
- SS — Sanitary Sewer & Flow Direction
- STRM — Storm Sewer & Flow Direction
- P — Power
- GAS — Natural Gas
- UNK — Unknown Utility
- FO — Fiber Optic
- Arrows Indicate Flow Direction Where Known

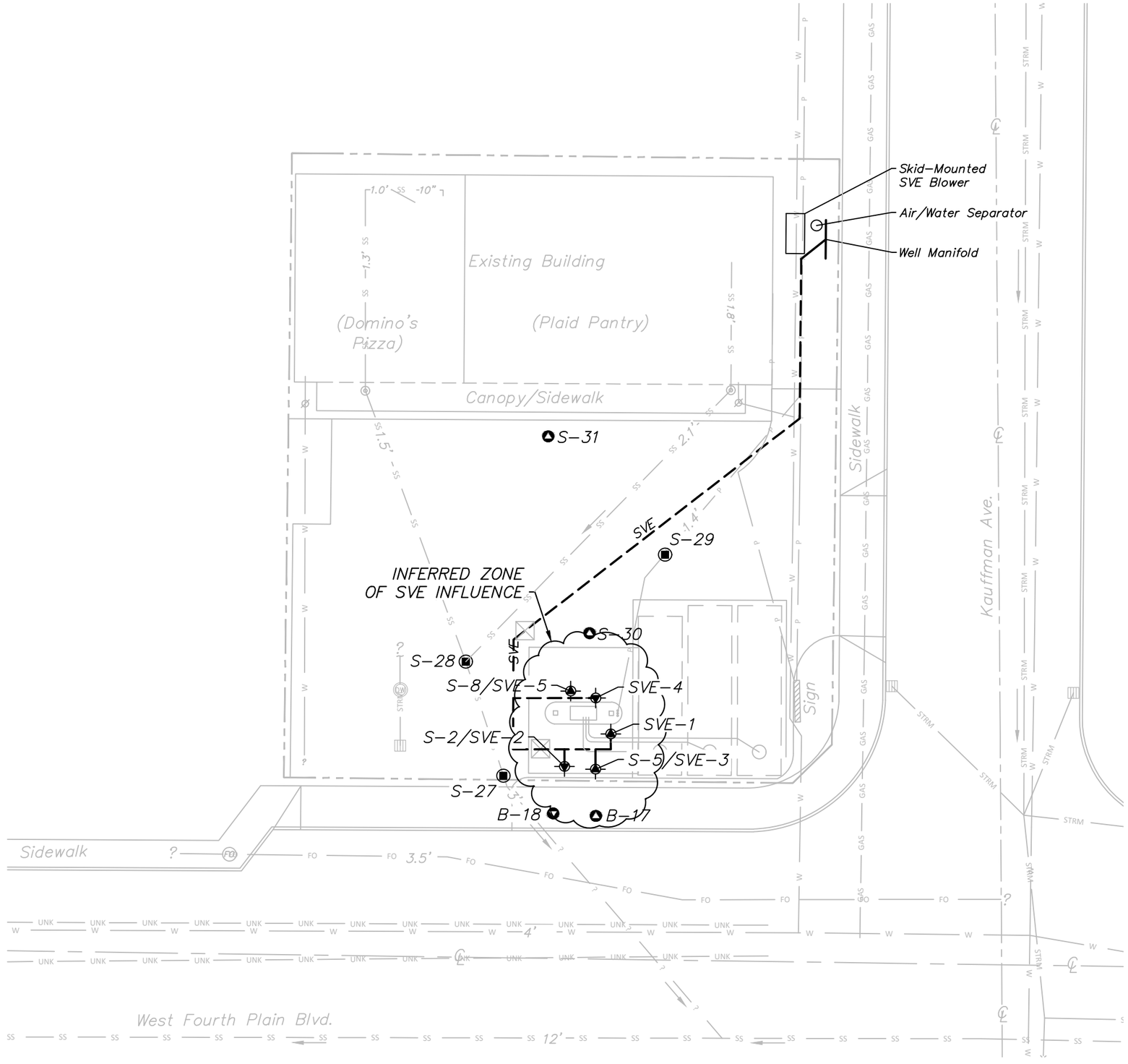
Approximate Utility Depths Indicated Where Known (Feet)

SITE FEATURES ARE APPROXIMATE.

APPROXIMATE SCALE IN FEET

0 10 20 40

N



PROJECT NO.	1179–01
DATE: 4–20–18	FIGURE NO. 2C
FILE: 1179–01	
DRAWN: JJT	
APPROVED: CR	

SVE SYSTEM LAYOUT

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LEGEND

- Property Boundary
- Direct–Push Boring (Sept 2011)
- Direct–Push Boring (Aug 2012)
- Catch Basin
- Dry Well
- Bollards
- Soil Boring and Shallow Vapor Monitoring Well (Sept 2015)
- Soil Boring and Deep Vapor Monitoring Well (Sept 2015)
- Soil Boring (Sept 2015)
- Vault
- SVE–1 — Shallow SVE Well (Aug 2012)
- SVE–2 — Deep SVE Well (Aug 2012)
- PIT–N — Abandoned UST Sample (Feb 2012)
- G = Gasoline

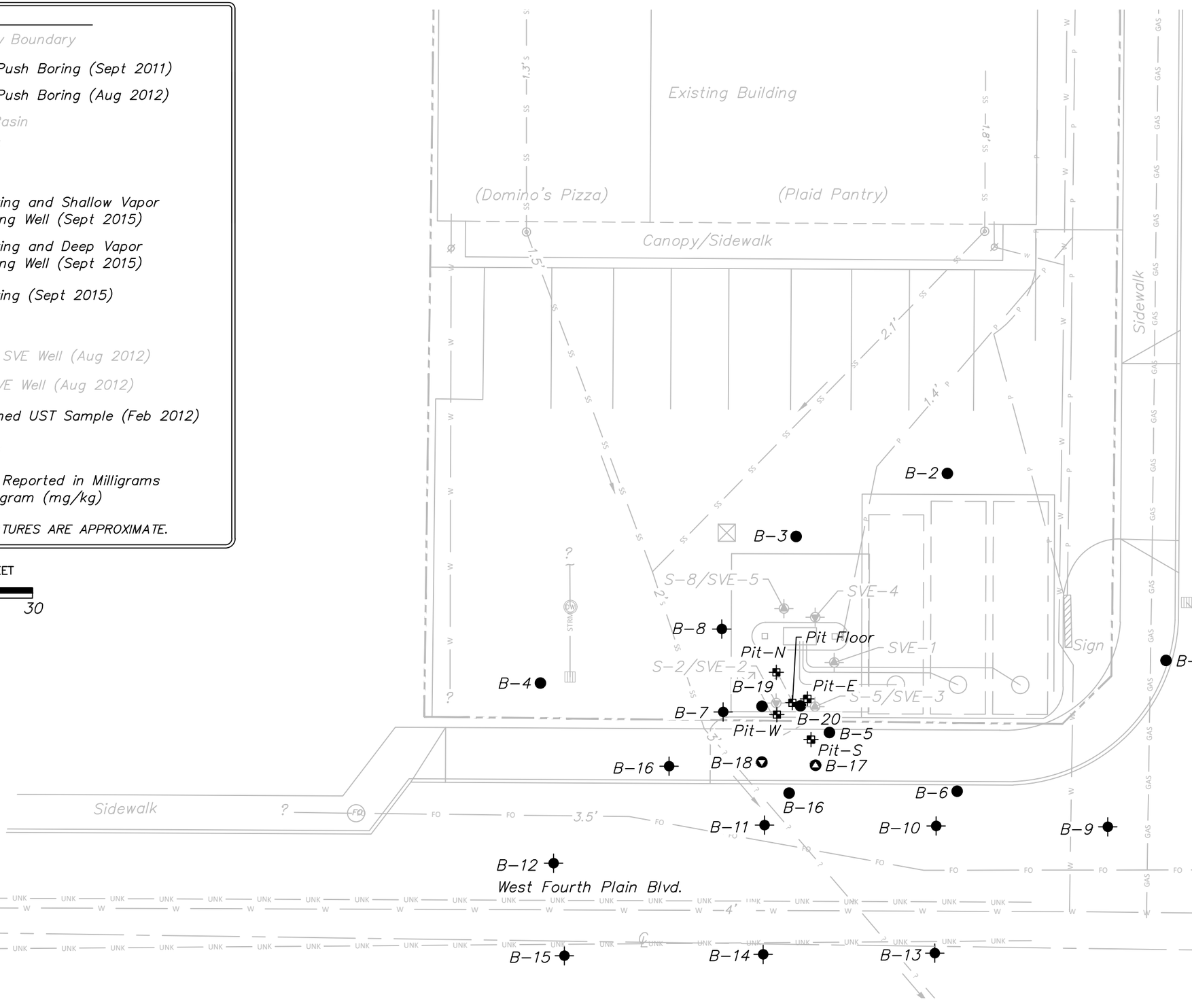
Results Reported in Milligrams per Kilogram (mg/kg)

SITE FEATURES ARE APPROXIMATE.

APPROXIMATE SCALE IN FEET

0 15 30

N



DATE:	6–1–18
FILE:	1179–01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179–01
FIGURE NO.	3

SOIL SAMPLE LOCATIONS
(2011–2015)

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VANCOUVER, WA.

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LEGEND

- Property Boundary
- Direct-Push Boring (Sept 2011)
- Direct-Push Boring (Aug 2012)
- Catch Basin
- Dry Well
- Vault
- SVE-1 — Shallow SVE Well (Aug 2012)
- SVE-2 — Deep SVE Well (Aug 2012)
- PIT-2 — Abandoned UST Sample (Feb 2012)
- 793 — Maximum Detected Gasoline Concentration in Soil (mg/kg)
- 24U — Not Detected at Method Reporting Limits Shown
- 10 — Gasoline Isoconcentration Contour (mg/kg, 2011-2012)

SITE FEATURES ARE APPROXIMATE.

APPROXIMATE SCALE IN FEET

0 5 10 20

N

B-1 24U
B-2 25U
B-3 26U
B-4 23U
B-5 4,070
B-6 26U
B-7 1,730
B-8 8.9U
B-9 8.2U
B-10 20U
B-11 20,400
B-12 20U
B-13 7.8U
B-14 7.6U
B-15 7.9U
B-16 8.0U

S-8/SVE-5 793
SVE-4 97
SVE-1 2,750
Pit-N 21U
S-2/SVE-2 6,800
Pit-E 64,200
S-5/SVE-3 3,820
Pit-W 18,700
Pit Floor 34,900
Pit-S 5,800

10,000
1,000
100
10

West Fourth Plain Blvd.
Kauffman Ave.
Sign

DATE:	6-1-18
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179-01
FIGURE NO.	4A

MAXIMUM GASOLINE CONCENTRATIONS IN SOIL (2011-2012)

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LEGEND

- Property Boundary
- Direct-Push Boring (Sept 2011)
- Direct-Push Boring (Aug 2012)
- Catch Basin
- Dry Well
- Soil Boring and Shallow Vapor Monitoring Well (Sept 2015)
- Soil Boring and Deep Vapor Monitoring Well (Sept 2015)
- Soil Boring (Sept 2015)
- Vault
- SVE-1 — Shallow SVE Well (Aug 2012)
- SVE-2 — Deep SVE Well (Aug 2012)
- PIT-N — Abandoned UST Sample (Feb 2012)
- G = Gasoline
- 10 — Approximate Gasoline Isoconcentration Contour (mg/kg, Sept 2015)
- A — A' Cross Section A-A' Location (See Figure 5)

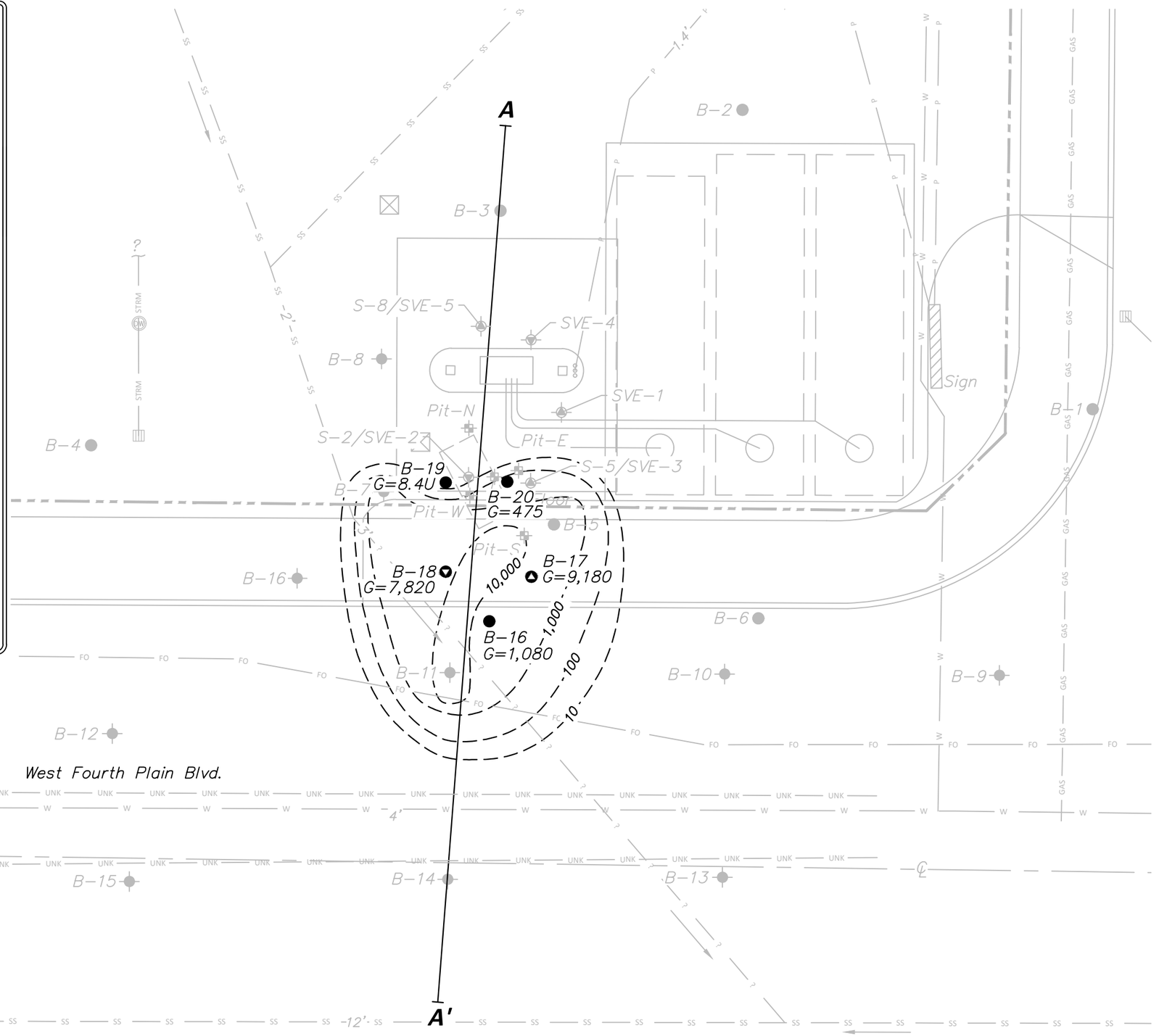
Results Reported in Milligrams per Kilogram (mg/kg)

SITE FEATURES ARE APPROXIMATE.

APPROXIMATE SCALE IN FEET

0 10 20

N



DATE:	6-1-18
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179-01
FIGURE NO.	4B

MAXIMUM GASOLINE CONCENTRATIONS IN SOIL (SEPTEMBER 2015)

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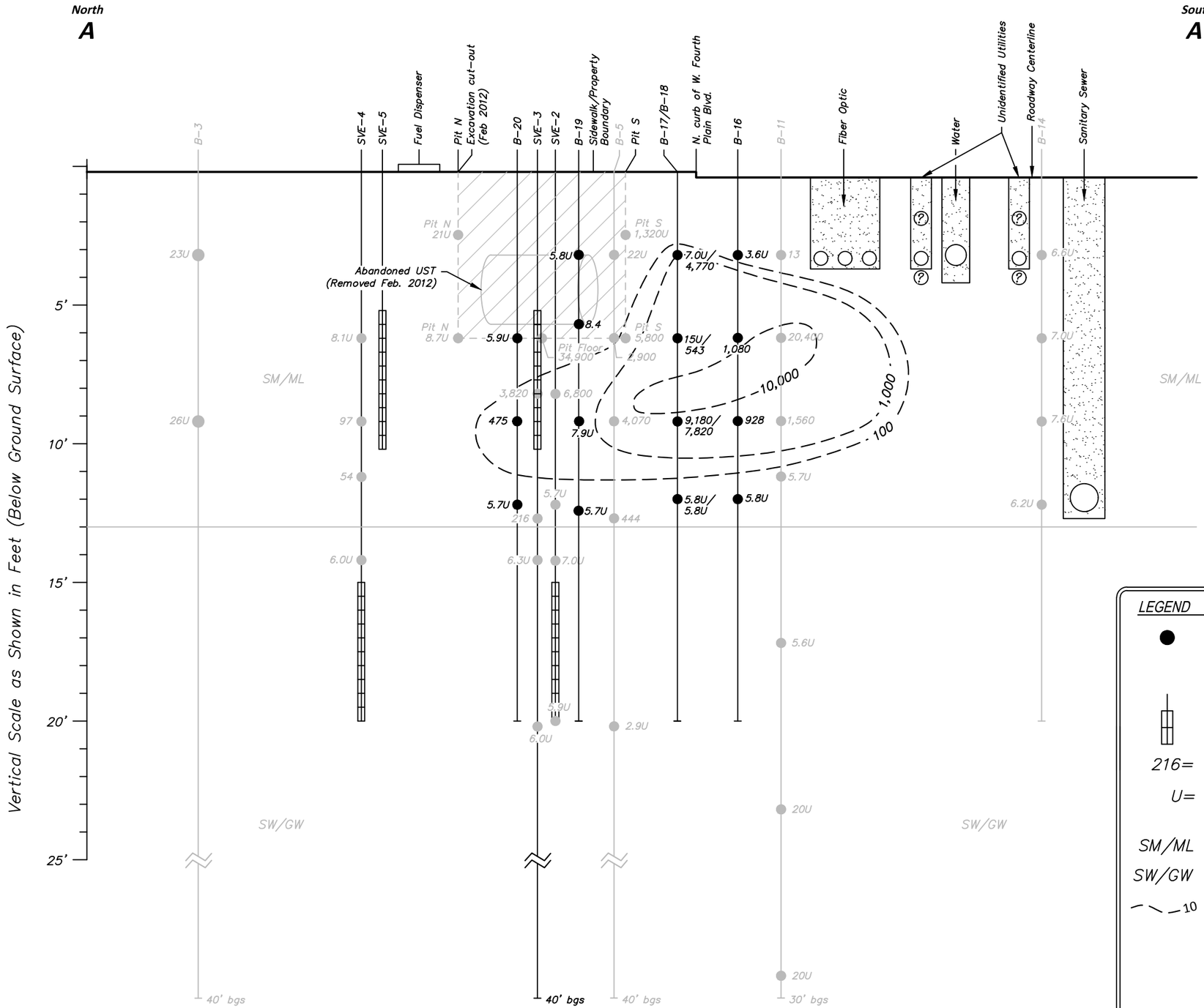

APPROXIMATE SCALE IN FEET

0 4 8 16

LEGEND

- Soil Sample (Data shown in Black Collected in 2015. Data shown in Gray Collected in 2011–2012)
- SVE – Soil Vapor Extraction Well and Screened Interval
- 216= Gasoline Concentration (mg/kg)
- U= Not Detected Above Method Reporting Limit
- SM/ML Sandy Silt/Silty Sand
- SW/GW Sand & Gravels
- 10 Approximate Gasoline Isoconcentration Contour (mg/kg, Sept 2015)

Results Reported in Milligrams per Kilogram (mg/kg)

SITE FEATURES ARE APPROXIMATE.

DATE:	6-1-18
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179-01
FIGURE NO.	5

NORTH-SOUTH CROSS SECTION A-A'
(SEPT. 2015)

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LEGEND

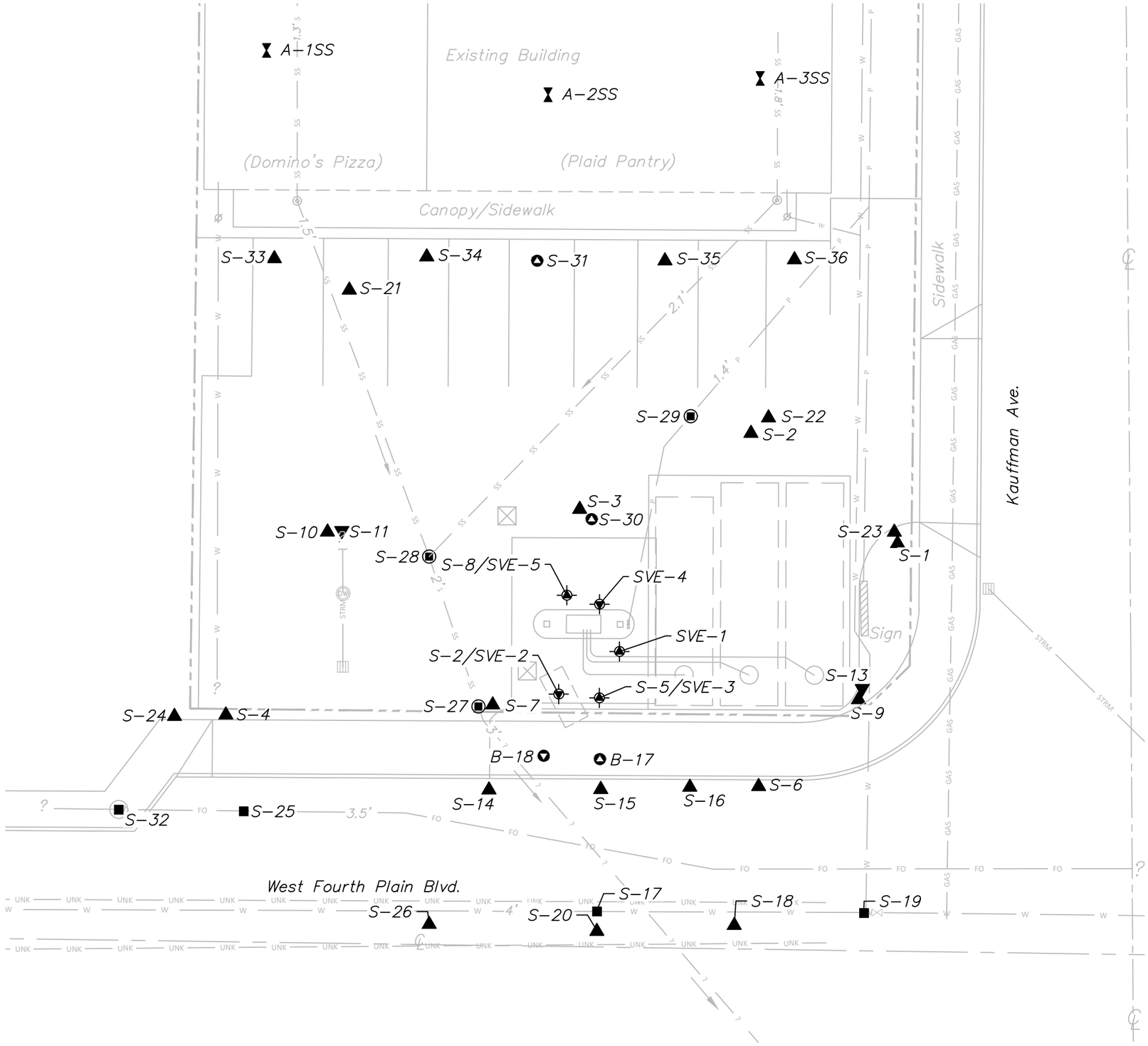
- Property Boundary
- Vault
- SVE Piping
- ▲ Shallow Soil Vapor Sample (5' bgs, Aug 2012)
- ▼ Deep Soil Vapor Sample (15' bgs, Aug 2012)
- SVE-1 Shallow SVE Well (Screened 5-10' bgs)
- SVE-2 Deep SVE Well (Screened 15-20' bgs)
- S-28 Utility Vapor Monitoring Well (Screened at Various Shallow Depths in Trench Backfill)
- B-17 Shallow Vapor Monitoring Well (Screened 5-10' bgs)
- B-18 Deep Vapor Monitoring Well (Screened 15-20' bgs)
- S-21 ▲ Soil Vapor Sample (5' bgs)
- S-32 ■ Utility Vapor Sample (Various Depths)
- S-33 ▲ Tier 1 Soil Vapor Sample (5' bgs, June 2016)
- A-1SS Tier 2 Sub-Slab Vapor Sample (Sept. 2016)

SITE FEATURES ARE APPROXIMATE

APPROXIMATE SCALE IN FEET

0 15 30

N



PROJECT NO.	1179-01
DATE:	6-1-18
FILE:	1179-01
FIGURE NO.	6
DRAWN:	JJT
APPROVED:	CJ

SOIL VAPOR SAMPLING LOCATIONS

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
VANCOUVER, WA.

EES
ENVIRONMENTAL CONSULTING, INC.
240 N Broadway #203, Portland, OR 97227
(503) 847-2740
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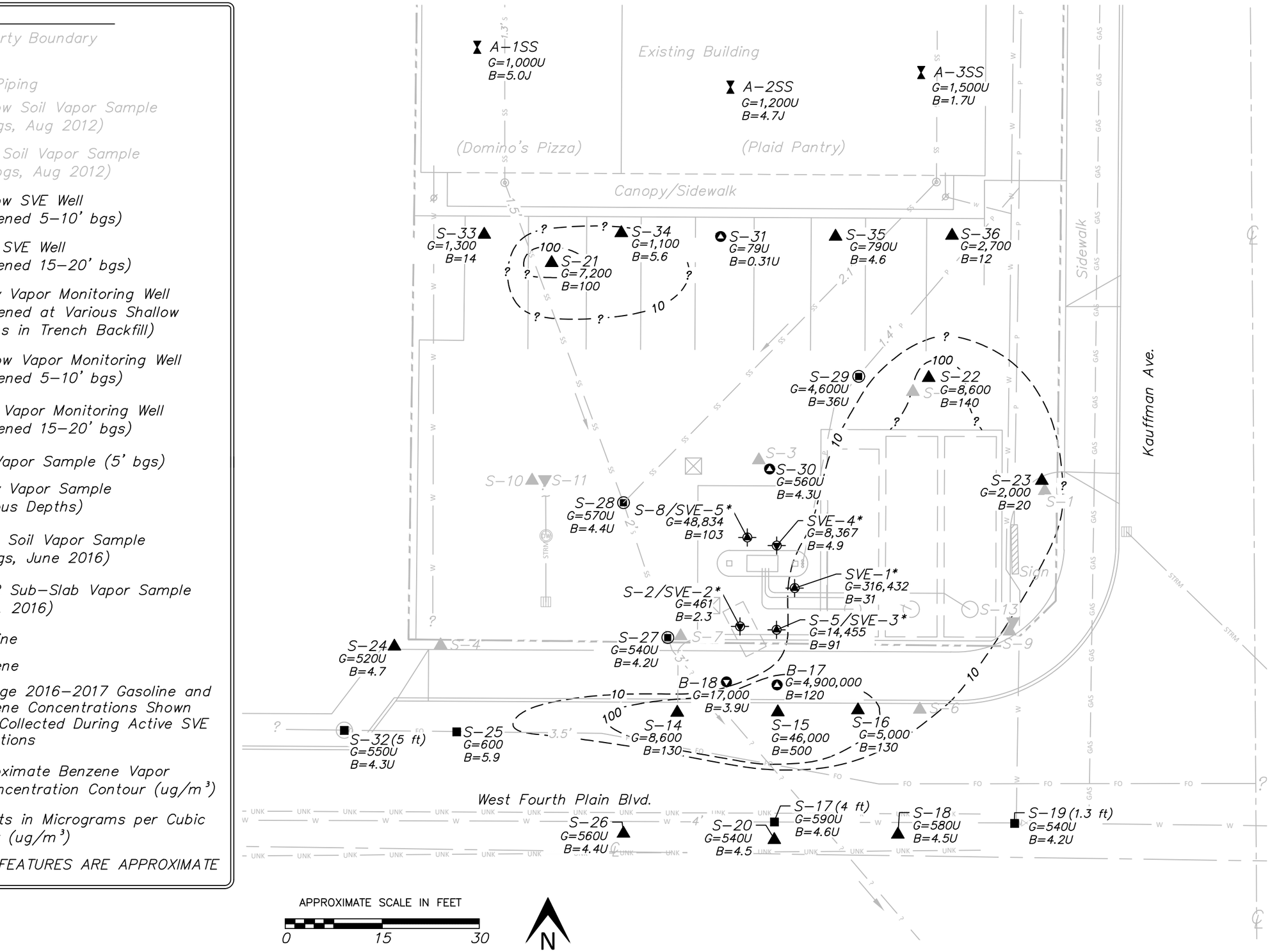
C:\Users\Josh\Desktop\Autocad Files\EES-Autocad\1179-01 Plaid Pantry #112\2018\June 2018\1179-01_BM-Data-060118.dwg 11.3.2015

LEGEND

- Property Boundary
- Vault
- SVE Piping
- Shallow Soil Vapor Sample (5' bgs, Aug 2012)
- Deep Soil Vapor Sample (15' bgs, Aug 2012)
- SVE-1 — Shallow SVE Well (Screened 5-10' bgs)
- SVE-2 — Deep SVE Well (Screened 15-20' bgs)
- S-28 — Utility Vapor Monitoring Well (Screened at Various Shallow Depths in Trench Backfill)
- B-17 — Shallow Vapor Monitoring Well (Screened 5-10' bgs)
- B-18 — Deep Vapor Monitoring Well (Screened 15-20' bgs)
- S-21 — Soil Vapor Sample (5' bgs)
- S-32 — Utility Vapor Sample (Various Depths)
- S-33 — Tier 1 Soil Vapor Sample (5' bgs, June 2016)
- A-1SS — Tier 2 Sub-Slab Vapor Sample (Sept. 2016)
- G = Gasoline
- B = Benzene
- * = Average 2016-2017 Gasoline and Benzene Concentrations Shown were Collected During Active SVE Operations
- 10 — Approximate Benzene Vapor Isoconcentration Contour (ug/m³)

Results in Micrograms per Cubic Meter (ug/m³)

SITE FEATURES ARE APPROXIMATE



PROJECT NO.	1179-01
DATE:	6-6-18
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
FIGURE NO.	7

SOIL VAPOR CONCENTRATIONS (2015-2016)

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
VANCOUVER, WA.

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LEGEND

- Property Boundary
- Vault
- SVE Piping
- S–3 — Shallow Soil Vapor Sample (5' bgs, 2012–2015)
- S–11 — Deep Soil Vapor Sample (15' bgs, 2012)
- S–32 — Utility Vapor Sample (Various Depths, 2015)
- SVE–1 — Shallow SVE Well (Screened 5–10' bgs)
- SVE–2 — Deep SVE Well (Screened 15–20' bgs)
- S–28 — Utility Vapor Monitoring Well (Screened at Various Shallow Depths in Trench Backfill)
- B–17 — Shallow Vapor Monitoring Well (Screened 5–10' bgs)
- B–18 — Deep Vapor Monitoring Well (Screened 15–20' bgs)
- A–1 — Tier 2 Sub–Slab Vapor, Indoor or Outdoor Air Sample (Sept 2016)
- 10 — Approximate 2015 Benzene Vapor Isoconcentration Contour (ug/m³)

G = Gasoline
B = Benzene
PCE = Tetrachloroethylene
N = Naphthalene
EDB = Ethylene Dibromide
CT = Carbon Tetrachloride

Results in micrograms per cubic meter (ug/m³)

SITE FEATURES ARE APPROXIMATE

A–1	INDOOR	SUB–SLAB
G	530	1,000U
B	0.93	5.0J
PCE	0.25U	23
N	0.12J	3.4U
EDB	0.0076U	1.8U
CT	0.48	2.0U

A–5	OUTDOOR
G	70U
B	0.27U
PCE	0.23U
N	0.10J
EDB	0.0071U
CT	0.50

A–2	INDOOR	SUB–SLAB
G	970	1,200U
B	1.5	4.7J
PCE	0.22U	21U
N	0.33J	4.3U
EDB	0.022J	2.3U
CT	0.46	2.5U

A–3	INDOOR	SUB–SLAB
G	980	1,500U
B	1.4	1.7U
PCE	0.23U	25U
N	0.36J	5.2U
EDB	0.0071U	2.8U
CT	0.54	3.0U

A–4	OUTDOOR
G	72U
B	0.28U
PCE	0.31
N	0.065J
EDB	0.0073U
CT	0.50

A–6	OUTDOOR
G	64
B	0.30
PCE	0.22U
N	0.84
EDB	0.0068U
CT	0.48

A–7	OUTDOOR
G	67U
B	1.2
PCE	0.22U
N	0.17J
EDB	0.0068U
CT	0.50

A–8	OUTDOOR
G	110
B	0.30
PCE	0.24U
N	0.079J
EDB	0.0074U
CT	0.47

A–9	OUTDOOR
G	350
B	3.3
PCE	0.24U
N	0.27J
EDB	0.0073U
CT	0.49

Predominant Wind Direction

Existing Building

(Domino's)

(Plaid Pantry)

Canopy/Sidewalk

Sidewalk

Skid–Mounte SVE Blower

Air/Water Se

Well Manifold

Sign

Kauffman Ave.

West Fourth Plain Blvd.

APPROXIMATE SCALE IN FEET

0 15 30

N

PROJECT NO.	1179–01	FIGURE NO.	8
DATE:	6–1–18	DRAWN:	JJT
FILE:	1179–01	APPROVED:	CJ

SUB–SLAB, INDOOR, AND OUTDOOR AIR ANALYTICAL RESULTS (SEPTEMBER 21–22, 2016)

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
VANCOUVER, WA.

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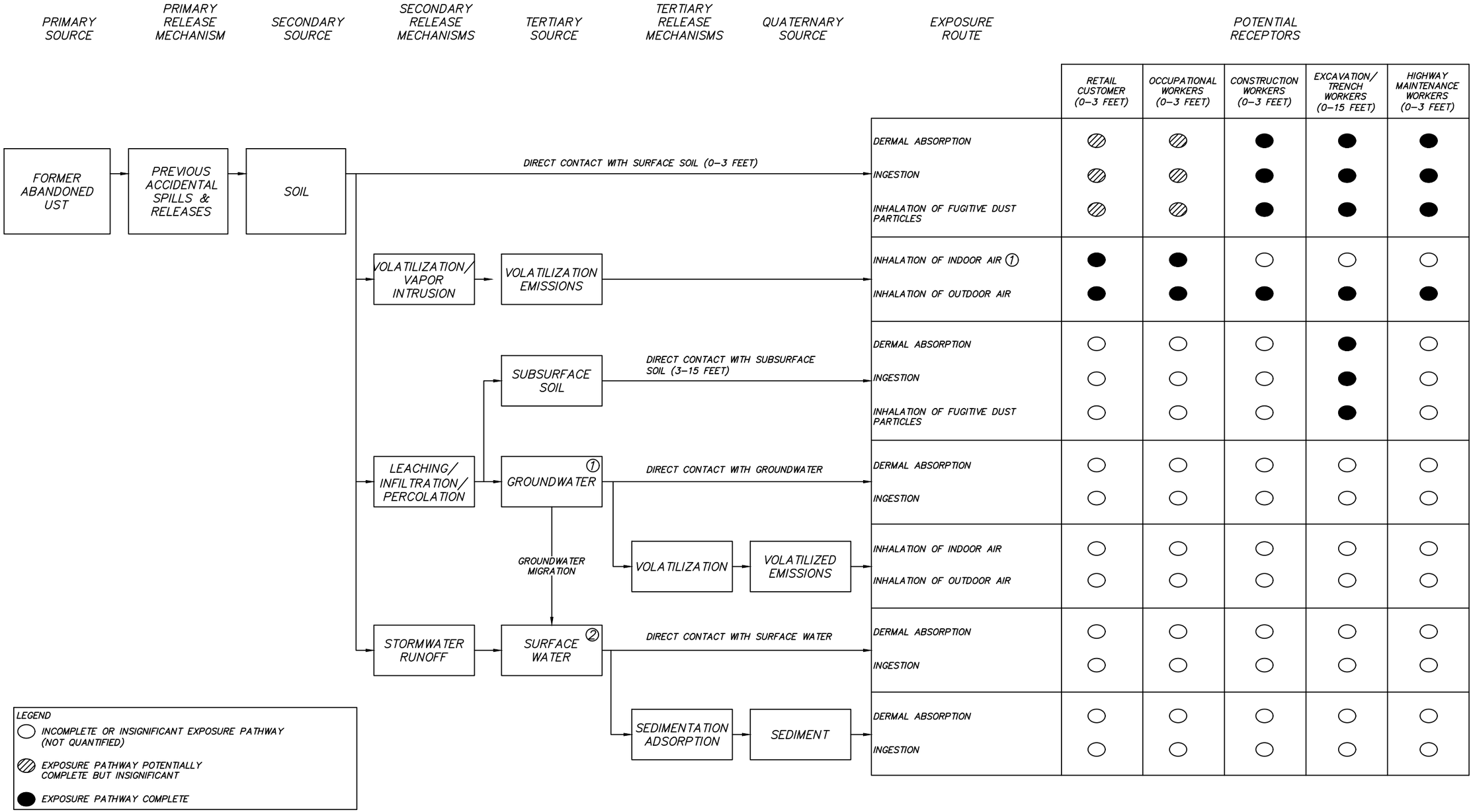
CONCEPTUAL SITE MODEL OF COMPLETE EXPOSURE PATHWAYS



POTENTIAL RECEPTORS	RETAIL CUSTOMER (0–3 FEET)	OCCUPATIONAL WORKERS (0–3 FEET)	CONSTRUCTION WORKERS (0–3 FEET)	EXCAVATION/ TRENCH WORKERS (0–15 FEET)	HIGHWAY MAINTENANCE WORKERS (0–3 FEET)
DERMAL ABSORPTION	▨	▨	●	●	●
INGESTION	▨	▨	●	●	●
INHALATION OF FUGITIVE DUST PARTICLES	▨	▨	●	●	●
INHALATION OF INDOOR AIR (1)	●	●	○	○	○
INHALATION OF OUTDOOR AIR	●	●	●	●	●
DERMAL ABSORPTION	○	○	○	●	○
INGESTION	○	○	○	●	○
INHALATION OF FUGITIVE DUST PARTICLES	○	○	○	●	○
DERMAL ABSORPTION	○	○	○	○	○
INGESTION	○	○	○	○	○
INHALATION OF INDOOR AIR	○	○	○	○	○
INHALATION OF OUTDOOR AIR	○	○	○	○	○
DERMAL ABSORPTION	○	○	○	○	○
INGESTION	○	○	○	○	○
DERMAL ABSORPTION	○	○	○	○	○
INGESTION	○	○	○	○	○

LEGEND

○ INCOMPLETE OR INSIGNIFICANT EXPOSURE PATHWAY (NOT QUANTIFIED)

▨ EXPOSURE PATHWAY POTENTIALLY COMPLETE BUT INSIGNIFICANT

● EXPOSURE PATHWAY COMPLETE

1. VAPOR INTRUSION PATHWAY IS COMPLETE BUT NOT APPLICABLE AT THIS ACTIVE RETAIL GASOLINE FUELING STATION PER ECOLOGY "GUIDANCE FOR EVALUATING SOIL VAPOR INTRUSION IN WASHINGTON STATE INVESTIGATION AND REMEDIAL ACTION" OCTOBER 2009.
2. GROUNDWATER IS NOT AN AFFECTED MEDIA AT THIS SITE.
3. THE SITE IS ENTIRELY PAVED. NO SURFACE WATER CONTACT WITH CONTAMINATED MEDIA IS ANTICIPATED.

PROJECT NO. 1179-01 | FIGURE NO. 9
DATE: 6-1-18 | DRAWN: JJT
FILE: 1179-01 | APPROVED: CJ

CONCEPTUAL SITE MODEL

PLAID PANTRY #112
1002 W FOURTH PLAIN BLVD.
VANCOUVER, WA.

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LEGEND

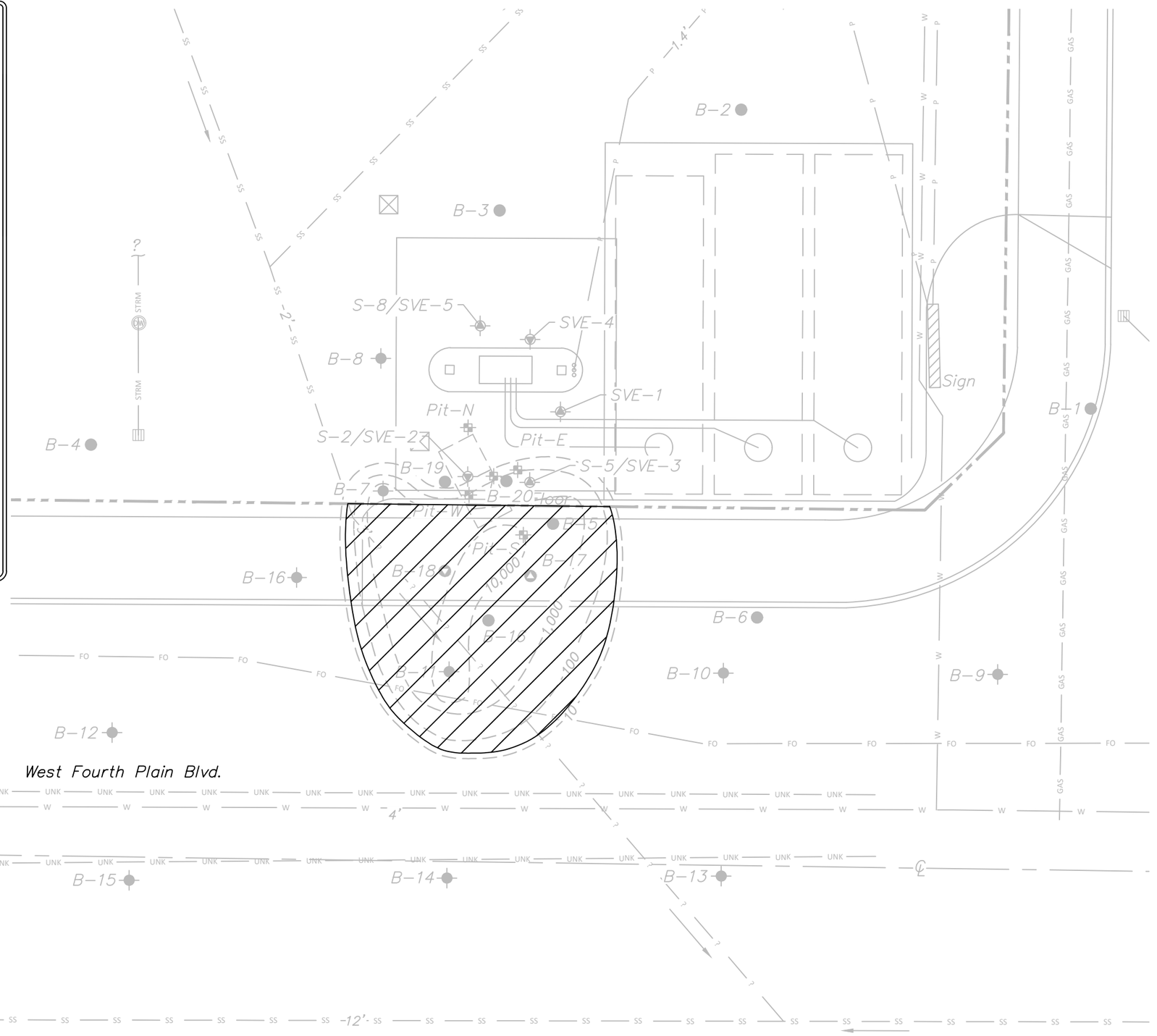
- Property Boundary
- Direct-Push Boring (Sept 2011)
- Direct-Push Boring (Aug 2012)
- Catch Basin
- Dry Well
- Soil Boring and Shallow Vapor Monitoring Well (Sept 2015)
- Soil Boring and Deep Vapor Monitoring Well (Sept 2015)
- Soil Boring (Sept 2015)
- Vault
- SVE-1 — Shallow SVE Well (Aug 2012)
- SVE-2 — Deep SVE Well (Aug 2012)
- PIT-N — Abandoned UST Sample (Feb 2012)
- 10 — Approximate Gasoline Isoconcentration Contour (mg/kg, Sept 2015)
- Area Potentially Requiring Cleanup to Achieve MTCA Method A Soil Cleanup Levels

SITE FEATURES ARE APPROXIMATE.

APPROXIMATE SCALE IN FEET

0 10 20

N



DATE:	6-12-18
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179-01
FIGURE NO.	10A

AREA POTENTIALLY REQUIRING CLEANUP TO ACHIEVE MTCA METHOD A CLEANUP LEVELS

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
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LEGEND

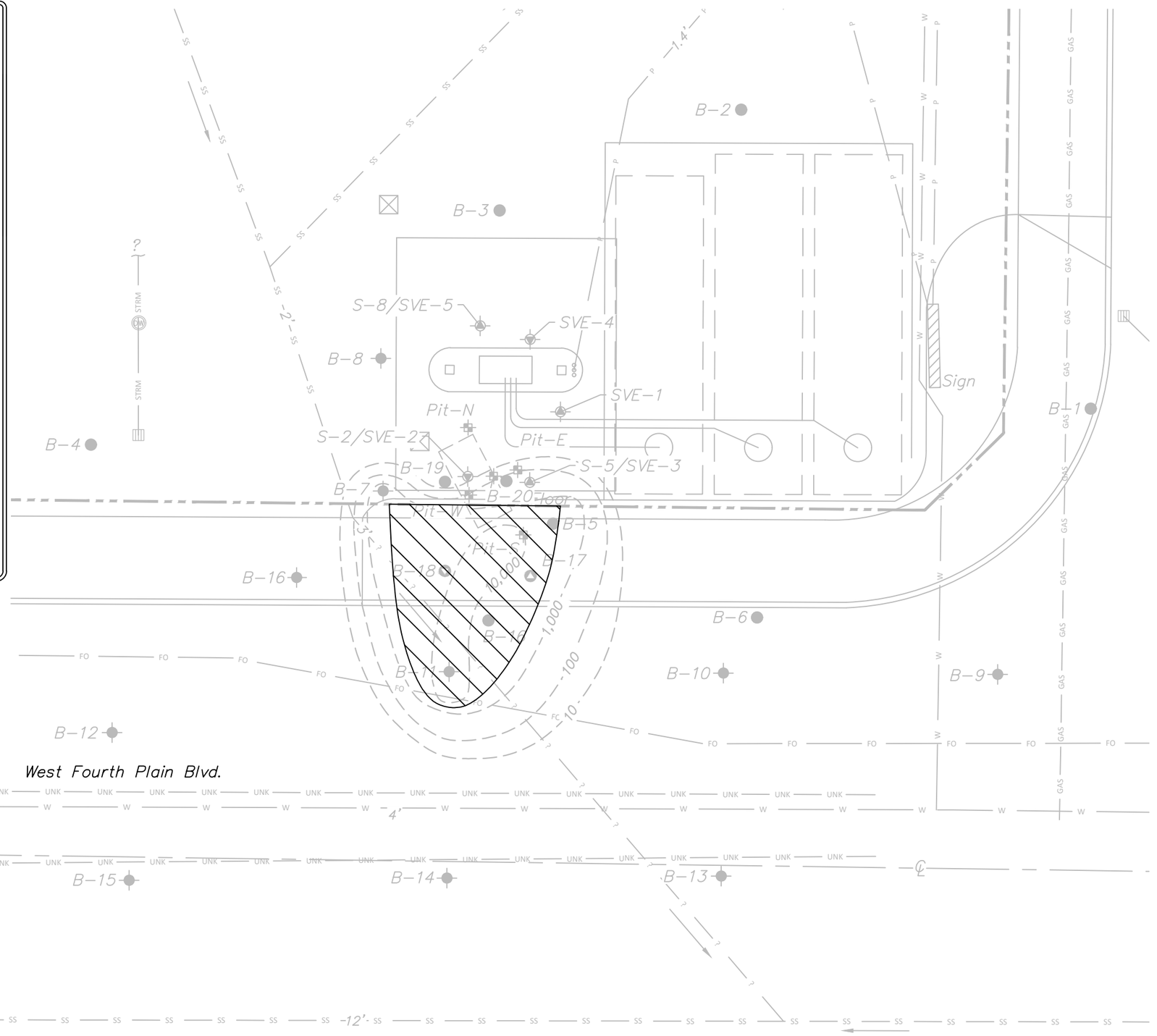
- Property Boundary
- Direct-Push Boring (Sept 2011)
- Direct-Push Boring (Aug 2012)
- Catch Basin
- Dry Well
- Soil Boring and Shallow Vapor Monitoring Well (Sept 2015)
- Soil Boring and Deep Vapor Monitoring Well (Sept 2015)
- Soil Boring (Sept 2015)
- Vault
- SVE-1 — Shallow SVE Well (Aug 2012)
- SVE-2 — Deep SVE Well (Aug 2012)
- PIT-N — Abandoned UST Sample (Feb 2012)
- 10 — Approximate Gasoline Isoconcentration Contour (mg/kg, Sept 2015)
- Area Potentially Requiring Cleanup to Achieve MTCA Method B Soil Cleanup Levels

SITE FEATURES ARE APPROXIMATE.

APPROXIMATE SCALE IN FEET

0 10 20

N



AREA POTENTIALLY REQUIRING CLEANUP TO ACHIEVE MTCA METHOD B CLEANUP LEVELS

DATE:	6-12-18
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179-01
FIGURE NO.	10B

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
VANCOUVER, WA.

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Tables

TABLE 1
Soil Analytical Results - Gasoline, Diesel, and Other Constituents (mg/kg)
Plaid Pantry No. 112
Vancouver, Washington

Location	Date	Sample Depth (feet bgs)	Gasoline	Diesel	Heavy Oil/Lube	Benzene	Toluene	Ethylbenzene	Xylenes	EDB	EDC	MTBE	Naphthalene	Lead	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
Soil Screening Levels																			
MTCA Method A[1] Unrestricted Use			100/30[2]	2,000	2,000	0.03	7	6	9	0.005	NA	0.10	5	250	0.05	0.03	NA	NA	2
MTCA Method B[3]			2,619[4]	NC	NC	18.2	6,400[5]	8,000[5]	16,000[5]	0.5	11	556	1,600[5]	NC	476	12	NC	14.3	160,000[5]
September 2011 Initial Soil Sampling																			
B1-3	09/08/2011	3	24 U	59 U	118 U	0.011 U	0.044 U	0.022 U	0.065 U	*0.022 U*	0.022 U	0.044 U	0.087 U	-	0.022 U	0.022 U	0.44 U	0.022 U	0.022 U
B1-9	09/08/2011	9	22 U	54 U	108 U	0.013 U	0.051 U	0.026 U	0.077 U	*0.026 U*	0.026 U	0.051 U	0.10 U	8.3	0.026 U	0.026 U	0.51 U	0.026 U	0.026 U
B1-15	09/08/2011	15	21 U	52 U	103 U	0.013 U	0.052 U	0.026 U	0.078 U	*0.026 U*	0.026 U	0.052 U	0.10 U	-	0.026 U	0.026 U	0.52 U	0.026 U	0.026 U
B2-3	09/07/2011	3	21 U	53 U	107 U	0.011 U	0.043 U	0.022 U	0.065 U	*0.022 U*	0.022 U	0.043 U	0.087 U	-	0.022 U	0.022 U	0.43 U	0.022 U	0.022 U
B2-9	09/07/2011	9	25 U	25 U[b1]	54 [b1]	0.0088 U	0.035 U	0.018 U	0.053 U	*0.018 U*	0.018 U	0.035 U	0.010 U[d]	-	0.018 U	0.018 U	0.35 U	0.018 U	0.018 U
B2-15	09/09/2011	15	21 U	53 U	105 U	0.0068 U	0.027 U	0.014 U	0.041 U	*0.014 U*	0.014 U	0.027 U	0.054 U	-	0.014 U	0.014 U	0.27 U	0.014 U	0.014 U
B3-3	09/07/2011	3	23 U	57 U	113 U	0.012 U	0.047 U	0.024 U	0.071 U	*0.024 U*	0.024 U	0.047 U	0.094 U	-	0.024 U	0.024 U	0.47 U	0.024 U	0.024 U
B3-9	09/07/2011	9	26 U	64 U	128 U	0.014 U	0.055 U	0.028 U	0.083 U	*0.028 U*	0.028 U	0.055 U	0.11 U	12	0.028 U	0.028 U	0.55 U	0.028 U	0.028 U
B4-3	09/07/2011	3	23 U	57 U	114 U	0.013 U	0.051 U	0.026 U	0.076 U	*0.026 U*	0.026 U	0.051 U	0.10 U	-	0.026 U	0.026 U	0.51 U	0.026 U	0.026 U
B4-9	09/07/2011	9	21 U	53 U	106 U	0.012 U	0.049 U	0.024 U	0.073 U	*0.024 U*	0.024 U	0.049 U	0.097 U	-	0.024 U	0.024 U	0.49 U	0.024 U	0.024 U
B5-3	09/08/2011	3	22 U	56 U	112 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B5-6	09/08/2011	6	**2,900** [a]	>57 [c]	114 U	*0.28 U*	1.1 U	**12**	**74**	*0.56 U*	0.56 U	*1.1 U*	**14**	21	*0.56 U*	*0.56 U*	11 U	0.56 U	0.56 U
B5-9	09/08/2011	9	**4,070** [a]	>54 [c]	108 U	*0.24 U*	0.95 U	**29**	**121**	*0.48 U*	0.48 U	*0.95 U*	**8.8**	11	*0.48 U*	*0.48 U*	9.5 U	0.48 U	0.48 U
B5-12.5	09/08/2011	12.5	**444** [a]	638 [b,c]	50 U[b]	**2.1**	0.13 U	5.3	**21**	*0.063 U*	0.063 U	*0.13 U*	1.1	13	*0.063 U*	*0.063 U*	1.3 U	0.063 U	0.13 U
B5-20	09/08/2011	20	2.9 U[a]	-	-	0.0073 U	0.029 U	0.015 U	0.044 U	*0.015 U*	0.015 U	0.029 U	0.058 U	-	0.015 U	0.015 U	0.29 U	0.015 U	0.015 U
B6-3	09/08/2011	3	22 U	54 U	107 U	0.0096 U	0.038 U	0.019 U	0.057 U	*0.019 U*	0.019 U	0.038 U	0.077 U	-	0.019 U	0.019 U	0.38 U	0.019 U	0.019 U
B6-9	09/08/2011	9	23 U	58 U	116 U	0.0093 U	0.037 U	0.019 U	0.056 U	*0.019 U*	0.019 U	0.037 U	0.074 U	-	0.019 U	0.019 U	0.37 U	0.019 U	0.019 U
B6-12	09/09/2011	12	26 U	64 U	128 U	0.011 U	0.044 U	0.022 U	0.065 U	*0.022 U*	0.022 U	0.044 U	0.087 U	-	0.022 U	0.022 U	0.44 U	0.022 U	0.022 U
February 2012 Abandoned Tank Decommissioning																			
SVE-1/5.0***	02/03/2012	5	22 U	55 U	110 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SVE-1/10.0***	02/03/2012	10	**2,750** [a]	>56.1 [c]	112 U	**0.39**	**48**	**40**	**301**	*0.19 U*	0.16 U	*0.62 U*	**13**	7.6	*0.31 U*	*0.31 U*	6.2 U	0.31 U	0.31 U
PIT S/1.5***	02/14/2012	1.5	23 U	25 U[b]	116 [b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank Sludge***	02/14/2012	NA	**2,410** [a]	172 U[c]	345 U	**0.040** J	1.9	2.7	**19**	*0.090 U*	0.090 U	*0.19 U*	**7.1** [e]	-	*0.094 U*	*0.094 U*	2.8 U	0.094 U	0.094 U
PIT N/2***	02/14/2012	2	21 U	52 U	104 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT N/6***	02/14/2012	6	8.7 U[a]	57 [c]	113 U	0.020 U	0.090 U	0.040 U	0.14	*0.040 U*	0.040 U	0.090 U	0.17 U	-	0.043 U	*0.043 U*	0.87 U	0.043 U	0.043 U
PIT S/2	02/14/2012	2	**1,320** [a]	54 [c]	109 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT S/6	02/14/2012	6	**5,800** [a]	62 [c]	124 U	**3.4**	**23**	**78**	**411**	*0.81 U*	0.81 U	*1.6 U*	**34**	-	*0.81 U*	*0.81 U*	16 U	0.81 U	0.81 U
PIT E/2***	02/14/2012	2	24 U	60 U	120 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT E/6***	02/14/2012	6	**64,200** [a]	62 [c]	123 U	**93**	**3,570**	**1,350**	**9,090**	*6.5 U*	6.5 U	*13 U*	**241**	-	*6.5 U*	*6.5 U*	182 U	6.5 U	*6.5 U*
PIT W/2***	02/14/2012	2	**1,210** [a]	59 [c]	118 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT W/6***	02/14/2012	6	**18,700** [a]	61 [c]	122 U	**26**	**572**	**296**	**1,693**	*1.6 U*	1.6 U	*3.2 U*	**67**	-	*1.6 U*	*1.6 U*	48 U	1.6 U	1.6 U
PIT Floor/6***	02/14/2012	6	**34,900** [a]	**2,660** [b]	81 U[b]	**56**	**1,460**	**609**	**3,605**	*0.81 U*	0.81 U	*1.6 U*	**27** [e]	-	*0.81 U*	*0.81 U*	105 U	0.81 U	0.81 U
August 2012 Soil Sampling																			
B-7/6	08/16/2012	6	**473** [a]	-	-	*0.18 J*	0.86 U	2.1	**12**	*0.011 U*[e]	0.43 U	*0.51 U*[g]	1.7 U	-	*0.21 U*[g]	*0.31 U*[g]	8.6 U	0.43 U	0.43 U
B-7/9	08/16/2012	9	**1,730** [a]	-	-	**0.80**	0.82 U	0.89	1.2 U	*0.25 U*[g]	0.41 U	*0.49 U*[g]	1.6 U	-	*0.21 U*[g]	*0.30 U*[g]	8.2 U	0.41 U	0.41 U
B-7/13	08/16/2012	13	**303** [a]	-	-	**0.15**	0.089 U	0.17	0.25	*0.0089 U*[e]	0.045 U	0.089 U	0.30	-	0.045 U	*0.032 U*[g]	0.89 U	0.045 U	0.045 U
B-7/14	08/16/2012	14	5.8 U[a]	-	-	0.015 U	0.058 U	0.029 U	0.087 U	0.0029 U[e,g]	0.029 U	0.058 U	0.12 U	-	0.029 U	0.029 U	0.58 U	0.029 U	0.029 U
B-8/6	08/16/2012	6	8.4 U[a]	-	-	0.026	0.084 U	0.072	0.30	0.0042 U[e,g]	0.042 U	0.084 U	0.17 U	-	0.042 U	*0.031 U*[g]	0.84 U	0.042 U	0.042 U
B-8/9	08/16/2012	9	7.4 U[a]	-	-	**0.042**	0.074 U	0.037 U	0.25	*0.023 U*[g]	0.037 U	0.074 U	0.15 U	-	0.037 U	0.027 U[g]	0.74 U	0.037 U	0.037 U
B-8/13	08/16/2012	13	8.9 U[a]	-	-	0.022 U	0.089 U	0.044 U	0.13 U	0.0044 U[e,g]	0.044 U	0.089 U	0.18 U	-	0.044 U	*0.032 U*[g]	0.88 U	0.044 U	0.044 U
B-9/3	08/13/2012	3	5.7 U[a]	59 U	117 U	0.0143 U	0.057 U	0.029 U	0.086 U	*0.017 U*[g]	0.029 U	0.057 U	0.11 U	-	0.029 U	0.029 U	0.57 U	0.029 U	0.029 U
B-9/6	08/13/2012	6	5.2 U[a]	-	-	0.013 U	0.052 U	0.026 U	0.078 U	*0.016 U*[g]	0.026 U	0.052 U	0.10 U	-	0.026 U	0.026 U	0.52 U	0.026 U	0.026 U
B-9/9	08/13/2012	9	8.2 U[a]	-	-	0.020 U	0.082 U	0.041 U	0.12 U	*0.025 U*[g]	0.041 U	0.082 U	0.16 U	-	0.041 U	0.030 U[g]	0.82 U	0.041 U	0.041 U
B-9/13	08/13/2012	13	5.9 U[a]	-	-	0.015 U	0.059 U	0.029 U	0.088 U	*0.018 U*[g]	0.029 U	0.059 U	0.12 U	-	0.029 U	0.029 U	0.59 U	0.029 U	0.029 U
B-10/3	08/13/2012	3	5.4 U[a]	55 U	109 U	0.013 U	0.054 U	0.027 U	0.080 U	*0.016 U*[g]	0.027 U	0.054 U	0.11 U	-	0.027 U	0.027 U	0.54 U	0.027 U	0.027 U
B-10/6	08/13/2012	6	9.2 U[a]	-	-	0.023 U	0.092 U	0.046 U	0.14 U	*0.028 U*[g]	0.046 U	0.092 U	0.18 U	-	0.046 U	*0.033 U*[g]	0.92 U	0.046 U	0.046 U
B-10/9	08/13/2012	9	11 U[a]	-	-	0.028 U	0.11 U	0.056 U	0.17 U	*0.034 U*[g]	0.056 U	0.067 U[g]	0.22 U	-	0.028 U[g]	*0.041 U*[g]	1.1 U	0.056 U	0.056 U
B-10/13	08/13/2012	13	4.7 U[a]	-	-	0.012 U	0.047 U	0.024 U	0.071 U	*0.014 U*[g]	0.024 U	0.047 U	0.095 U	-	0.024 U	0.024 U	0.47 U	0.024 U	0.024 U
B-10/18	08/13/2012	18	20 U	51 U	102 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 1
Soil Analytical Results - Gasoline, Diesel, and Other Constituents (mg/kg)
Plaid Pantry No. 112
Vancouver, Washington

Location	Date	Sample Depth (feet bgs)	Gasoline	Diesel	Heavy Oil/Lube	Benzene	Toluene	Ethylbenzene	Xylenes	EDB	EDC	MTBE	Naphthalene	Lead	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
Soil Screening Levels																			
MTCA Method A[1] Unrestricted Use			100/30[2]	2,000	2,000	0.03	7	6	9	0.005	NA	0.10	5	250	0.05	0.03	NA	NA	2
MTCA Method B[3]			2,619[4]	NC	NC	18.2	6,400[5]	8,000[5]	16,000[5]	0.5	11	556	1,600[5]	NC	476	12	NC	14.3	160,000[5]
August 2012 Soil Sampling (continued)																			
B-11/3	08/14/2012	3	13 [a]	56 U	113 U	0.017 U	0.068 U	0.034 U	0.10 U	*0.021 U*[g]	0.034 U	0.068 U	0.14 U	-	0.034 U	0.025 U[g]	0.68 U	0.034 U	0.034 U
B-11/6	08/14/2012	6	**20,400** [a]	62 X	123 U	**3.7**	0.81 U	3.9	1.6 U	*0.25 U*[g]	0.41 U	*0.49 U*[g]	**57**	24	*0.20 U*[g]	*0.30 U*[g]	8.1 U	0.41 U	0.41 U
B-11/9	08/14/2012	9	**1,560** [a]	-	-	**0.47**	0.095 U	0.62	0.14 U	*0.029 U*[g]	0.048 U	0.095 U	1.9	-	0.048 U	*0.035 U*[g]	2.7 U	0.048 U	0.048 U
B-11/11	08/14/2012	11	5.7 U[a]	-	-	0.014 U	0.057 U	0.029 U	0.086 U	0.0029 U[e,g]	0.029 U	0.057 U	0.11 U	3.3	0.029 U	0.029 U	0.57 U	0.029 U	0.029 U
B-11/17	08/14/2012	17	5.6 U[a]	-	-	0.014 U	0.056 U	0.028 U	0.084 U	*0.017 U*[g]	0.028 U	0.056 U	0.11 U	-	0.028 U	0.028 U	0.56 U	0.028 U	0.028 U
B-11/23	08/14/2012	23	20 U	51 U	102 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-11/29	08/14/2012	29	20 U	51 U	102 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-12/3	08/14/2012	3	5.2 U[a]	58 U	116 U	0.013 U	0.052 U	0.026 U	0.078 U	*0.016 U*[g]	0.026 U	0.052 U	0.10 U	-	0.026 U	0.026 U	0.52 U	0.026 U	0.026 U
B-12/6	08/14/2012	6	8.1 U[a]	-	-	0.020 U	0.081 U	0.040 U	0.12 U	*0.024 U*[g]	0.040 U	0.081 U	0.16 U	-	0.040 U	0.029 U[g]	0.81 U	0.040 U	0.040 U
B-12/9	08/14/2012	9	9.6 U[a]	-	-	0.024 U	0.096 U	0.048 U	0.14 U	*0.029 U*[g]	0.048 U	0.096 U	0.19 U	-	0.048 U	*0.035 U*[g]	0.96 U	0.048 U	0.048 U
B-12/13	08/14/2012	13	8.1 U[a]	-	-	0.020 U	0.081 U	0.040 U	0.12 U	*0.025 U*[g]	0.040 U	0.081 U	0.16 U	-	0.040 U	0.029 U[g]	0.81 U	0.040 U	0.040 U
B-12/18	08/14/2012	18	20 U	50 U	100 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-13/3	08/15/2012	3	7.8 U[a]	-	-	0.019 U	0.078 U	0.039 U	0.12 U	*0.024 U*[g]	0.039 U	0.078 U	0.16 U	-	0.039 U	0.028 U[g]	0.78 U	0.039 U	0.039 U
B-13/6	08/15/2012	6	6.5 U[a]	-	-	0.016 U	0.065 U	0.032 U	0.097 U	*0.020 U*[g]	0.032 U	0.065 U	0.13 U	-	0.032 U	0.023 U[g]	0.65 U	0.032 U	0.032 U
B-13/9	08/15/2012	9	6.9 U[a]	-	-	0.017 U	0.069 U	0.034 U	0.10 U	*0.021 U*[g]	0.034 U	0.069 U	0.14 U	-	0.034 U	0.025 U[g]	0.69 U	0.034 U	0.034 U
B-13/13	08/15/2012	13	8.0 U[a]	-	-	0.020 U	0.080 U	0.040 U	0.12 U	*0.024 U*[g]	0.040 U	0.080 U	0.16 U	-	0.040 U	0.029 U[g]	0.80 U	0.040 U	0.040 U
B-14/3	08/15/2012	3	6.6 U[a]	-	-	0.017 U	0.066 U	0.033 U	0.099 U	*0.020 U*[g]	0.033 U	0.066 U	0.13 U	-	0.033 U	0.024 U[g]	0.66 U	0.033 U	0.033 U
B-14/6	08/15/2012	6	7.0 U[a]	-	-	0.018 U	0.070 U	0.035 U	0.11 U	*0.021 U*[g]	0.035 U	0.070 U	0.14 U	-	0.035 U	0.025 U[g]	0.70 U	0.035 U	0.035 U
B-14/9	08/15/2012	9	7.6 U[a]	-	-	0.019 U	0.076 U	0.038 U	0.11 U	*0.023 U*[g]	0.038 U	0.076 U	0.15 U	-	0.038 U	0.027 U[g]	0.76 U	0.038 U	0.038 U
B-14/13	08/15/2012	13	6.2 U[a]	-	-	0.016 U	0.062 U	0.031 U	0.094 U	*0.019 U*[g]	0.031 U	0.062 U	0.13 U	-	0.031 U	0.023 U[g]	0.62 U	0.031 U	0.031 U
B-15/3	08/15/2012	3	6.6 U[a]	-	-	0.017 U	0.066 U	0.033 U	0.099 U	*0.020 U*[g]	0.033 U	0.066 U	0.13 U	-	0.033 U	0.024 U[g]	0.66 U	0.033 U	0.033 U
B-15/6	08/15/2012	6	7.9 U[a]	-	-	0.020 U	0.079 U	0.040 U	0.12 U	*0.024 U*[g]	0.040 U	0.079 U	0.16 U	-	0.040 U	0.029 U[g]	0.79 U	0.040 U	0.040 U
B-15/9	08/15/2012	9	7.6 U[a]	-	-	0.019 U	0.076 U	0.038 U	0.11 U	*0.023 U*[g]	0.038 U	0.076 U	0.15 U	-	0.038 U	0.027 U[g]	0.76 U	0.038 U	0.038 U
B-15/13	08/15/2012	13	6.2 U[a]	-	-	0.016 U	0.062 U	0.031 U	0.093 U	*0.019 U*[g]	0.031 U	0.062 U	0.12 U	-	0.031 U	0.023 U[g]	0.62 U	0.031 U	0.031 U
B-16/6	08/16/2012	6	5.8 U[a]	-	-	0.015 U	0.058 U	0.029 U	0.087 U	0.0030 U[e,g]	0.029 U	0.058 U	0.17 U	11	0.029 U	0.029 U	0.58 U	0.029 U	0.029 U
B-16/9	08/16/2012	9	8.0 U[a]	-	-	0.020 U	0.080 U	0.040 U	1.2 U	*0.024 U*[g]	0.040 U	0.080 U	0.16 U	12	0.040 U	0.029 U[g]	0.80 U	0.040 U	0.040 U
B-16/13	08/16/2012	13	5.9 U[a]	-	-	0.015 U	0.059 U	0.030 U	0.089 U	0.0030 U[e,g]	0.030 U	0.059 U	0.12 U	-	0.030 U	0.030 U	0.59 U	0.030 U	0.030 U
SVE-2/8***	08/16/2012	8	**6,800** [a]	-	-	**14**	**48**	**96**	**436**	*0.27 U*[g]	0.45 U	*0.54 U*[g]	**27**	11	*0.22 U*[g]	*0.32 U*[g]	9.0 U	0.45 U	0.45 U
SVE-2/12***	08/16/2012	12	5.7 U[a]	-	-	0.014 U	0.057 U	0.029 U	0.086 U	0.0029 U[e,g]	0.029 U	0.057 U	0.11 U	2.8	0.029 U	0.029 U	0.57 U	0.029 U	0.029 U
SVE-2/16***	08/16/2012	16	7.0 U[a]	-	-	0.018 U	0.070 U	0.035 U	0.11 U	0.0035 U[e,g]	0.035 U	0.070 U	0.14 U	-	0.035 U	0.025 U[g]	0.70 U	0.035 U	0.035 U
SVE-2/20***	08/16/2012	20	5.9 U[a]	-	-	0.014 U	0.059 U	0.030 U	0.089 U	*0.018 U*[g]	0.030 U	0.059 U	0.12 U	-	0.030 U	0.030 U	0.59 U	0.030 U	0.030 U
SVE-3/5***	08/16/2012	5	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-
SVE-3/8***	08/16/2012	8	**3,820** [a]	-	-	**6.5**	**117**	**70**	**389**	*0.36 U*[g]	0.60 U	*0.72 U*[g]	**16**	10	*0.30 U*[g]	*0.43 U*[g]	12 U	0.60 U	0.60 U
SVE-3/12.5***	08/16/2012	12.5	**216** [a]	-	-	**1.5**	4.8	3.9	**21**	0.0036 U[e,g]	0.36 U	*0.43 U*[g]	1.4 U	-	*0.18 U*[g]	*0.26 U*[g]	7.2 U	0.36 U	0.36 U
SVE-3/14***	08/16/2012	14	6.3 U[a]	-	-	0.016 U	0.063 U	0.031 U	0.094 U	0.0031 U[e,g]	0.031 U	0.063 U	0.13 U	-	0.031 U	0.023 U[g]	0.63 U	0.031 U	0.031 U
SVE-3/20***	08/16/2012	20	6.0 U[a]	-	-	0.015 U	0.060 U	0.030 U	0.089 U	*0.018 U*[g]	0.030 U	0.060 U	0.12 U	-	0.030 U	0.030 U	0.60 U	0.030 U	0.030 U
SVE-4/6***	08/16/2012	6	8.1 U[a]	-	-	0.020 U	0.081 U	0.040 U	0.12 U	0.0040 U[e,g]	0.040 U	0.081 U	0.16 U	-	0.040 U	0.029 U[g]	0.81 U	0.040 U	0.040 U
SVE-4/9***	08/16/2012	9	**97** [a]	-	-	0.018	0.072 U	0.30	0.58	*0.022 U*[g]	0.036 U	0.072 U	1.4	-	0.036 U	0.026 U[g]	0.72 U	0.036 U	0.036 U
SVE-4/11***	08/16/2012	11	**54** [a]	-	-	**0.034**	0.15	0.82	1.5	0.0038 U[e,g]	0.038 U	0.076 U	1.4	-	0.038 U	0.028 U[g]	0.76 U	0.038 U	0.038 U
SVE-4/14***	08/16/2012	14	6.0 U[a]	-	-	0.015 U	0.060 U	0.030 U	0.090 U	0.0030 U[e,g]	0.030 U	0.060 U	0.12 U	-	0.030 U	0.030 U	0.60 U	0.030 U	0.030 U
SVE-5/5***	08/16/2012	5	6.1 U[a]	-	-	0.015 U	0.061 U	0.031 U	0.092 U	0.0031 U[e,g]	0.031 U	0.061 U	0.12 U	7.5	0.031 U	0.022 U[g]	0.61 U	0.031 U	0.031 U
SVE-5/7.5***	08/16/2012	7.5	**793** [a]	-	-	**0.15**	**9.0**	**7.4**	**57**	*0.098 U*[g]	0.16 U	*0.19 U*[g]	**21**	11	*0.081 U*[g]	*0.12 U*[g]	3.2 U	0.16 U	0.16 U
September 2015 Soil Sampling																			
B-16(3)	09/02/2015	3	3.6 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-16(6)	09/02/2015	6	**1,080** J[1,a]	-	-	*0.18 U*	0.73 U	0.37 U	1.1 U	-	-	-	-	-	-	-	-	-	-
B-16(9)	09/02/2015	9	**928** J[1,a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-16(12)	09/02/2015	12	5.8 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-17(3)	09/02/2015	3	7.0 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-17(6)	09/02/2015	6	15 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-17(9)	09/02/2015	9	**9,180** [a]	-	-	*0.19 U*	0.77 U	0.63	1.2 U	-	-	-	-	-	-	-	-	-	-
B-17(12)	09/03/2015	12	5.8 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 1
Soil Analytical Results - Gasoline, Diesel, and Other Constituents (mg/kg)
Plaid Pantry No. 112
Vancouver, Washington

Location	Date	Sample Depth (feet bgs)	Gasoline	Diesel	Heavy Oil/Lube	Benzene	Toluene	Ethylbenzene	Xylenes	EDB	EDC	MTBE	Naphthalene	Lead	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
Soil Screening Levels																			
MTCA Method A[1] Unrestricted Use			100/30[2]	2,000	2,000	0.03	7	6	9	0.005	NA	0.10	5	250	0.05	0.03	NA	NA	2
MTCA Method B[3]			2,619[4]	NC	NC	18.2	6,400[5]	8,000[5]	16,000[5]	0.5	11	556	1,600[5]	NC	476	12	NC	14.3	160,000[5]
September 2015 Soil Sampling (continued)																			
B-18(3)	09/03/2015	3	**4,770** [a]	-	-	*0.66 U*	2.6 U	2.6	3.9 U	-	-	-	-	-	-	-	-	-	-
B-18(6)	09/03/2015	6	**543** [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-18(9)	09/03/2015	9	**7,820** [a]	-	-	*0.19 U*	0.74 U	0.37 U	1.1 U	-	-	-	-	-	-	-	-	-	-
B-18(12)	09/04/2015	12	5.8 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-19(3)	09/03/2015	3	5.8 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-19(6)	09/03/2015	6	8.4 [a]	-	-	0.019 U	0.077 U	0.039 U	0.12 U	-	-	-	-	-	-	-	-	-	-
B-19(9)	09/03/2015	9	7.9 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-19(12)	09/03/2015	12	5.7 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-20(6)	09/03/2015	6	5.9 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-20(9)	09/03/2015	9	**475** J[1,a,f]	-	-	0.018 U	0.073 U	0.036 U	0.11 U	-	-	-	-	-	-	-	-	-	-
B-20(12)	09/03/2015	12	5.7 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Gasoline, Diesel, and Heavy Oil/Lube by Method by NWTPH-HCID unless otherwise noted.

Volatiles by EPA Method 8260B

[1] Model Toxics Control Act (MTCA) Cleanup Amendments, Method A Soil Cleanup Levels for Unrestricted Land Use (WDOE, CLARC Database, August 2015)

[2] Per MTCA, the cleanup value for gasoline is 30 mg/kg if benzene is detected and/or if the sum of the toluene, ethylbenzene, and xylenes is greater than one percent of the gasoline concentration, and 100 mg/kg for all other gasoline mixtures.

[3] Model Toxics Control Act (MTCA) Cleanup Amendments, Method B Soil Cleanup Levels (cancer endpoint) (WDOE, CLARC Database, August 2015)

[4] MTCA modified Method B cleanup value calculated using Ecology's Workbook Tool for Calculating Soil and Groundwater Cleanup Levels (revised December 2007). The median soil concentration shown is based on site-specific analytical data combined with generic default assumptions.

[5] Stated cleanup level is a non-cancer value. No cancer value available.

[a] Gasoline by Method NWTPH-Gx/EPA 8260B

[b] Diesel and Heavy Oil/Lube by Method NWTPH-Dx

[b1] Diesel and Heavy Oil/Lube by Method NWTPH-Dx with silica-gel cleanup

[c] Results in the diesel organics range are due to overlap from a gasoline range product.

[d] Naphthalene analyzed by EPA Method 8270D SIM. No detections were reported for any of the PAH compounds.

[e] 1,2-Dibromoethane (EDB) analyzed by EPA 8260B SIM.

[f] The chromatographic pattern does not resemble the fuel pattern used for quantitation.

[g] The analyte is reported down to the method detection limit. Result is an estimated concentration.

MTBE = Methyl tert-butyl ether

EDB = 1,2-Dibromoethane

EDC = 1,2-Dichloroethane

PCE = Tetrachloroethene

TCE = Trichloroethene

mg/kg = milligrams per kilogram

Bold values indicate concentrations exceed the Method A cleanup level shown.

Italics indicate analytical reporting limit exceeds lowest cleanup level shown.

U = Undetected at method limit shown

J = Estimated value. Result was below the method reporting limit, but above the method detection limit.

J[1] = Data Validation Qualifier. The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

X = The detection in the diesel range is due to overlap from a gasoline range product.

NA = Not Applicable/Not Available

NC = Not Calculated

- = Not analyzed for this parameter

*** Sampling data collected prior to initiation of active SVE treatment in 2013, and is not representative of current soil conditions. See most recent sampling data (September 2015).

TABLE 2
Soil Analytical Results - Polynuclear Aromatic Hydrocarbons (mg/kg)
Plaid Pantry No. 112
Vancouver, Washington

Location	Date	Sample Depth (feet)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Benzo(g,h,i) perylene	Chrysene	Dibenzo(a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-c,d) pyrene	Naphthalene	Phenanthrene	Pyrene
Soil Screening Levels																		
MTCA Method A Unrestricted Land Use[a]			NA	NA	NA	NA	0.1[b]	NA	NA	NA	NA	NA	NA	NA	NA	5	NA	NA
MTCA Method B[c]			4,800	NA	24,000	1.37	0.137[b]	1.37	13.7	NA	137	0.137	3,200	3,200	1.37	1,600	NA	2,400
Tank Sludge	02/14/2012	-	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.24	0.18 U	0.18 U	**7.1** [1]	0.26 [1]	0.37
PIT Floor/6	02/14/2012	6	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	0.51 U	**27**	0.51 U	0.51 U

Notes:
Polynuclear Aromatic Hydrocarbons (PAHs) EPA Method 8270D SIM
[a] Washington Department of Ecology (WDOE), Model Toxics Control Act (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Use, Table 740-1 (August 2015)
[b] Cleanup level shown is for toxic equivalent concentration of all carcinogenic PAHs. (See TABLE 2B)
[c] MTCA Cleanup Amendments, Method B Soil Cleanup Levels (WDOE, CLARC August 2015)
[1] Laboratory Qualifer. Due to matrix interference, this analyte cannot be accurately quantified. The reported result is an estimate.
mg/kg = Milligrams per kilogram
bgs = below ground surface
NA = Not Available
U = Undetected at method reporting limit shown

TABLE 3

Soil Analytical Results - Polychlorinated Biphenyls (mg/kg)

Plaid Pantry No. 112

Vancouver, Washington

Location	Date	Depth (feet bgs)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260
Soil Screening Levels									
MTCA Method A Unrestricted Land Use[a]			NA	NA	NA	NA	NA	NA	NA
MTCA Method B[b]			5.6	NA	NA	NA	NA	0.5	0.5
Tank Sludge	02/14/2012	-	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U

Notes:

Polychlorinated Biphenyls (PCBs) by EPA 8082A.

[a] Model Toxics Control Act (MTCA) Cleanup Amendments, Method A Soil Cleanup Levels for Unrestricted Land Use (CLARC, August 2015)

[b] MTCA Cleanup Amendments, Method B Soil Cleanup Levels (CLARC, August 2015)

mg/kg = Milligrams per kilogram

bgs = below ground surface

NA = Not Available

- = Not analyzed or not known

U = Undetected at method reporting limit shown

TABLE 4

Soil Vapor Analytical Results - Volatile Organic Compounds (µg/m^3)

Plaid Pantry No. 112

Vancouver, Washington

Location	Date	Sample Depth (feet bgs)	Gasoline	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	EDB	EDC	MTBE	Naphthalene	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
Soil Gas Screening Levels MTCA Method B[1]			NA	10.7/32.1	76,200/229,000	15,200/45,700	1,520/4,570[2]	1,520/4,570	0.139/0.417	3.21/9.62	321/962	2.45/7.35	321/962	12.3/37	NA	13.9/41.7	76,200/229,000
August 2012 Soil Vapor Sampling (Current SVE Data Averages for Comparison)																	
SVE-1	2016-2017 Avg	5-10	316,432	**31**	45	22	56	51	-	-	-	**74**	-	-	-	-	-
S-1	08/14/2012	5	-	6.1	50	9.6	37	12	*1.3 U*	0.68 U	0.60 U	**4.4**	3.7	0.90 U	30	3.8	0.92 U
S-2	08/15/2012	5	-	8.7	72	31	120	43	*1.2 U*	0.65 U	0.58 U	**4.4**	32	0.86 U	52	10	0.88 U
S-3	08/15/2012	5	-	3.8	18	2.6	8.2	3.3	*1.2 U*	0.62 U	0.55 U	**4.4**	28	0.82 U	16	8.4	0.83 U
S-4	08/14/2012	5	-	10	130	49	180	66	*1.2 U*	0.63 U	0.56 U	**6.2**	2.5	0.83 U	38	0.98 U	0.84 U
S-5/SVE-3	08/17/2012	5-10	-	**82,000**	**860,000**	**210,000**	**900,000**	**340,000**	*2,000 U*	*1,100 U*	*950 U*	*5,500 U*	**2,200**	*1,400 U*	3,100 U	*1,600 U*	1,400 U
SVE-3	2016-2017 Avg	5-10	14,455	**91**	1,002	49	175	78	-	-	-	**11**	-	-	-	-	-
S-6	08/14/2012	5	-	2.9	11	2.0	6.6	2.6	*1.4 U*	0.74 U	0.66 U	*4.8 U*	1.7	0.98 U	33	1.2 U	1.0 U
S-7	08/16/2012	5	-	7.7	14	3.1	9.0	5.0	*1.3 U*	0.71 U	0.63 U	**19**	2.0	0.94 U	32	1.1 U	0.95 U
S-8/SVE-5	08/17/2012	5-10	-	**7,900**	**220,000**	**86,000**	**340,000**	**160,000**	*1,000 U*	*530 U*	*470 U*	**7,700**	**2,500**	*710 U*	1,600 U	*830 U*	720 U
SVE-5	2016-2017 Avg	5-10	48,834	**103**	620	164	1,034	535	-	-	-	**17**	-	-	-	-	-
S-9	08/15/2012	5	-	2.1	8.1	1.7	6.0	2.5	*1.3 U*	0.66 U	0.59 U	*4.3 U*	6.8	0.88 U	16	1.2	0.89 U
S-10	08/14/2012	5	-	1.7	7.0	1.8	7.1	2.6	*1.1 U*	0.59 U	0.53 U	**6.4**	22	0.78 U	19	0.92 U	0.80 U
S-11	08/14/2012	15	-	1.3	9.7	2.2	6.6	2.1	*1.3 U*	0.69 U	0.62 U	4.5 U	100	0.92 U	12	3.5	1.1
S-12/SVE-2	08/20/2012	15-20	-	**3,900**	22,000	1,400	**25,000**	**17,000**	*120 U*	*65 U*	75	*340 U*	130	17 U	47 U	20 U	17 U
SVE-2	2016-2017 Avg	15-20	461	2.3	9.4	3.1	5.1	3.1	-	-	-	**8.9**	-	-	-	-	-
S-13	08/15/2012	15	-	1.1	11	0.71	3.1	1.2	*1.2 U*	0.65 U	0.58 U	4.2 U	230	0.86 U	5.9	**52**	0.88 U
SVE-4	08/17/2012	15-20	-	**560**	12,000	4,800	**22,000**	**9,300**	*130 U*	*66 U*	59 U	**620**	170	*88 U*	190 U	*100 U*	89 U
SVE-4	2016-2017 Avg	15-20	8,367	4.9	13	6.7	8.6	6.7	-	-	-	**18**	-	-	-	-	-
August-September 2015 Soil Vapor Sampling																	
B-17	09/14/2015	5-10	4,900,000	**120**	120	140	120 U	120 U	-	-	-	-	-	-	-	-	-
B-18	09/14/2015	15-20	17,000	3.9 U	14	5.4 U	7.7	5.4 U	-	-	-	-	-	-	-	-	-
S-14	08/31/2015	5	8,600	**130**	130	25	42	16	-	-	-	-	-	-	-	-	-
S-15	08/31/2015	5	46,000	**500**	880	190	360	180	-	-	-	-	-	-	-	-	-
S-16	08/31/2015	5	5,000	**130**	150	22	35	16	-	-	-	-	-	-	-	-	-
S-17	09/01/2015	4	590 U	4.6 U	8.1	6.3 U	7.3	6.3 U	-	-	-	-	-	-	-	-	-
S-18	09/01/2015	5	580 U	4.5 U	12	6.1 U	12	6.1 U	-	-	-	-	-	-	-	-	-
S-19	09/01/2015	1	540 U	4.2 U	5.9	5.7 U	5.7 U	5.7 U	-	-	-	-	-	-	-	-	-
S-20	09/02/2015	5	540 U	4.5	7.4	5.7 U	7.3	5.7 U	-	-	-	-	-	-	-	-	-
S-21	08/31/2015	5	7,200	**100**	140	35	71	35	-	-	-	-	-	-	-	-	-
S-22	08/31/2015	5	8,600	**140**	220	49	100	44	-	-	-	-	-	-	-	-	-
S-23	08/31/2015	5	2,000	**20**	29	6.5	12	6.2	-	-	-	-	-	-	-	-	-
S-24	08/31/2015	5	520 U	4.7	7.8	5.5 U	5.5 U	5.5 U	-	-	-	-	-	-	-	-	-
S-25	09/02/2015	3.4	600	5.9	31	12	44	13	-	-	-	-	-	-	-	-	-
S-26	09/01/2015	5	560 U	4.4 U	5.2 U	6.0 U	8.4	6.0 U	-	-	-	-	-	-	-	-	-
S-27	09/14/2015	2.3-2.9	540 U	4.2 U	5.0 U	5.8 U	11	7.7	-	-	-	-	-	-	-	-	-
S-28	09/11/2015	1.8-2.2	570 U	4.4 U	5.2 U	6.0 U	6.0 U	6.0 U	-	-	-	-	-	-	-	-	-
S-29	09/11/2015	1.25-1.5	4,600 U[c]	*36 U*[c]	43 U[c]	49 U[c]	49 U[c]	49 U[c]	-	-	-	-	-	-	-	-	-
S-30	09/11/2015	5-10	560 U	4.3 U	5.1 U	5.9 U	5.9 U	5.9 U	-	-	-	-	-	-	-	-	-
S-31	09/11/2015	5-10	740	5.4	16	8.1	33	8.7	-	-	-	-	-	-	-	-	-
S-32	09/02/2015	5	550 U	4.3 U	6.0	5.8 U	5.8 U	5.8 U	-	-	-	-	-	-	-	-	-
June 2016 VIA Tier 1 Assessment																	
S-31	06/22/2016	10	79 U	0.31 U	0.33	0.17 U	0.48	0.27	*0.30 U*	0.16 U	0.70 U	0.51 U	5.3	0.21 U	4.0	0.76	0.21 U
S-33	06/22/2016	5	1,300	**14**	17	3.1	6.7	3.2	*0.28 U*	0.15 U	0.66 U	0.48 U	4.6	0.20 U	35	0.23 U	0.20 U
S-34	06/22/2016	5	1,100	5.6	9.1	7.4	34	17	*0.72 U*	0.38 U	1.7 U	1.2 U	11	0.50 U	53	0.59 U	0.51 U
S-35	06/22/2016	5	790 U	4.6	5.8	21	91	34	*3.0 U*	1.6 U	7.0 U	*5.0 U*	**3,500**	2.1 U	31	2.4 U	2.1 U
S-36	06/22/2016	5	2,700	**12**	17	78	330	120	*0.58 U*	0.31 U	1.4 U	1.0 U	27	0.87	50	0.48 U	0.41 U

TABLE 4

Soil Vapor Analytical Results - Volatile Organic Compounds (µg/m^3)

Plaid Pantry No. 112

Vancouver, Washington

Notes:

[1] Washington Department of Ecology (WDOE), CLARC database values (August 2015).

The numerator value is the screening level for sub-slab (<15 foot depth) soil gas measurements; the denominator value is for deep (>=15 foot depth) soil gas measurements.

[2] Screening levels for m-xylene

[c] Reporting limits were raised due to high levels of non-target analytes.

Volatiles by EPA Method TO-15

MTBE = Methyl tert-butyl ether

EDB = 1,2-Dibromoethane

EDC = 1,2-Dichloroethane

PCE = Tetrachloroethene

TCE = Trichloroethene

µg/m^3 = Micrograms per cubic meter

Bold values indicate concentrations exceed the Method B soil gas screening level for representative sample depth.

Italics indicate analytical reporting limits exceed Method B soil gas screening level for representative sample depth.

U = Undetected at method reporting limit shown

NA = Not Applicable/Not Available

- = not analyzed for this parameter

TABLE 5

Sub-Slab, Indoor, and Outdoor Air Analytical Results - Volatile Organic Compounds (µg/m^3)

Plaid Pantry No. 112

Vancouver, Washington

Location	Date	Sample Location	Sample Depth (feet bgs)	Gasoline	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	EDB	EDC	MTBE	Naphthalene	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
September 2016 Tier 2 VIA - Sub-Slab																		
A-1SS	09/22/2016	Domino's Kitchen	0.5	1,000 U	5.0 J	12	11 U	11 U	11 U	*1.8 U*[6]	2.1 U[6]	35 U	*3.4 U*[6]	23	2.4 U[6]	29 U	2.0 U[6]	13 U
A-2SS	09/22/2016	Plaid Store	0.5	1,200 U	4.7 J	11 U	13 U	13 U	13 U	*2.3 U*[6]	2.6 U[6]	44 U	*4.3 U*[6]	21 U	3.0 U[6]	36 U	2.5 U[6]	20
A-3SS	09/22/2016	Plaid Maintenance Room	0.5	1,500 U	1.7 U[6]	25	16 U	16 U	16 U	*2.8 U*[6]	3.1 U[6]	53 U	*5.2 U*[6]	25 U	3.7 U[6]	43 U	3.0 U[6]	20 U
Median				1,200 U	4.7 J	12	13 U	13 U	13 U	*2.3 U*[6]	2.6 U[6]	44 U	*4.3 U*[6]	23	3.0 U[6]	36 U	2.5 U[6]	20
Mean[8]				1,233 U	3.8 J	16	13 U	13 U	13 U	*2.3 U*[6]	2.6 U[6]	44 U	*4.3 U*[6]	23	3.0 U[6]	36 U	2.5 U[6]	18
MTCA Method B Soil Gas Screening Levels[1]																		
Sub-Slab (<15 foot depth)				NA	10.7	76,200	15,200	1,520[7]	1,520	0.139	3.21	321	2.45	321	12.3	NA	13.9	76,200
September 2016 Tier 2 VIA - Indoor Air																		
A-1	09/21/2016	Domino's Kitchen	-	**530**	**0.93**	1.1	0.16 U	0.32 U	0.16 U	*0.0076 U*[6]	0.043 J	0.66 U	**0.12** J,J[1]	0.25 U	0.20 U	2.7 U	**0.48**	0.20 U
A-2	09/21/2016	Plaid Store	-	**970**	**1.5**	8.5	0.64	1.9	0.78	**0.022** J	0.083 J	0.59 U	**0.33** J,J[1]	0.22 U	0.18 U	2.8	**0.46**	0.18 U
A-3	09/21/2016	Plaid Maintenance Room	-	**980**	**1.4**	7.5	0.58	1.8	0.73	*0.0071 U*[6]	0.074 J	0.62 U	**0.36** J,J[1]	0.23 U	0.18 U	3.2	**0.54**	0.19 U
Median				970	**1.4**	7.5	0.58	1.8	0.73	*0.0076 U*[6]	0.074 J	0.62 U	**0.33** J	0.23 U	0.18 U	2.8	**0.48**	0.19 U
Mean[8]				827	**1.3**	5.7	0.46	1.3	0.56	**0.012** J	0.067 J	0.62 U	**0.27** J	0.23 U	0.19 U	2.9	**0.49**	0.19 U
MTCA Method B Indoor Air Cleanup Levels[2]				140 [9]	0.321	2,290	457	45.7[7]	45.7	0.00417	0.0962	9.62	0.0735	9.62	0.37	2,290	0.417	2,290
US EPA Indoor Air Background Levels[3]																		
Range of 50th Percentile (2011)				116-594[9]	<0.05-4.7[10]	4.8-24	1-3.7	1.5-14	1.1-3.6	NA	<0.08[10]	0.025-3.5	0.18-1.7[9]	<0.03-2.2[10]	<0.02-1.1[10]	NA	<0.15-0.68[10]	<0.12-5.9[10]
Median (50th Percentile) (2012)				NA	2.0	12	3.0	7.5[3a]	7.5[3a]	NA	NA	-	NA	1.5	0.8	NA	-	1.0
Max				NA	26	87	15	100[3a]	100[3a]	NA	NA	1.8	NA	1,896	850	NA	1	140
September 2016 Tier 2 VIA - Outdoor Air																		
A-4	09/21/2016	Domino's Roof	-	72 U	0.28 U	13	1.9	8.6	3.2	*0.0073 U*[6]	0.058 J	0.63 U	0.065 J,J[1]	0.31	0.29	*2.6 U*	**0.50**	0.19 U
A-5	09/21/2016	Plaid Roof	-	70 U	0.27 U	0.60 J[1]	0.15 U	*0.24 J*	0.15 U	*0.0071 U*[6]	0.049 J	0.62 U	**0.10** J,J[1]	0.23 U	0.0072 U	*2.5 U*	**0.50**	0.19 U
A-6	09/21/2016	Domino's Entry	-	64	0.30 J[1]	9.2	0.52	2.0	0.80	*0.0068 U*[6]	0.094 J	0.59 U	**0.84** J[1]	0.22 U	0.067 J	5.3	**0.48**	0.18 U
A-7	09/21/2016	Plaid Entry	-	67 U	**1.2**	3.6	0.38	1.2	0.42	*0.0068 U*[6]	0.046 J	0.59 U	**0.17** J,J[1]	0.22 U	0.0069 U	*2.4 U*	**0.50**	0.18 U
A-8	09/21/2016	Western Property Boundary	-	110	0.30	18	1.0	4.5	1.3	*0.0074 U*[6]	0.070 J	0.64 U	**0.079** J,J[1]	*0.24 U*	0.048 J	*2.6 U*	**0.47**	0.20 U
A-9	09/21/2016	Roadway Intersection	-	**350**	**3.3**	13	1.2	4.1	1.3	*0.0073 U*[6]	0.054 J	0.63 U	**0.27** J,J[1]	*0.24 U*	0.045 J	*2.6 U*	**0.49**	0.19 U
Median				71	0.30	11	0.76	3.1	1.1	*0.0072 U*[6]	0.056 J	0.63 U	**0.14** J	0.235	0.05	2.6	**0.50**	0.19 U
Mean[8]				122	**0.94**	10	0.86	3.4	1.2	*0.0071 U*[6]	0.062 J	0.62 U	**0.25** J	0.243	0.08	3.0	**0.49**	0.19 U
US EPA Outdoor Background Levels[4]																		
Median				NA	0.385	NA	NA	0.17	0.17	0.192	0.081	NA	NA	0.237	0.161	NA	2.7	NA
Max				NA	4.8	NA	NA	0.17	0.17	3.85	2.0	NA	NA	3.4	2.7	NA	2.7	NA
Vancouver Air Toxics Monitoring Results[5]																		
Annual Average Concentration				NA	0.98[a]	3.45	NA	NA	NA	NA	NA	NA	0.0019[a]	NA	NA	0.46	NA	NA

TABLE 5

Sub-Slab, Indoor, and Outdoor Air Analytical Results - Volatile Organic Compounds (µg/m^3)

Plaid Pantry No. 112

Vancouver, Washington

Notes:

[1] Washington Department of Ecology (WDOE), Model Toxics Control Act (MTCA) Soil Gas Screening Levels from CLARC Database (August 2015)

[2] WDOE, MTCA Indoor Air Cleanup Levels from CLARC Database (August 2015)

[3] United States Environmental Protection Agency (US EPA) Vapor Intrusion Database Table: Preliminary Evaluation of Attenuation Factors. Table 2 (2011) and Table 3 (March 16, 2012); [3a] Screening value shown is for Xylenes.

[4] US EPA National Scale Air Toxics Assessment Table 1-A list of background concentration values used in the 1999 National-Scale Assessment by pollutant (revised 2006 and 2009)

[5] Southwest Clean Air Agency, Vancouver 2005 Ambient Air Toxics Monitoring Review Table 4-1 (January 26, 2007)

[6] Analyte was reported down to the method detection limit.

[7] Screening level for m-xylene shown

[8] Mean values calculated using 100% of method reporting limit for non-detect values.

[9] WDOE, Petroleum Vapor Intrusion (PVI): Updated Screening Levels, Cleanup Levels, and Assessing PVI Threats to Future Buildings, Table 1 (January 2018)

[10] USEPA Vapor Intrusion Database Table: Preliminary Evaluation of Attenuation Factors, Table 2 (2011). Lowest reporting limit (RL) from RL Range column used in place of RL from Range of 50th Percentile.

Volatile Organic Compounds analyzed by EPA Method TO-15

[a] Not enough valid sampling days for a statistically meaningful average.

EDB = 1,2-Dibromoethane

EDC = 1,2-Dichloroethane

MTBE = Methyl tert-butyl ether

PCE = Tetrachloroethene

TCE = Trichloroethene

µg/m^3 = Micrograms per cubic meter

bgs = below ground surface

U = Undetected at method reporting limit shown

J = Laboratory Qualifier. The reported value was detected below the reporting limit, but above the detection limit of the instrument. Value should be considered an estimate.

J^1 = Data Validation Qualifier. The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample. See data validation report for further explanation.

NA = Not Applicable/Not Available

Bold values indicate concentrations exceed the MTCA Method B cleanup level.

Italics indicate analytical reporting limits exceed MTCA Method B cleanup level.

TABLE 6

Corrected Indoor Air Results (µg/m^3)

Plaid Pantry No. 112

Vancouver, Washington

	Gasoline	Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	EDB	EDC	MTBE	Naphthalene	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
September 2016 Tier 2 VIA - Corrected Indoor Air Concentrations															
Mean Indoor Air Concentration (uncorrected)	**827**	**1.3**	5.7	0.46	1.3	0.56	**0.012** J	0.067 J	0.62 U	**0.27** J	0.24 U	*0.19 U*	2.9	**0.49**	0.19 U
Correction Factor[1]	122	0.94	10	0.86	3.5	1.2	0.0071 U[5]	0.062 J	0.62 U	0.25 J	0.24	0.20	3.0	0.49	0.19 U
Corrected Indoor Air Concentration[2]	**705**	**0.36**	-3.9	-0.40	-2.2	-0.64	**0.0049**	0.0052	0.0067	0.016	-0.0033	-0.012	-0.10	0.00	0.0017
MTCA Method B Indoor Air Cleanup Levels[3]	140[7]	0.321	2,290	457	45.7[6]	45.7	0.00417	0.0962	9.62	0.0735	9.62	0.37	2,290	0.417	2,290
US EPA Indoor Air Screening Levels[4]															
Range of 50th Percentile (2011)	116-594[7]	<0.05-4.7[8]	4.8-24	1-3.7	1.5-14	1.1-3.6	NA	<0.08[8]	0.025-3.5	0.18-1.7[7]	<0.03-2.2[8]	<0.02-1.1[8]	NA	<0.15-0.68[8]	<0.12-5.9[8]
Median (50th Percentile) (2012)	NA	2.0	12	3.0	7.5[4a]	7.5[4a]	NA	NA	-	NA	1.5	0.8	NA	-	1.0
Max	NA	26	87	15	100[4a]	100[4a]	NA	NA	1.8	NA	1,896	850	NA	1	140

Notes:

[1] Based on the mean of all outdoor samples collected on 9/21/2016

[2] Corrected indoor air concentration based on subtracting outdoor air concentration (Correction Factor) from average (mean) indoor air concentration, per Ecology draft Vapor Intrusion Guidance, October 2009. Negative value indicates outdoor air concentration > indoor air concentration.

[3] Washington Department of Ecology (WDOE), Model Toxics Control Act (MTCA) Indoor Air Screening Levels from CLARC Database (August 2015)

[4] United States Environmental Protection Agency (US EPA) Vapor Intrusion Database Table: Preliminary Evaluation of Attenuation Factors. Table 2 (2011) and Table 3 (March 16, 2012); [4a] Screening value shown is for Xylenes.

[5] Analyte was reported down to the method detection limit.

[6] Screening level for m-xylene shown

[7] WDOE, Petroleum Vapor Intrusion (PVI): Updated Screening Levels, Cleanup Levels, and Assessing PVI Threats to Future Buildings, Table 1 (January 2018)

[8] USEPA Vapor Intrusion Database Table: Preliminary Evaluation of Attenuation Factors, Table 2 (2011). Lowest reporting limit (RL) from RL Range column used in place of RL from Range of 50th Percentile.

Volatile Organic Compounds analyzed by EPA Method TO-15

EDB = 1,2-Dibromoethane

EDC = 1,2-Dichloroethane

MTBE = Methyl tert-butyl ether

PCE = Tetrachloroethene

TCE = Trichloroethene

µg/m^3 = Micrograms per cubic meter

U = Undetected at method reporting limit shown

J = Laboratory Qualifier. The reported value was detected below the reporting limit, but above the detection limit of the instrument. Value should be considered an estimate.

NA = Not Applicable/Not Available

Bold values indicate concentrations exceed Ecology cleanup level.

Italics indicate analytical reporting limits exceed MTCA Method B cleanup level.

TABLE 7

Water Analytical Results - Gasoline and Related Constituents (ug/L)

Plaid Pantry No. 112

Vancouver, Washington

Location	Date	Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	EDB	EDC	MTBE	Naphthalene
S-28	12/23/2015	200 U	0.40 U	2.0 U	1.0 U	3.0 U	-	-	-	-
SVE-5	11/24/2015	100 U	0.20 U	1.0 U	0.50 U	1.5 U	*0.50 U*	*0.50 U*	1.0 U	2.0 U
	12/11/2015	100 U	0.20 U	1.0 U	0.50 U	1.5 U	-	-	-	-
	12/23/2015	100 U	0.20 U	1.0 U	0.50 U	1.5 U	-	-	-	-
	01/26/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	-	-	-	-
	02/19/2016	100 U	0.20 U	1.0 U	0.50 U	1.5 U	-	-	-	-
MTCA Cleanup Levels[1]										
Method A		800/1,000[2]	5.0	1,000	700	1,000	0.01	5.0	20	160

Notes:

[1] Washington Department of Ecology (WDOE), Model Toxics Control Act (MTCA) Cleanup Amendments, Groundwater Cleanup Levels (CLARC Database, August 2015)

[2] MTCA Method A cleanup level for gasoline is 1,000 ug/L if no benzene is detected; cleanup level is 800 ug/L if benzene is detected

Gasoline by Method NWTPH-Gx

Volatile Compounds by EPA Method 8260B (except as otherwise noted)

ug/L = Micrograms per liter

Italics indicate analytical reporting limit exceeds lowest screening level shown.

EDB = 1,2-Dibromoethane

EDC = 1,2-Dichloroethane

U = Undetected at method limit shown

Appendix A

PNG ENVIRONMENTAL, INC.

MEMORANDUM

To: Plaid #112 Project File

From: Martin Acaster

Date: July 29, 2011

Subject: Historic Information Review Summary

PNG has reviewed information regarding the Plaid #112 site including aerial photographs, a city directory abstract, and City of Vancouver building records for the property. This memorandum summarizes the findings of this site historical information review.

AERIAL PHOTOGRAPHS

PNG acquired aerial photographs of the Plaid #112 site vicinity from Environmental Data Resources (EDR) and the Washington Department of Transportation (WDOT). EDR provided aerial photographs dated 1951, 1955, 1960, 1963, 1970, 1975, 1984, 1986, 1990, 1994, 2000, 2005 and 2006. WDOT provided photographs dated 1955, 1966, 1970, 1978, and 1984. In general, the aerial photographs show two stages of commercial development at the Plaid #112 site. Aerial photographs for 1955, 1966, 1978, and 1984 are attached as Figures 1 through 4.

The first known development of the property (visible in aerial photographs from 1951 through 1978) consisted of a commercial building originally consisting of three conjoined structures. The primary structure is a square-shaped building located in the center of the property parcel. This building appears to have an attached canopy that extends towards the southeast corner of the property. Smaller satellite structures are attached to the northeast and southwest corners of the primary building. In photos prior to 1963 the northwest corner of the property appears to be covered with vegetation and the southeast corner of the property appears to be paved parking and driveways. The 1963 aerial photograph shows the construction of an addition to the northwest corner of the building with additional parking and driveway areas to the north and west of the expanded structure. No additional changes to this commercial structure are evident in aerial photographs dated 1966, 1970, 1975 and 1978.

The second stage of development at the site (visible in aerial photographs from 1984 through 2006) consists of the existing rectangular commercial building currently occupied by Plaid and a Domino's pizza shop. Aerial photographs dated 1984 through 2006 all show the current site features including the building, pump island canopy, concrete underground storage tank (UST) pad, and asphalt paved parking areas to the south of the building.

CITY DIRECTORY ABSTRACT

PNG acquired a city directory abstract report from EDR (Attachment A). The city directory abstract includes occupant listings for the Plaid #112 site under three site addresses for the years 1958, 1965, 1971, 1977, 1983, and 2000. The current Plaid site address is 1002 W Fourth Plain Boulevard. The current Domino's site address is 1006

W Fourth Plain Boulevard. According to Clark County GIS database a third address (2600 Kauffman Avenue) was historically included within the property boundaries and generated occupant listings in the city directory abstract. Plaid Pantry is the only listed occupant of the 1002 W Fourth Plain Boulevard address and was only listed in the 2000 directory. Occupants of the 1006 W Fourth Plain Boulevard address include a Furlong Barber Shop in 1958, Standard Dairy in 1965, a thrift/re-sale store in 1971 and 1977 and Domino's in 2000. The address was listed as vacant in 1983. Occupants of the 2600 Kauffman Avenue address include Anderson Garage auto repair and Champion Midway Service gasoline station in 1958, Anderson Garage and Midway Eagle Service in 1965, and Vancouver Auto Upholstery in 1971 and 1977. The 2600 Kauffman Avenue address was not listed in 1983 and 2000 directories.

CITY OF VANCOUVER BUILDING RECORDS

PNG reviewed City of Vancouver building records for the Plaid #112 property. Site addresses included in the search were 1002 W Fourth Plain, 1006 W Fourth Plain, and 2600 Kauffman Avenue. Building records for the three site addresses range from November 1954 through May 1985. The records also indicate that W Fourth Plain Boulevard was previously W 26th Street. Records from 1954, 1955, and 1960 identify the Perkins Oil Company as the site occupant. A 1962 building permit is for the construction of the Standard Dairy, presumably the new building addition visible in the 1963 aerial photograph. 1967 electrical permits indicate Daisy Dry Cleaners as an occupant of the 2600 Kauffman Avenue address and Standard Dairy as the occupant of the 1006 W Fourth Plain Boulevard address. A 1968 plumbing permit identifies Anderson Garage Auto Repair as the 2600 Kauffman Avenue occupant. A 1969 certificate of occupancy identifies a new site address 2602 Kauffman Avenue occupied by an auto detailing business. 1970 certificates of occupancy identify the Perkins Oil Company as the property owner and operator of a gasoline service station and a second hand store as an additional site occupant. A 1971 certificate of occupancy identifies a wood furniture refinishing shop as the occupant of the 1006 W Fourth Plain Boulevard (26th Street) address. Records from 1982 through 1985 show redevelopment of the property and Plaid and Domino's as site occupants.

SUMMARY

Each of the site historic information sources provides information that is consistent with two stages of development at the site. The first known site development appears to be a commercial building with as many as four tenant spaces. Site occupants include a gasoline service station, an auto repair shop, an auto detailing and upholstery shop, a dry cleaner, a barber shop, a dairy, a wood furniture refinishing shop, and a second hand store. The service station/vehicle maintenance shops, wood furniture refinishing shop, and dry cleaners all represent potential sources of contaminants at the Plaid #112 site. These historic uses of the site should be considered during site investigation and the selection of analytical methods for samples collected at the site.

Attachments: Figure 1 – 1955 Aerial Photograph
Figure 2 – 1966 Aerial Photograph
Figure 3 – 1978 Aerial Photograph
Figure 4 – 1984 Aerial Photograph
Attachment A – City Directory Abstract

FIGURES

1955 Aerial Photo

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PNG ENVIRONMENTAL, INC. 6665 SW Hampton St., Ste. 101 TEL (503) 620-2387 Tigard, OR 97223 FAX (503) 620-2977	DATE: 10-19-11 FILE NAME: 1179-01 DRAWN BY: JJT APPROVED BY: PE	PLAID PANTRY #112 1002 W. FOURTH PLAIN BLVD VANCOUVER, WASHINGTON	1955 AERIAL SITE PHOTO	Project No. 1179-01 Figure No. 1

1966 Aerial Photo

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PNG ENVIRONMENTAL, INC.
6665 SW Hampton St., Ste. 101
Tigard, OR 97223
TEL (503) 620-2387
FAX (503) 620-2977

DATE: 10-19-11
FILE NAME: 1179-01
DRAWN BY: JJT
APPROVED BY: PE

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD
VANCOUVER, WASHINGTON

1966 AERIAL SITE PHOTO

Project No. 1179-01
Figure No. 2

1978 Aerial Photo

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PNG ENVIRONMENTAL, INC. 6665 SW Hampton St., Ste. 101 TEL (503) 620-2387 Tigard, OR 97223 FAX (503) 620-2977	DATE: 10-19-11 FILE NAME: 1179-01 DRAWN BY: JJT APPROVED BY: PE	PLAID PANTRY #112 1002 W. FOURTH PLAIN BLVD VANCOUVER, WASHINGTON	1978 AERIAL SITE PHOTO	Project No. 1179-01 Figure No. 3

1984 Aerial Photo

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PNG ENVIRONMENTAL, INC. 6665 SW Hampton St., Ste. 101 TEL (503) 620-2387 Tigard, OR 97223 FAX (503) 620-2977	DATE: 10-19-11 FILE NAME: 1179-01 DRAWN BY: JJT APPROVED BY: PE	PLAID PANTRY #112 1002 W. FOURTH PLAIN BLVD VANCOUVER, WASHINGTON	1984 AERIAL SITE PHOTO	Project No. 1179-01 Figure No. 4

Attachment A
City Directory Abstract

Plaid #112
1002 W Fourth Plain Boulevard
Vancouver, WA 98660

Inquiry Number: 3122904.2
July 15, 2011

The EDR-City Directory Abstract

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2000	Polk's City Directory	X	X	X	-
1983	Polk's City Directory	-	X	X	-
1977	Polk's City Directory	-	X	X	-
1971	Polk's City Directory	-	X	X	-
1965	Polk's City Directory	-	X	X	-
1958	Polk's City Directory	-	X	X	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

1002 W Fourth Plain Boulevard
Vancouver, WA 98660

FINDINGS DETAIL

Target Property research detail.

Year	*Uses*	*Source*
2000	Plaid Pantry (groc)	Polk's City Directory

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

Kauffman Ave

2518 Kauffman Ave

Year	Uses	Source
2000	Caponey Tires	Polk's City Directory
	Used Tire Place	Polk's City Directory
1983	Kraemers Arco	Polk's City Directory
1977	Lyles Hancock Service (gas sta)	Polk's City Directory
1971	Lyles Hancock Service (gas sta)	Polk's City Directory
1965	Hodge's Hancock Service (gas sta)	Polk's City Directory
1958	Eli's Stop & Save (gas sta)	Polk's City Directory

2600 Kauffman Ave

Year	Uses	Source
1977	Vancouver Auto Upholstery	Polk's City Directory
1971	Vancouver Auto Upholstery	Polk's City Directory
1965	Anderson Garage (auto rpr)	Polk's City Directory
	Midway Eagle Service (gas sta)	Polk's City Directory
1958	Anderson Garage (auto rpr)	Polk's City Directory
	Champion Midway Service (gas sta)	Polk's City Directory

2601 Kauffman Ave

Year	Uses	Source
1977	Kauffman Thriftway	Polk's City Directory
1971	Pay N Takit Stores (groc)	Polk's City Directory
1965	Pay N Takit Stores (groc)	Polk's City Directory
1958	Kramers Mkt (groc)	Polk's City Directory

2610 Kauffman Ave

Year	Uses	Source
2000	Hidden Brick Co	Polk's City Directory
1983	Hidden Brick Co (mfr)	Polk's City Directory
1977	Hidden Brick Co (mfr)	Polk's City Directory
1971	Hidden Brick Co (mfr)	Polk's City Directory
1965	Hidden Brick Co (mfr)	Polk's City Directory
1958	Hidden Brick Co (mfr)	Polk's City Directory

FINDINGS

W Fourth Plain Boulevard

W Fourth Plain Boulevard

Year	Uses	Source
2000	No addresses listed between 815 and 1002	Polk's City Directory
1983	No addresses listed between 817 and 901	Polk's City Directory
1977	No addresses listed between 815 and 1006	Polk's City Directory
1971	No addresses listed between 815 and 1006	Polk's City Directory

1006 W Fourth Plain Boulevard

Year	Uses	Source
2000	Dominos Pizza	Polk's City Directory
1983	Vacant	Polk's City Directory
1977	Re-Sale Store (used clo)	Polk's City Directory
1971	Thrift Store	Polk's City Directory

1008 W Fourth Plain Boulevard

Year	Uses	Source
1983	Vacant	Polk's City Directory
1977	Central Personnel Employment Agcy	Polk's City Directory

1009 W Fourth Plain Boulevard

Year	Uses	Source
2000	Residential	Polk's City Directory
1983	Residential	Polk's City Directory
1977	Vacant	Polk's City Directory
1971	Vacant	Polk's City Directory

1011 W Fourth Plain Boulevard

Year	Uses	Source
2000	Residential	Polk's City Directory
1983	Residential	Polk's City Directory
1977	Residential	Polk's City Directory
1971	Residential	Polk's City Directory

901 W Fourth Plain Boulevard

Year	Uses	Source
1983	Kauffman Thriftway (groc)	Polk's City Directory

FINDINGS

W Fourth Plain Boulevard (W 26th)

W Fourth Plain Boulevard (W 26th)

Year	*Uses*	*Source*
1965	No addresses listed between 815 and 1006	Polk's City Directory
1958	No addresses listed between 817 and 1006	Polk's City Directory

1006 W Fourth Plain Boulevard (W 26th)

Year	*Uses*	*Source*
1965	Standard Dairy	Polk's City Directory
1958	Furlong Barber Shop	Polk's City Directory

1009 W Fourth Plain Boulevard (W 26th)

Year	*Uses*	*Source*
1965	Vacant	Polk's City Directory
1958	Residential	Polk's City Directory

1011 W Fourth Plain Boulevard (W 26th)

Year	*Uses*	*Source*
1965	Residential	Polk's City Directory
1958	Residential	Polk's City Directory

FINDINGS

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
1002 W Fourth Plain Boulevard	1983, 1977, 1971, 1965, 1958

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

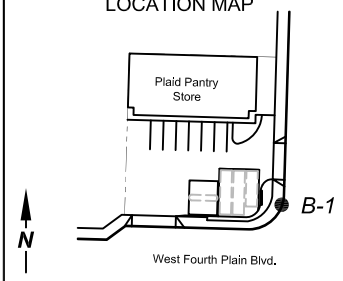
The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
W Fourth Plain Boulevard	No Years Found
W Fourth Plain Boulevard (W 26th)	No Years Found
1006 W Fourth Plain Boulevard	No Years Found
1006 W Fourth Plain Boulevard (W 26th)	No Years Found
1008 W Fourth Plain Boulevard	1971
1008 W Fourth Plain Boulevard (W 26th)	1965, 1958
1009 W Fourth Plain Boulevard	No Years Found
1009 W Fourth Plain Boulevard (W 26th)	No Years Found
1011 W Fourth Plain Boulevard	No Years Found
1011 W Fourth Plain Boulevard (W 26th)	No Years Found
2518 Kauffman Ave	No Years Found
2600 Kauffman Ave	No Years Found
2601 Kauffman Ave	No Years Found
2610 Kauffman Ave	No Years Found
901 W Fourth Plain Boulevard	1977, 1971
901 W Fourth Plain Boulevard (W 26th)	1965, 1958

Appendix B

PNG ENVIRONMENTAL, INC.
6665 SW Hampton St., Suite 101
Tigard, Oregon 97223
TEL (503) 620-2387
FAX (503) 620-2977

LOCATION MAP



WELL/BORING NUMBER: B-1

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: C. Hultgren
REVIEWED BY: ---
DATE: 9-8-11

SAMPLE INFORMATION

SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL	STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)
										CONCRETE, 0-0.4', gray, artificially cemented coarse sand with gravel.
									ML	SILT (ML), 0.4-8', brown, fine-grained silt, low plastic fines, medium dense, dry, no odor.
HA		3.4			B1-3					
						5				
HA		3.2			B1-7					
HA		3.1			B1-9					
						10			ML	Sandy SILT (ML), 8-13.5', brown, fine-grained silt with increasing fine sand content, low plasticity fines, medium dense, moist, no odor.
									GM	Silty GRAVEL (GM), 13.5-15', fine to subround to subangular coarse gravel up to 1" diameter, 20 percent fines, damp, no odor.
MC		4.3			B1-15	15			GW	Sandy GRAVEL (GW), 15-28', fine coarse subrounded gravels up to 1.5" diameter, sand is fine to coarse, trace fines, well graded, moist, no odor.
MC		5.0			B1-20	20				
MC		2.5			B1-25	25				
									SW	Gravelly SAND (SW), 25-40', fine to coarse sand, with <50 percent fine subrounded gravel, <5 percent fines, no odor.
MC		4.5			B1-30	30				
MC		4.5			B1-34					Note: @ 34' Moist, no odor.

BOREHOLE/WELL CONSTRUCTION DETAIL

Backfill borehole with hydrated bentonite and capped with black dyed concrete.

Air knife from 0' to 10' bgs.

Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-8-11
DRILLING END TIME: 9-8-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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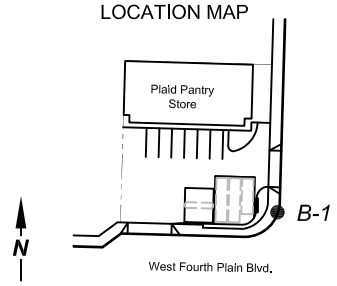
PNG ENVIRONMENTAL, INC.
6665 SW Hampton St., Suite 101
Tigard, Oregon 97223
TEL (503) 620-2387
FAX (503) 620-2977

LOCATION MAP



WELL/BORING NUMBER: B-1

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: Craig Hultgren
REVIEWED BY: ---
DATE: 9-8-11

SAMPLE INFORMATION

SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL	STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)
MC		3.8			B1-37				SW	Note: @ 37' Moist but not wet.
MC		2.4			B1-40	40				Total Boring Depth @ 40' bgs.
										Install temporary well in boring. Screen from 25' to 40' bgs (dry). Groundwater not encountered.
						45				
						50				
						55				
						60				
						65				

BOREHOLE/WELL CONSTRUCTION DETAIL

Backfill borehole with hydrated bentonite and capped with black dyed concrete.

Air knife from 0' to 10' bgs.

Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-8-11
DRILLING END TIME: 9-8-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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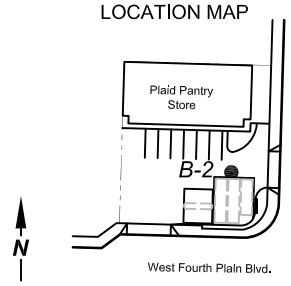
PNG ENVIRONMENTAL, INC.
6665 SW Hampton St., Suite 101
Tigard, Oregon 97223
TEL (503) 620-2387
FAX (503) 620-2977

LOCATION MAP



WELL/BORING NUMBER: B-2

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: C. Hultgren
REVIEWED BY: ---
DATE: 9-7-11

SAMPLE INFORMATION

SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL	STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)
						0				ASPHALT., 0-0.5'.
									GP	GRAVEL, 0.5-1', road base.
									ML	SILT 1-15', brown, fine-grained silt, trace fine sand, low plastic fines, micaceous, medium dense, dry, no odor.
HA		3.5			B2-3					
						5				
HA		2.7			B2-6					
									ML	Note: @ 9' SILT as above, local trace, fine subrounded gravel up to 0.5" diameter.
HA		3.4			B2-9					
						10				
				▽						Note: Moist to wet from 12' to 13'.
MC		3.1			B2-15	15			GW	Sandy GRAVEL (GW), 15-20', brown to gray, fine to coarse subrounded gravel, fine to coarse sand, well graded, moist to damp, no odor.
MC		3.2			B2-20	20			SW	Gravelly SAND (SW), 20-35', generally as above with increasing sand content to >50 percent, decrease fines content to <5 percent.
MC					B2-25	25				
MC		3.5			B2-30	30				Note: @ 30' Gravel up to 1.25" diameter.

BOREHOLE/WELL CONSTRUCTION DETAIL

Backfill borehole with hydrated bentonite and capped with black dyed concrete.

Air knife from 0' to 10' bgs.

Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-7-11
DRILLING END TIME: 9-7-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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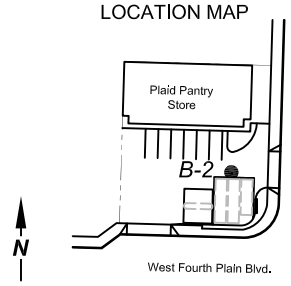
PNG ENVIRONMENTAL, INC.
6665 SW Hampton St., Suite 101
Tigard, Oregon 97223
TEL (503) 620-2387
FAX (503) 620-2977

LOCATION MAP



WELL/BORING NUMBER: B-2

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: Craig Hultgren
REVIEWED BY: ---
DATE: 9-7-11

SAMPLE INFORMATION								STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)	BOREHOLE/WELL CONSTRUCTION DETAIL
SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL				
MC		1.8			B2-35				SP/SM	SAND with SILT (SP/SM), 35-40', brown, predominately fine sand, varying amounts of fines from 15 to 20 percent, moist, no odor.	Backfill borehole with hydrated bentonite and capped with black dyed concrete. Air knife from 0' to 10' bgs. Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).
MC		3.3			B2-40	40				Total Boring Depth @ 40' bgs. Install temporary well in boring. Screen from 25' to 40' bgs (dry). Groundwater not encountered.	
						45					
						50					
						55					
						60					
						65					

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-7-11
DRILLING END TIME: 9-7-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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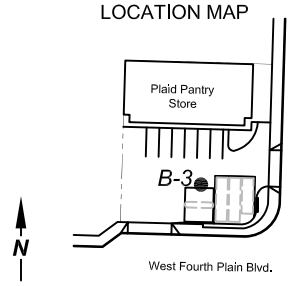
PNG ENVIRONMENTAL, INC.
6665 SW Hampton St., Suite 101
Tigard, Oregon 97223
TEL (503) 620-2387
FAX (503) 620-2977

LOCATION MAP



WELL/BORING NUMBER: B-3

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: C. Hultgren
REVIEWED BY: ---
DATE: 9-7-11

SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL	STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)
										ASPHALT, 0-0.8'.
									ML	SILT (ML), 0.8-12.5', brown, trace fine sand, low plastic fines, slightly micaceous, damp, no odor.
HA		4.1			B3-3					
						5				
HA		3.9			B3-6					
HA		2.6			B3-9					
						10				Note: Slight increase in fine sand content from 9' bgs.
				▽						Note: Local wet zone from 12' to 12.5'.
		4.9							SW	Gravelly SAND (SW), 12.5-33', gray to brown, mostly fine to coarse sand, some fine to coarse subrounded gravel up to 1.5" diameter, well sorted, moist, no odor.
MC		3.6			B3-15	15				
MC		4.2			B3-20	20				Note: @ 20' Local increased gravel content, gravel up to 1.25" diameter.
MC		3.5			B3-25	25				Note: From 25' predominately coarse sand and fine subrounded gravels, moist, no odor.
MC		4.0			B3-30	30				
		4.1							SP/ SM	

BOREHOLE/WELL CONSTRUCTION DETAIL

Backfill borehole with hydrated bentonite and capped with black dyed concrete.

Air knife from 0' to 9.5' bgs.

Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-7-11
DRILLING END TIME: 9-7-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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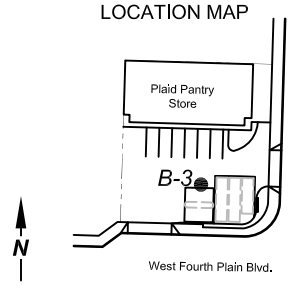
LOCATION MAP



WELL/BORING NUMBER: B-3

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: Craig Hultgren
REVIEWED BY: ---
DATE: 9-7-11

SAMPLE INFORMATION								STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)	BOREHOLE/WELL CONSTRUCTION DETAIL
SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL				
MC		3.0			B3-35				SP/SM	SAND with SILT (SP/SM), 35-40', brown, fine sand, trace medium graded sand, up to 25 percent plastic fines, moist, no odor.	Backfill borehole with hydrated bentonite and capped with black dyed concrete. Air knife from 0' to 10' bgs. Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).
MC		2.2			B3-40	40				Total Boring Depth @ 40' bgs. Install temporary well in boring. Screen from 25' to 40' bgs (dry). Groundwater not encountered.	
						45					
						50					
						55					
						60					
						65					

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-7-11
DRILLING END TIME: 9-7-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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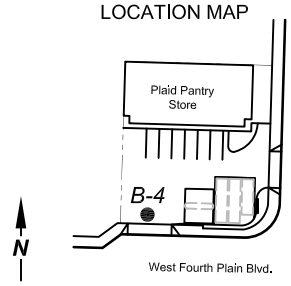
LOCATION MAP



WELL/BORING NUMBER: B-4

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: C. Hultgren
REVIEWED BY: ---
DATE: 9-7-11

SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL	STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)
										ASPHALT, 0-1'.
									ML	SILT (ML), 1-8.5', brown, trace fine sand, low plastic fines, slightly micaceous, damp, no odor.
HA		4.3			B4-3					
						5				
HA		3.7			B4-6					
HA		3.7			B4-9				SM	Silty SAND (SM), 8.5-20', brown, predominately fine sand, local trace subrounded gravel up to 3" diameter, some low plastic fines, damp, no odor.
						10				
MC		4.3			B4-15	15				
MC		3.2			B4-20	20			SW	Gravelly SAND (SW), 20-36.5', gray to brown, fine to coarse sand, fine to coarse subrounded gravel up to 1.5" diameter, <10% fines, well graded, no odor.
MC		4.0			B4-25	25				
		3.3								
MC		3.6			B4-30	30				

BOREHOLE/WELL CONSTRUCTION DETAIL

Backfill borehole with hydrated bentonite and capped with black dyed concrete.

Air knife from 0' to 10' bgs.

Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-7-11
DRILLING END TIME: 9-8-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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6665 SW Hampton St., Suite 101
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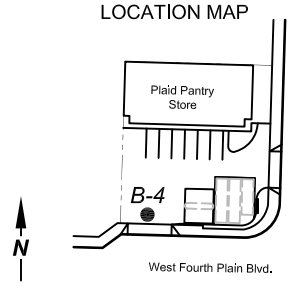
TEL (503) 620-2387
FAX (503) 620-2977

LOCATION MAP



WELL/BORING NUMBER: B-4

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: Craig Hultgren
REVIEWED BY: ---
DATE: 9-7-11

SAMPLE INFORMATION

SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL	STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)
MC		2.5			B4-35				SW	Gravelly SAND (SW), 20-36.5', gray to brown, >50% fine to coarse sand, <50% fine to coarse gravel up to 1.25" diameter, trace fines, moist, no odor.
		1.0							SP	SAND (SP), 36.5-38', brown, predominately fine sand, trace fines, moist, no odor.
									SP/ML	SAND and SILT interbeds (SP/ML), 38-40', damp to moist, no odor.
MC		4.8			B4-40	40				Total Boring Depth @ 40' bgs.
						45				Install temporary well in boring. Screen from 25' to 40' bgs (dry). Groundwater not encountered.
						50				
						55				
						60				
						65				

BOREHOLE/WELL CONSTRUCTION DETAIL

Backfill borehole with hydrated bentonite and capped with black dyed concrete.

Air knife from 0' to 10' bgs.

Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-7-11
DRILLING END TIME: 9-8-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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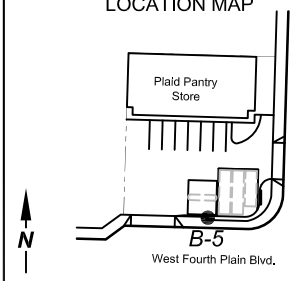
LOCATION MAP



WELL/BORING NUMBER: B-5

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: C. Hultgren
REVIEWED BY: ---
DATE: 9-7-11

SAMPLE INFORMATION

SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL	STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)
										CONCRETE, 0-0.5'.
									ML	SILT (ML), 0.5-5.0', brown, low plastic fines, moist, no odor.
HA		2.3			B5-3					
HA		46.3			B5-4.5					Note: @ 4.5' Color change to olive gray.
						5			SM	
HA		1,692			B5-6					Note: @ 6.0' Silty SAND, olive gray, slight petroleum hydrocarbon odor.
HA		2,349			B5-9					Silty SAND, as above, hydrocarbon stain, odor, and sheen.
						10				
MC		81 58			B5-12.5					Note: Local wet zone from 13' to 13.5'. Efforts to collect water sample unsuccessful in this zone.
									GW	Sandy GRAVEL (GW), 13.5-20', gray, fine to coarse subrounded gravel up to 2" diameter, fine to coarse sand, trace fines, well graded, dry, no odor.
						15				
MC		3.8			B5-20	20			SW	Gravelly SAND (SW), 20-25', brown to gray, fine to coarse sand, fine to coarse subrounded gravel up to 1.5" diameter, damp no odor.
MC		2.5			B5-25	25			GW	Sandy GRAVEL (GW), 25-30', Generally as above, increase in gravel content to >50 percent, moist, no odor.
MC		2.0			B5-30	30				Note: @ 30' Sandy GRAVEL, generally as above, increase in sand grain size with coarse sand being predominate, moist, no odor.

BOREHOLE/WELL CONSTRUCTION DETAIL

Backfill borehole with hydrated bentonite and capped with black dyed concrete.

Air knife from 0' to 10' bgs.

Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-8-11
DRILLING END TIME: 9-8-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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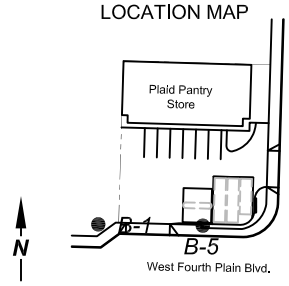
PNG ENVIRONMENTAL, INC.
6665 SW Hampton St., Suite 101
Tigard, Oregon 97223
TEL (503) 620-2387
FAX (503) 620-2977

LOCATION MAP



WELL/BORING NUMBER: B-5

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: Craig Hultgren
REVIEWED BY: ---
DATE: 9-8-11

SAMPLE INFORMATION								STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)	BOREHOLE/WELL CONSTRUCTION DETAIL
SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL				
MC		6.8			B5-35				SW	Gravelly SAND (SW), 35-39', gray to brown, >50 percent fine to coarse sand with predominately coarse, <50 percent fine to coarse subrounded gravel up to 1" diameter, moist, slight odor @ 35'.	Backfill borehole with hydrated bentonite and capped with black dyed concrete. Air knife from 0' to 10' bgs. Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).
MC		4.1			B5-40	40			SM	Silty SAND (SM), 39-40', brown, fine to medium sand, low plastic fines, moist, no odor.	
										Total Boring Depth @ 40' bgs.	
										Install temporary well in boring. Screen from 25' to 40' bgs (dry). Groundwater not encountered.	
						45					
						50					
						55					
						60					
						65					

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-8-11
DRILLING END TIME: 9-8-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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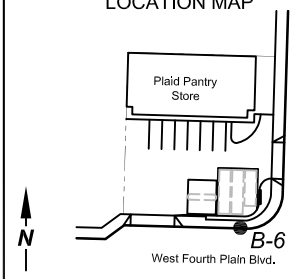
LOCATION MAP



WELL/BORING NUMBER B-6

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: C. Hultgren
REVIEWED BY: ---
DATE: 9-7-11

SAMPLE INFORMATION

SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL	STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)
										ASPHALT, 0-0.9'.
									ML	SILT (ML), 0.9-14.5', brown, low plastic fines, medium dense, dry, no odor.
HA		2.9			B6-3					
						5				
HA		3.8			B6-6					
HA		5.4			B6-9					
						10				Note: @ 10' to 14.5' SILT, brown, <20 percent fine sand, low plastic fines.
MC		2.4		▽	B5-12					Note: Local wet zone from 13' to 14.5'.
						15			GW	Sandy GRAVEL (GW), 14.5-30', gray, >50 percent fine to coarse subrounded gravel, <50 percent fine to coarse sand, up to 5 percent fines, well graded, damp, no odor.
MC		3.4			B6-20	20				Note: @ 20' Sandy GRAVEL, generally as above, gravel up to 1.25" diameter, well graded, moist.
MC		2.6			B6-25	25				Note: @ 25' Sandy GRAVEL, gravel content to 1.5" diameter, moist, no odor.
MC		1.3			B6-30	30			SW	Gravelly SAND (SW), 30-34.5', >50 percent sand, <50 percent fine to coarse subrounded gravels up to 1" diameter, moist, no odor.
		2.8								

BOREHOLE/WELL CONSTRUCTION DETAIL

Backfill borehole with hydrated bentonite and capped with black dyed concrete.

Air knife from 0' to 10' bgs.

Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-8-11
DRILLING END TIME: 9-8-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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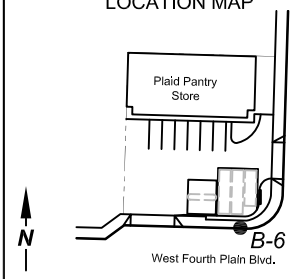
Tigard, Oregon 97223
TEL (503) 620-2387
FAX (503) 620-2977

LOCATION MAP



WELL/BORING NUMBER: B-6

PROJECT NAME: Plaid Pantry #112
PROJECT NUMBER: 1179-01
LOCATION: Vancouver, Washington
LOGGED BY: Craig Hultgren
REVIEWED BY: ---
DATE: 9-8-11

SAMPLE INFORMATION								STRATA	SOIL TYPE	DESCRIPTION (USCS Classification, Depth Interval, Color, Grain Size, Plasticity, Shapes, Mineral Composition, Density or Consistency, Moisture, Odor, Geological Interpretation)	BOREHOLE/WELL CONSTRUCTION DETAIL
SAMPLE TYPE	Blow Counts	PID (ppm)	REC %	First Water	LAB SAMPLE I.D.	DEPTH bgs (ft)	SAMPLE INTERVAL				
MC		0.7			B6-35				SP	SAND (SP), 34.5-40', brown, predominately fine grain, 5 to 10 percent fines, moist, no odor.	Backfill borehole with hydrated bentonite and capped with black dyed concrete. Air knife from 0' to 10' bgs. Soil samples collected at 2' intervals using stainless steel hand auger (HA) in upper 10 feet bgs. Samples below 10 feet bgs collected by GeoProbe Macro Core (MC).
MC		2.8			B6-40	40				Total Boring Depth @ 40' bgs. Install temporary well in boring. Screen from 25' to 40' bgs (dry). Groundwater not encountered.	
						45					
						50					
						55					
						60					
						65					

DRILLING CONTRACTOR: Major Drilling
DRILLING METHOD: Geoprobe
SAMPLING METHOD: Macro Core
DRILLING START TIME: 9-8-11
DRILLING END TIME: 9-8-11

COORDINATES: ---
SURFACE ELEVATION: ---
CASING ELEVATION: ---
SITE DATUM: ---

TIME	DATE	DTW
		N/A

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DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppmV)	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0	ML	Asphalt (2 inches), no gravel base. SANDY SILT: light brown, damp, sandy SILT, low plasticity.	3.3	B7/3 Hold
5		Petroleum-like odor and gray staining at 5.5 feet bgs.	25	B7/6 NWTPH-Gx and EPA 8260B
	SM	SILTY SAND: dark gray, damp, silty SAND, non-plastic. Petroleum-like odor and staining.	543	B7/9 NWTPH-Gx
10		Petroleum-like odor and staining from 10 to 13.5 feet bgs.	608	B7/13 NWTPH-Gx and EPA 8260B
	SW	GRAVELLY SAND: orangish-gray and brown, damp, fine to coarse gravelly SAND. Gravels are up to coarse, subrounded. No noticeable impact.	1.5	B7/14 NWTPH-Gx and EPA 8260B
15		Decreasing gravel percentage 15 to 20 feet bgs.		
			0.6	B7/18 Hold
20		End of boring at 20 feet bgs. Borehole backfilled with bentonite chips and capped with asphalt.		
25				
30				

BORING METHOD: Hand Auger / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/16/2012 - 8/16/2012

NOTES:
Hand auger utilized to advance boring to 5 feet bgs.

Plaid Pantry #112
1002 W. Fourth Plain Blvd
Vancouver, WA

E-1179-01

EES Environmental Consulting, Inc.
240 N Broadway, Suite 115
Portland, Oregon 97227
Tel (503) 847-2740

LOG OF BORING B7

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppmV)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0		ML	Asphalt (2 inches), no gravel base. SANDY SILT: light brown, damp, sandy SILT, low plasticity.						
					1.6				B8/3 Hold
5			Petroleum-like odor and gray staining at 6 feet bgs.		7.8				B8/6 NWTPH-Gx and EPA 8260B
		SM	SILTY SAND: light brown, damp, silty SAND, non-plastic. Hydrocarbon-like odor and gray staining.		5.7				B8/9 NWTPH-Gx
10			Petroleum-like odor and gray staining from 10 to 13.5 feet bgs.						
					2.2				B8/13 NWTPH-Gx and EPA 8260B
		SW	GRAVELLY SAND: orangish-brown and gray, damp, fine to coarse gravelly SAND. Gravels are up to coarse, subrounded. PVC conduit (4-inch) at 14 feet bgs. Moist, with decreasing gravel content from 15 to 20 feet bgs.		1.0				B8/14 Hold
15									
					0.7				B8/18 Hold
20			End of boring at 20 feet bgs. Borehole backfilled with bentonite chips and capped with asphalt.						
25									
30									

BORING METHOD: Hand Auger / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/16/2012 - 8/16/2012

NOTES:
Hand auger utilized to advance boring to 5 feet bgs.

Plaid Pantry #112
1002 W. Fourth Plain Blvd
Vancouver, WA

E-1179-01

EES Environmental Consulting, Inc.
240 N Broadway, Suite 115
Portland, Oregon 97227
Tel (503) 847-2740

LOG OF BORING B8

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppmV)	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0		Asphalt (0.75 feet) over gravel base (2 inches).		
	ML	SANDY SILT: light brown, damp, sandy SILT, low plasticity.	0.4	B9/3 NWTPH-Gx, NWTPH-Dx, and EPA 8260B
5	SM	SILTY SAND: light brown with gray mottling, damp, silty SAND, low plasticity.	0.2	B9/6 NWTPH-Gx and EPA 8260B
			0.4	B9/9 NWTPH-Gx and EPA 8260B
10				
			0.2	B9/13 NWTPH-Gx and EPA 8260B
15	SW	GRAVELLY SAND: light brown, damp, gravelly SAND. Gravels are up to medium-grained, subrounded to rounded.		
			0.3	B9/18 Hold
20		End of boring at 20 feet bgs. Borehole backfilled with bentonite chips and capped with asphalt.		
25				
30				

BORING METHOD: Air-Knife / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/13/2012 - 8/13/2012

NOTES:
Air-knife utilized to advance boring to 10 feet bgs. Soil samples shallower than 10 feet were collected with a hand auger.

Plaid Pantry #112
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LOG OF BORING B9

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppmV)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0			Asphalt (0.75 feet) over gravel base (6 inches).						
		ML	SANDY SILT: light brown, damp, sandy SILT, low plasticity.		0.5				B10/3 NWTPH-Gx, NWTPH-Dx, and EPA 8260B
5					1.2				B10/6 NWTPH-Gx and EPA 8260B
		SM	SILTY SAND: light brown, damp, silty SAND, low plasticity to non-plastic. Increasing sand content.		4.4				B10/9 NWTPH-Gx and EPA 8260B
10		SW	GRAVELLY SAND: light brown and gray, damp, fine to medium SAND, trace fine gravel.		1.9				B10/13 NWTPH-Gx and EPA 8260B
15		GW	GRAVEL: gray to light brown, damp, fine to coarse subrounded GRAVEL, trace sand and fines.						
		SW	GRAVELLY SAND: light brown and gray, damp, fine to coarse SAND with trace medium to coarse subrounded gravel.		1.5				B10/18 NWTPH-Gx and NWTPH-Dx
20			End of boring at 20 feet bgs. Borehole backfilled with bentonite chips and capped with asphalt.						
25									
30									

BORING METHOD: Air-Knife / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/13/2012 - 8/13/2012

NOTES:
Air-knife utilized to advance boring to 10 feet bgs. Soil samples shallower than 10 feet were collected with a hand auger.

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LOG OF BORING B10

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppmV)	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0		Asphalt (1.1 feet) over gravel base (~6 inches).		
	ML	SANDY SILT: dark gray, damp, sandy SILT, low plasticity to non-plastic. Hydrocarbon-like odor and staining.	11	B11/3 NWTPH-Gx, NWTPH-Dx, and EPA 8260B
5			1152	B11/6 NWTPH-Gx, NWTPH-Dx, and EPA 8260B
	SM	SILTY SAND: dark gray, damp, silty SAND, low plasticity to non-plastic. Hydrocarbon-like odor and staining.	603	B11/9 NWTPH-Gx and EPA 8260B
10	SW	Hydrocarbon-like odor and gray staining from 10 to 10.5 feet bgs. GRAVELLY SAND: orangish-brown to gray, damp, gravelly SAND. Gravels are fine to medium, subrounded. Decreasing hydrocarbon-like odor and no visible staining.	4.9	B11/11 NWTPH-Gx and EPA 8260B
15			1.7	B11/17 NWTPH-Gx and EPA 8260B
20		Decreasing gravel content from 20 to 25 feet bgs.		
25			2.4	B11/23 NWTPH-Gx and NWTPH-Dx
30		End of boring at 30 feet bgs. Borehole backfilled with bentonite chips and capped with asphalt.	2.2	B11/29 NWTPH-Gx and NWTPH-Dx

BORING METHOD: Air-Knife / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/14/2012 - 8/14/2012

NOTES:
Air-knife utilized to advance boring to 10 feet bgs. Soil samples shallower than 10 feet were collected with a hand auger.

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LOG OF BORING B11

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppmV)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0			Asphalt (~1.3 feet) over gravel base (~6 inches).						
		ML	SANDY SILT: light brown, damp, sandy SILT, low plasticity.		1.8				B12/3 NWTPH-Gx, NWTPH-Dx, and EPA 8260B
5		SM	SILTY SAND: light brown, damp, silty SAND, non-plastic. Increasing sand percentage.		2.1				B12/6 NWTPH-Gx and EPA 8260B
					0.3				B12/9 NWTPH-Gx and EPA 8260B
10		SW	GRAVELLY SAND: light brownish-gray, damp to moist, fine to medium SAND with trace fine subrounded gravel.		1.0				B12/13 NWTPH-Gx and EPA 8260B
15			Increasing gravel percentage. Gravels are fine to medium, moist.		1.2				B12/18 NWTPH-Gx and NWTPH-Dx
20			End of boring at 20 feet bgs. Borehole backfilled with bentonite chips and capped with asphalt.						
25									
30									

BORING METHOD: Air-Knife / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/14/2012 - 8/14/2012

NOTES:
Air-knife utilized to advance boring to 10 feet bgs. Soil samples shallower than 10 feet were collected with a hand auger.

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LOG OF BORING B12

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppmV)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0			Asphalt (~1.1 feet) over gravel base (~4 inches).						
		ML	SANDY SILT: light brown, damp, sandy SILT, trace subangular fine gravel, low plasticity to non-plastic.		0.5				B13/3 NWTPH-Gx and EPA 8260B
5		SM	SILTY SAND: light brown, damp, silty SAND, non-plastic. Increasing sand percentage.		1.5				B13/6 NWTPH-Gx and EPA 8260B
					1.8				B13/9 NWTPH-Gx and EPA 8260B
10		SW	GRAVELLY SAND: light orangish-brown, moist, fine to coarse SAND with trace gravel up to medium-grained.		1.3				B13/13 NWTPH-Gx and EPA 8260B
15			Increased gravel percentage. Gravels are up to coarse-grained.		0.6				B13/18 Hold
20			End of boring at 20 feet bgs. Borehole backfilled with bentonite chips and capped with asphalt.						
25									
30									

BORING METHOD: Air-Knife / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/15/2012 - 8/15/2012

NOTES:
Air-knife utilized to advance boring to 10 feet bgs. Soil samples shallower than 10 feet were collected with a hand auger.

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LOG OF BORING B13

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppmV)	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0		Asphalt (1.2 feet) over gravel base (6 inches).		
	ML	SANDY SILT: light brown, damp, sandy SILT, non-plastic.	0.9	B14/3 NWTPH-Gx and EPA 8260B
5			0.3	B14/6 NWTPH-Gx and EPA 8260B
	SM	SILTY SAND: light brown, damp to moist, silty SAND, low plasticity to non-plastic.	0.6	B14/9 NWTPH-Gx and EPA 8260B
10			0.4	B14/13 NWTPH-Gx and EPA 8260B
	SW	GRAVELLY SAND: light orangish-brown, moist, fine to coarse gravelly SAND. Gravels are subangular to subrounded. Increased gravel percentage. Gravels are up to coarse-grained from 15 to 20 feet bgs.		
15			0.8	B14/18 Hold
20		End of boring at 20 feet bgs. Borehole backfilled with bentonite chips and capped with asphalt.		
25				
30				

BORING METHOD: Air-Knife / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/15/2012 - 8/15/2012

NOTES:
Air-knife utilized to advance boring to 10 feet bgs. Soil samples shallower than 10 feet were collected with a hand auger.

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LOG OF BORING B14

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppmV)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0			Asphalt (1.0 foot) over gravel base (6 inches).						
		ML	SANDY SILT: light brown, damp, sandy SILT, low plasticity.		1.9				B15/3 NWTPH-Gx and EPA 8260B
5					2.8				B15/6 NWTPH-Gx and EPA 8260B
		SM	SILTY SAND: light brown, damp, silty SAND, low plasticity.		2.4				B15/9 NWTPH-Gx and EPA 8260B
10			Moist, with increasing sand percentage at 10 to 13.5 feet bgs.						
		SW	GRAVELLY SAND: light orangish-brown, moist, fine to coarse gravelly SAND. Gravels are fine to coarse, subrounded to rounded.		1.4				B15/13 NWTPH-Gx and EPA 8260B
15			Increased gravel percentage from 15 to 20 feet bgs.						
					1.5				B15/18 Hold
20			End of boring at 20 feet bgs.						
			Borehole backfilled with bentonite chips and capped with asphalt.						
25									
30									

BORING METHOD: Air-Knife / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/15/2012 - 8/15/2012

NOTES:
Air-knife utilized to advance boring to 10 feet bgs. Soil samples shallower than 10 feet were collected with a hand auger.

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LOG OF BORING B15

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	VOLATILE READING (ppmV)	GROUNDWATER	GW SCREENED INTERVAL	FIELD TESTING	SAMPLE NUMBER / TESTING AND LABORATORY DATA
0			Concrete (0.4 feet). No base layer.						
		ML	SANDY SILT: light brown, damp, sandy SILT, trace organics, low plasticity.		2.5				B16/3 Hold
5					1.7				B16/6 NWTPH-Gx and EPA 8260B
		SM	SILTY SAND: light brownish-gray with orange mottling, damp, silty SAND, non-plastic.		1.9				B16/9 NWTPH-Gx
10									
		SW	GRAVELLY SAND: grayish-brown, damp, fine to coarse gravelly SAND. Gravels are up to medium-grained, subrounded.		2.1				B16/13 NWTPH-Gx and EPA 8260B
15			Damp to moist, gravel percentage increases from 15 to 20 feet bgs.						
					2.7				B16/18 Hold
20			End of boring at 20 feet bgs. Borehole backfilled with bentonite chips and capped with concrete.						
25									
30									

BORING METHOD: Air-Knife / Direct Push

BOREHOLE DIAMETER:

DRILL RIG: NA

CONTRACTOR: Pacific Soil & Water/NK

LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA

GROUND SURFACE ELEVATION: NA

START CARD/TAG ID: NA

DRILLING DATES: 8/16/2012 - 8/16/2012

NOTES:
Air-knife utilized to advance boring to 10 feet bgs. Soil samples shallower than 10 feet were collected with a hand auger.

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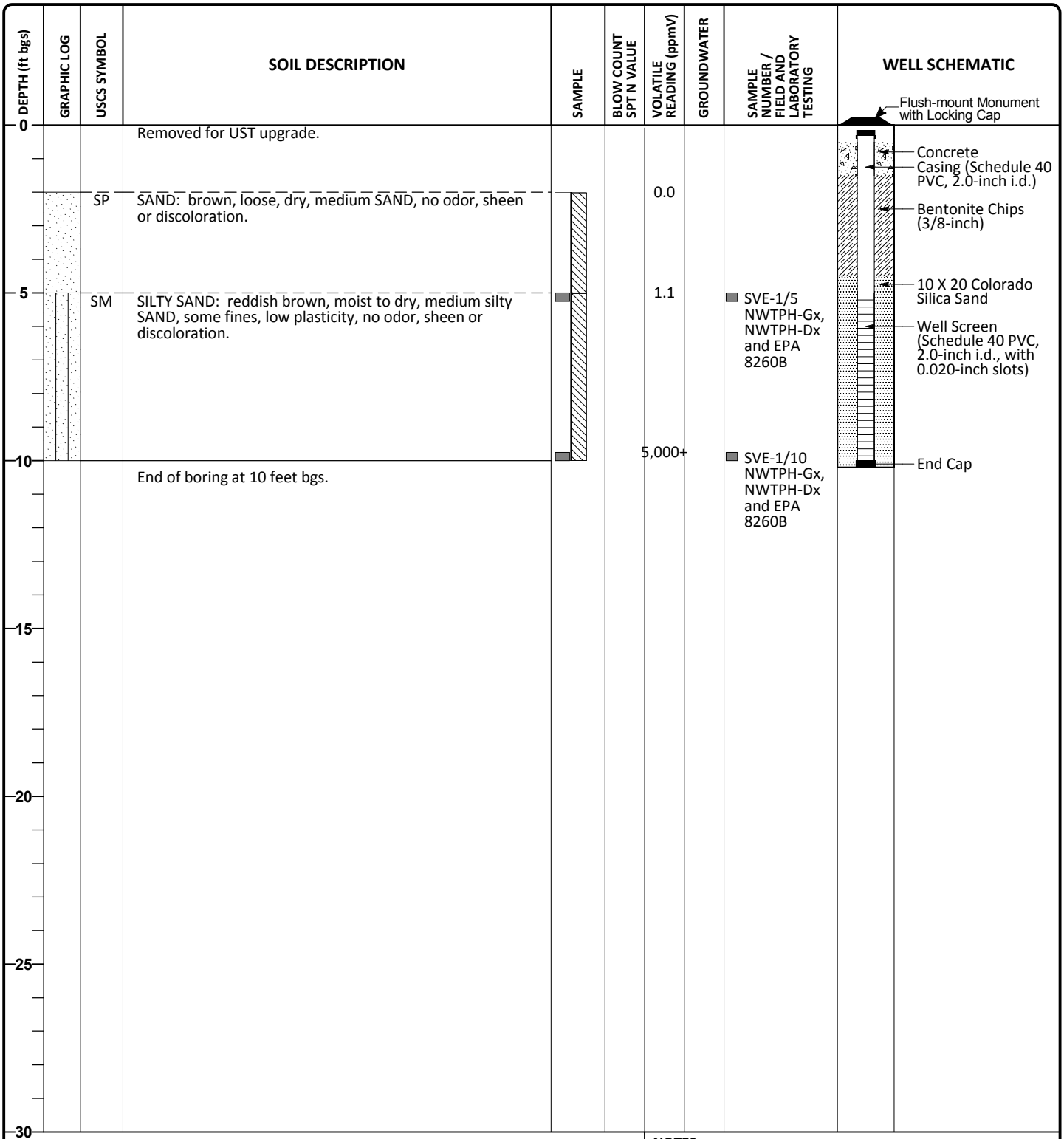
LOG OF BORING B16



BORING METHOD: Direct Push
BOREHOLE DIAMETER:
DRILL RIG: NA
CONTRACTOR: Major Drilling/KV
LOGGED BY/REVIEWED BY: JG/LF

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: NA
DRILLING DATES: 2/3/2012 - 2/3/2012

NOTES:

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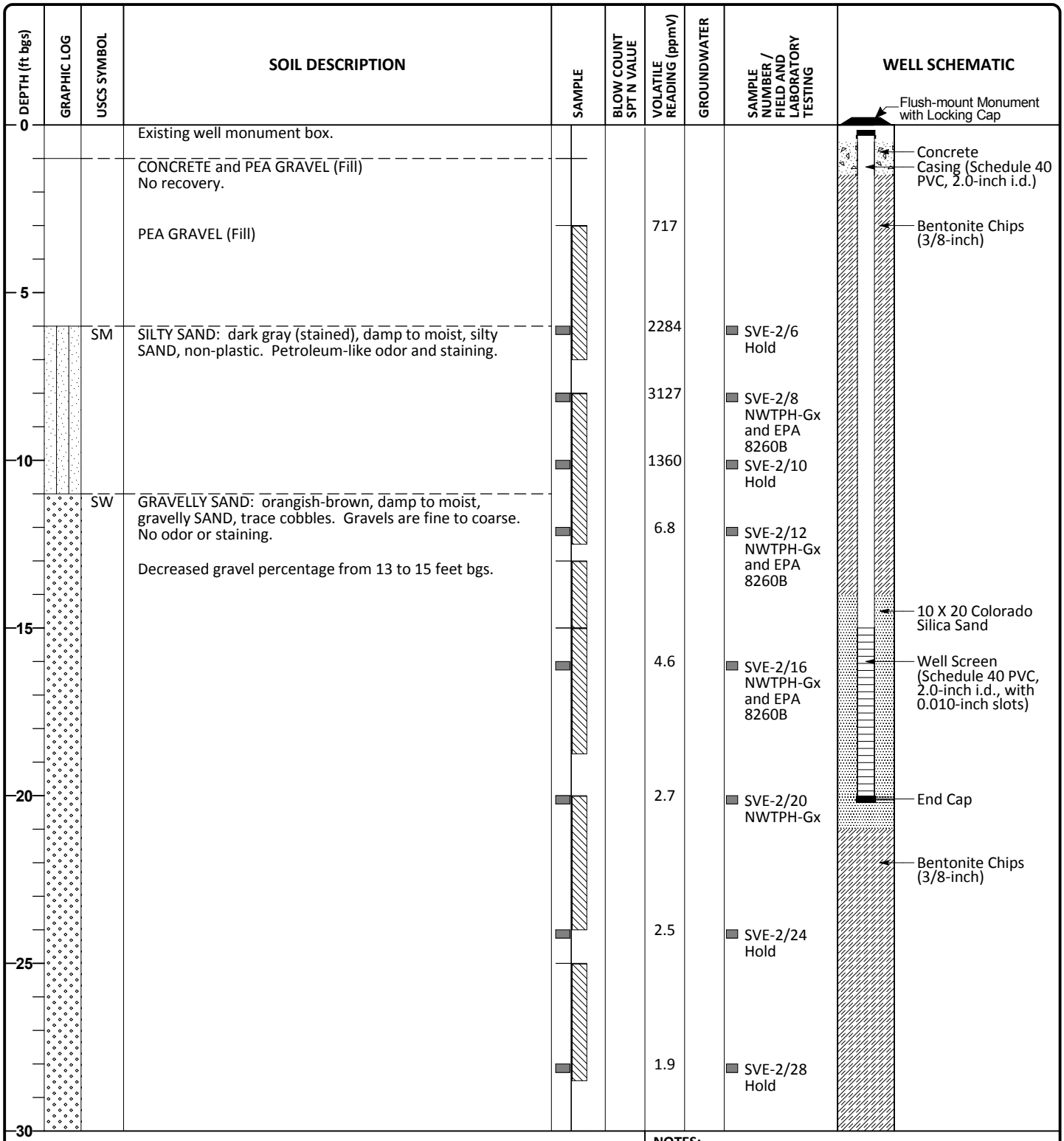
LOG OF BORING SVE-1



BORING METHOD: Direct Push
BOREHOLE DIAMETER:
DRILL RIG: NA
CONTRACTOR: Pacific Soil & Water/NK
LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: NA
DRILLING DATES: 8/17/2012 - 8/17/2012

NOTES:

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LOG OF BORING SVE-2

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppmV)	GROUNDWATER	SAMPLE NUMBER / FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30		SW							
		SP	SAND: light brown, dry to damp, fine SAND, trace fines.			1.7		SVE-2/32 Hold	Bentonite Chips (3/8-inch)
35			No recovery. Sample liner melted in sampler.						
			End of boring at 39 feet bgs due to refusal.						
40									
45									
50									
55									
60									

BORING METHOD: Direct Push
BOREHOLE DIAMETER:
DRILL RIG: NA
CONTRACTOR: Pacific Soil & Water/NK
LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: NA
DRILLING DATES: 8/17/2012 - 8/17/2012

NOTES:

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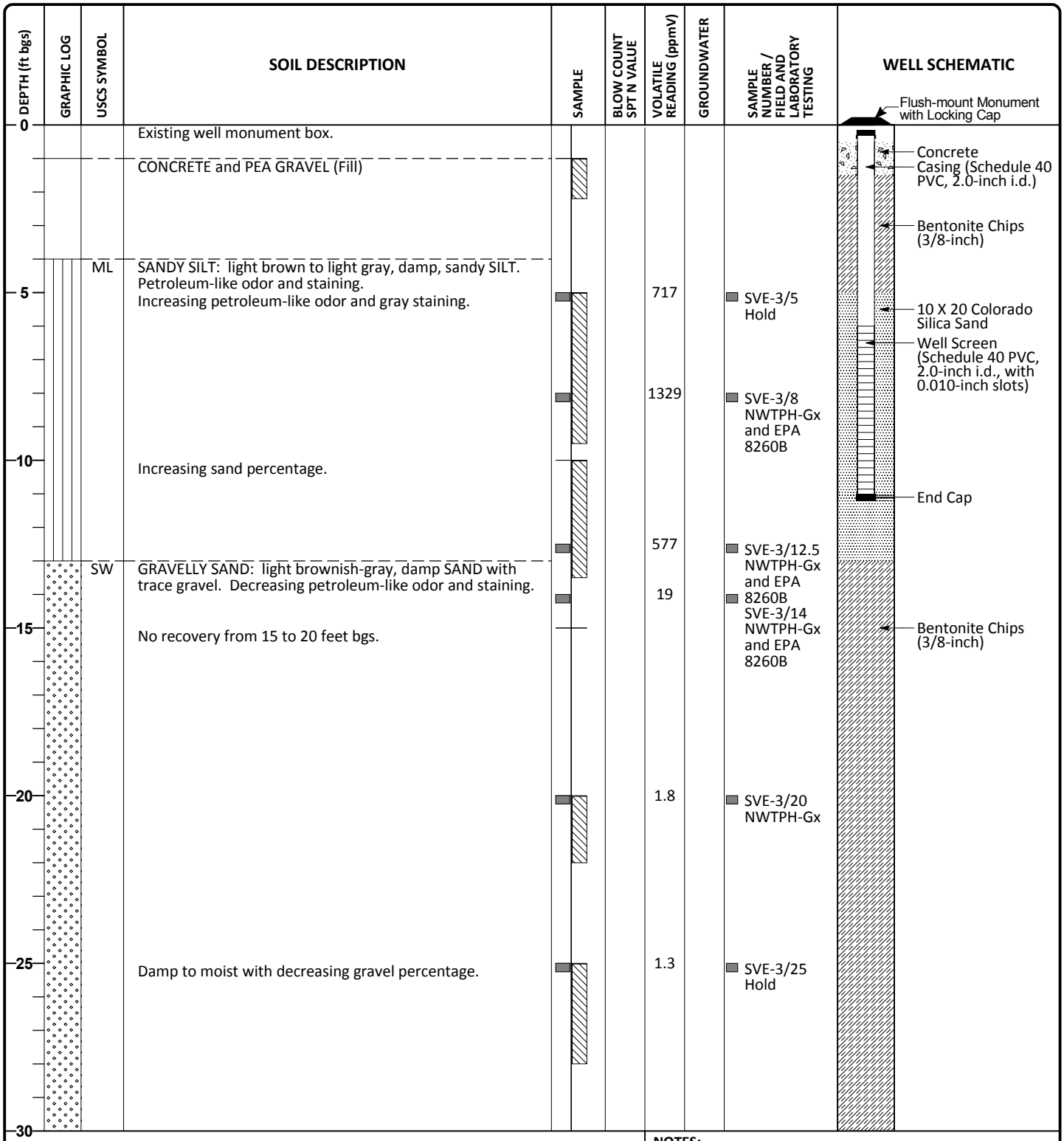
LOG OF BORING SVE-2



BORING METHOD: Direct Push
BOREHOLE DIAMETER:
DRILL RIG: NA
CONTRACTOR: Pacific Soil & Water/NK
LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: NA
DRILLING DATES: 8/16/2012 - 8/16/2012

NOTES:

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E-1179-01

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LOG OF BORING SVE-3

DEPTH (ft bgs)	GRAPHIC LOG	USCS SYMBOL	SOIL DESCRIPTION	SAMPLE	BLOW COUNT SPT N VALUE	VOLATILE READING (ppmV)	GROUNDWATER	SAMPLE NUMBER / FIELD AND LABORATORY TESTING	WELL SCHEMATIC
30		SW				17		SVE-3/31 Hold	Bentonite Chips (3/8-inch)
35			Increased grain-size up to coarse and trace fine subrounded gravel.			3.7		SVE-3/37 Hold	
40			End of boring at 40 feet bgs due to refusal.						
45									
50									
55									
60									

BORING METHOD: Direct Push
BOREHOLE DIAMETER:
DRILL RIG: NA
CONTRACTOR: Pacific Soil & Water/NK
LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: NA
DRILLING DATES: 8/16/2012 - 8/16/2012

NOTES:

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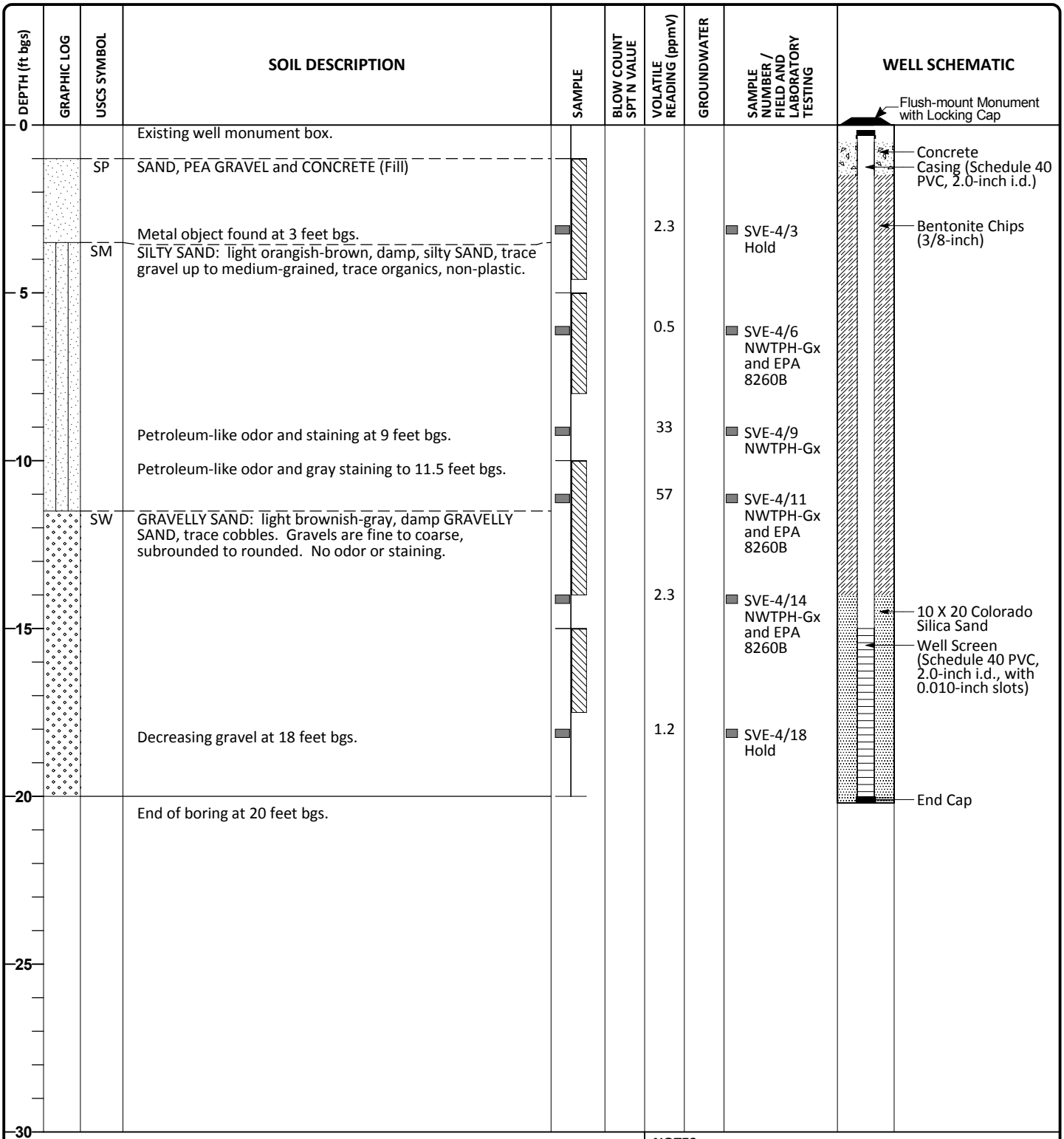
LOG OF BORING SVE-3



BORING METHOD: Direct Push
BOREHOLE DIAMETER:
DRILL RIG: NA
CONTRACTOR: Pacific Soil & Water/NK
LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: NA
DRILLING DATES: 8/17/2012 - 8/17/2012

NOTES:

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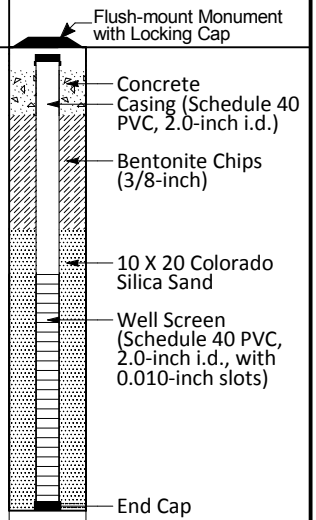
LOG OF BORING SVE-4

DEPTH (ft bgs)	USCS SYMBOL	SOIL DESCRIPTION	VOLATILE READING (ppmV)	SAMPLE NUMBER / FIELD AND LABORATORY TESTING
0		Existing well monument box.		
	ML	SANDY SILT: light brown, damp, sandy SILT, low plasticity. Poor recovery.		
5		Petroleum-like odor and gray staining at 6 feet bgs.	12	SVE-5/5 NWTPH-Gx and EPA 8260B
			1379	SVE-5/7.5 NWTPH-Gx and EPA 8260B
	SM	SILTY SAND: gray, damp, silty SAND, non-plastic.		
10		End of boring at 10 feet bgs.	323	
15				
20				
25				
30				



BORING METHOD: Direct Push
BOREHOLE DIAMETER:
DRILL RIG: NA
CONTRACTOR: Pacific Soil & Water/d
LOGGED BY/REVIEWED BY: AC/LF

ELEVATION REFERENCE: NA
GROUND SURFACE ELEVATION: NA
CASING ELEVATION: NA
START CARD/TAG ID: NA
DRILLING DATES: 8/16/2012 - 8/16/2012

NOTES:

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LOG OF BORING SVE-5

EES Environmental Consulting, Inc.

Boring Log

Boring Location	Directly over electrical locate
Latitude:	
Longitude:	
North	
EES Project:	1179-02
Project Name:	PP112
Location:	
Sampled By:	A. Gnompe
Contractor:	Cascade
Type of Drilling:	AK
Bit Diameter:	
Water Level Depth:	
Date/Time Measured:	
Boring Number:	S-29
Page:	1 of 1
Start Date:	9/4/15
End Date:	9/4/15
Equipment Used:	AK
Elevation:	

Inches Driven / Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description (Surface Conditions:)	Comments
							0-2" Asphalt	
					1	ML	Brown, sandy silt, moist, no odor	
							Electrical conduit at ~~1.55~~ ('8.5" bgs	
					2			S-29 (1.75)
	0.2	N	N				Installed vapor well at 1.75'	@1610
					3		Screened interval 1.75' to 1.25'	(x2) 40ml (x1) 8oz
							Bentonite from 1.25 to 0.75.	
					4		Monument set in bentonite but	
							grouted on inside for solid floor.	
					5			
					6			
					7			
					8			
					9			
					0			
					1			
					2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					0			
					1			

EES Environmental Consulting, Inc.

Boring Log

Boring Location

Latitude:
Longitude:

North

AK 2'-3'
HA 3'-10'

EES Project: 1179-02	Boring Number: S-30
Project Name: PP112	Page: 1 of 1
Location:	Start Date: 9/4/15
Sampled By: A Compe	End Date: 9/4/15
Contractor: Cascade	Equipment Used: HA
Type of Drilling: Hand Auger	Bit Diameter:
Water Level Depth:	Date/Time Measured:
Elevation:	

Inches Driven

Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description	Comments
							Surface Conditions:	
							Asphalt (2")	Cored asphalt
					1		Construction subgrade to 1'	
						ML	Brown, silt, sandy-silt	
					2			
	0.0	N	N		3			S-30(3)@0855
								(x2) 40 mL, (x1) 8oz
					4			
					5			
	0.1	N	N		6			
								S-30(6)@0920
					7			(x2) 40 mL, (x1) 8oz
					8			
	0.0	N	N		9			S-30(9)@
								(x2) 40 mL, (x1) 8oz
					0		End HA	
							Constructed vapor monitoring well	
					1		screened 5'-10' bgs	
					2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					0			
					1			

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Boring Log

Boring Location Latitude: ngitude: 42.75' E of curb line 3.5' S of curb	EES Project: 1179-02 Project Name: PP112 Location: Vancouver, WA Sampled By: A Grompe Contractor: Cascade Type of Drilling: Direct Push — Bit Diameter: Water Level Depth: — Date/Time Measured:	Boring Number: S-31 Page: 1 of 1 Start Date: 9/1/15 End Date: 9/1/15 Equipment Used: Direct Push / 7720DT Elevation:

North

Inches Driven

PH / Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description Surface Conditions:	Comments
						AS	0-3.5" Asphalt	
					1	ML	Sandy-silt, brown	
					2			
	0.0	N			3			
					4			
6.5/5					5			Collect sample S-31(5) @ 0935 (x1 8oz)
	0.0	N			6	SM	Silty sand, brown, damp	
					7			
					8			
	0.0	N			9			
					10			Collect sample S-31(10) @ 0940 (x1 8oz)
					11		End, constructed vapor monitoring well	
					12			
					13			
					14			
					15			
					16			
					17			
					18			
					19			
					20			
					21			

EES Environmental Consulting, Inc.

Boring Log

Boring Location Latitude: ngitude:	EES Project: 1179-02 Project Name: PP112 Location: Sampled By: A Grampe Contractor: Cascade Type of Drilling: DP — Bit Diameter: Water Level Depth: — Date/Time Measured:	Boring Number: B-16 Page: 1 of 1 Start Date: 9/2/15 End Date: 9/2/15 Equipment Used: 7720DT Elevation:

North

AK 1-3' bgs
HA 3-9.5'
DP 9.5-20

Inches Driven

pH / Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description Surface Conditions:	Comments
					1		Asphalt 0-0.9≤'	
					2	ML	Air knife 0.9≤ 3' brown, sandy silt	
	0.3	N	N		3	SM	Silty sand, brown, damp ~~Strong hc odor~~	B-16(3)@1210 (x2)40ml, (x1)4oz
					4			
					5			
6.82	169	N	Y		6		Silty sand, brown, moist strong hc odor, some grey-stained streaks in brown soil	B-16(6)@1228 (x4)40ml, (x2)4oz
					7			
6.65	518	N	Y		8		At 8.5' seeing dark grey staining, damp, high hc odor	
	608	N	Y		9		Grey (dark) silty-sand, moist	B-16(9)@1240 (x4)40ml, (x2)4oz
	15.8	N	Y		10		At 10.5' moist to wet, moderate hc odor	B-16(10.5)@1440 (x4)40ml, (x2)4oz
					11			
	13.8	N	Y		12	SW	At 11.5-12', ~~sandy gravel~~ (GS), brown/grey, moist → gravelly sand	B-16(12)@1440 (x4)40ml, (x2)4oz
					13			
	11.1	N	Y		14			
					15		Light hc odor Moist, brown-grey sandy gravel to gravelly, sand	B-16(15)@1445 (x2)40ml, (x1)4oz
					16			
					17			
	0.3	N	N		18			
					19		End of recovery 18.5' bgs	
					20			B-16(18.5)@1500 (x2)40ml, (x1)4oz
					21		End boring at 20' bgs	

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Boring Log

Boring Location Latitude: ngitude: North	EES Project: 1179-02 Project Name: PP112 Location: Sampled By: N Grompe Contractor: Cascade Type of Drilling: DP — Bit Diameter: Water Level Depth: — Date/Time Measured:	Boring Number: B-17 Page: 1 of 1 Start Date: 9/2/15 End Date: 9/3/15 Equipment Used: 7720DT Elevation:

0-9' bgs (9/2/15)
9'-20' bgs (9/3/15)
Airknife 0-3'
Hand auger 3'-9'
DP 9'-20'

Inches Driven:

Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description Surface Conditions:	Comments
					1		Concrete 0-0.45'	
					2		Vac truck to 3' bgs Brown, silty sand with high silt content (SM)	
	29.5	N	Y		3	SM	Brown silty-sand, moist ~~Very~~ Faint HC odor	B-17(3)@1505 (x2)40ml, (x1)4oz
					4			
					5			
	225	N	Y		6		Moderate hc odor, moist dark brown silty sand	B-17(6)@1510 (x4)40ml, (x2)4oz
					7			
					8			
	1436				9		Dark grey silty-sand, strong hc odor, moist	B-17(9)@1515 (x4)40ml, (x2)4oz
	81.6				0			
	31.5	N	Y		1			
					2		Very moist, silty fines brown to grey	B-17(12)@0825
	0.4	N			3	SW	~12.5 d's to Gravelly-sand, brown, moist. Faint HC odor	(x4)40ml, (x2)4oz
					4			
	71.6	N	Y		5		Moderate hc odor, moist	B-17(15)@0840 (x2)40ml, (x1)4oz
					6			
					7			
					8			
	0.3	N	N		9		Gravelly sand with silt, no odor moist	B-17(20)@0900 (x2)40ml, (x1)4oz
					0		End at 20' bgs Constructed MW.	
					1			

EES Environmental Consulting, Inc.

Boring Log

Boring Location Latitude: ngitude:	EES Project: PP112 Project Name: 1179-02 2nd Location:	Boring Number: B-18 Page: of
North	Sampled By: A. Crompe Contractor: Cascade	Start Date: 9/3/15 End Date: 9/4/15
0-3 Concrete cored Air knife 3- Hand auger	Type of Drilling: DP Bit Diameter:	Equipment Used: 7720 DT
Inches Driven	Water Level Depth: Date/Time Measured:	Elevation:

PID / Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description Surface Conditions: Strong HC odor noticed while air knifing.	Comments
							Concrete 0-0.45'	
					1	SM		
					2			
	4837	Y	Y		3		Moist, dark grey silty sand VERY strong HC odor, sheen	B-18(3)@1100 (x4)40 ml, (x2)4 oz
					4			
					5			
	1960	N	Y		6		Moist, dark grey/brown silty sand strong hc odor	B-18(6)@1125 (x4)40 ml, (x2)4 oz
					7			
					8			
	5664	N	Y		9		Moist, dark grey silty sand VERY strong HC odor	B-18(9)@1135 (x4)40 ml, (x2)4 oz
					0		Set (temporary) screened well to attempt to capture GW @11.0' bgs. Attempt to collect GW unsuccessful.	
					1		At 11.5' Gravelly sand	
	0.6	N	N		2			B-18(12)@1005 (x4)40 ml, (x2)4 oz
					3			
					4			
	0.4	N	N		5		No odor	B-18(15)@1020 (x2)40 ml, (x1)4 oz
					6			
					7			
					8			
	0.2	N	N		9		No odor	B-18(20)@1030 (x2)40 ml, (x1)4 oz
					0		Finished at 20' Constructed MW.	
					1			

9/4/15

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Boring Log

Boring Location: B-19 (N↑) B-20; Latitude: ; Longitude: ; North	EES Project: PP112		Boring Number: B-19
	Project Name: 1179-02		
	Location:		Page: of
0-3' Vac truck cleared	Sampled By: A. Gromps		Start Date: 9/3/15
	Contractor: Cascade		End Date: 9/
	Type of Drilling: Direct Push	Bit Diameter:	Equipment Used: 7720DT
Inches Driven: Set temp. mon. well - bentonite to 11' bgs, screen 11-16	Water Level Depth:	Date/Time Measured:	Elevation:

Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description (Surface Conditions:)	Comments
							Concrete 0-0.45'	
					1	SM	cleared w/ vac truck to 3' bgs	
					2		brown, silty sand	
	0.3	N	N		3		Very earthy/organic odor, no hc	B-19(3)@1410 (x2) 40 ml, (x1) 8 oz
					4			
					5			
	347	N	Y		6		Brown, silty sand	B-19(6)@1420 (x4) 40 ml, (x2) 8/2 oz
					7			
					8		@8.5' Some grey-stained soil, sweet hc odor	
	291	N	Y		9		Dark brown with grey silty sand mod. hc odor	B-19(9)@1430 (x4) 40 ml, (x2) 8/2 oz
	0.3	N	N		0			
					1	SW	Wet interval 10-10.5', high silt content sand w/ - no odor	
	26.8	N	N		2		Gravelly sand at 11-11.5', brown to dark grey	B-19(12)@1620 (x1) 40 ml, (x2) 8/2 oz
					3		Dry-damp	
	2.1	N	N		4			
					5		moist	B-19(15)@1635 (x2) 40 ml, (x1) 8 oz
					6			
					7			
	0.3	N	N		8			
					9		Moist, gravelly sand (very gravelly) End at 19.5' bgs	B-19(19)@1645 (x2) 40 ml, (x1) 8 oz
					0			
					1			

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Boring Log

Boring Location Latitude: ngitude:	EES Project: 1179-02 Project Name: PP112 Location: Sampled By: A. Crompe Contractor: Cascade Type of Drilling: Direct Push Bit Diameter: Water Level Depth: Date/Time Measured:	Boring Number: B-20 Page: of Start Date: 9/3/15 End Date: 9/3/15 Equipment Used: Elevation:

North

Air knife 0.5-6' bgs
Hand auger 6'-9'
DP 9'-20'

Inches Driven

Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description Surface Conditions:	Comments
					1	SM	Concrete 0-0.5' Brown, silty sand Vac truck cleared to 3' bgs	
					2		At 3'5" pea gravel	
					3			
					4		Continued to vac-clear pea-gravel	
					5			
					6			
	0.4	N	N		7		At 6' bgs, brown silty sand Earthy/organic odor, damp	B-20(6)@1545 (x4) 40 ml, (x2) 8/2 oz ✓
					8			
	1600	N	Y		9		Strong* HC odor	B-20(9)@1600 (x4) 40 ml, (x2) 8/2 oz ✓
					0		Strong HC odor 10.5-11'	
	410	N	Y		1		Brown silty sand, strong hc odor	B-20(10.5)@1720 PID = 0.3 at very wet interval (10.5-11') ("sample 1415")
	0.3	N	N		2	SW	At 10.5-11' very wet, high silt content Gravelly sand, moist	B-20(12)@1710 (x4) 40 ml, (x2) 8/2 oz
					3			
					4			
					5			
					6		No recovery, pea-gravel	
					7			
					8			
	0.3	N	N		9		Gravelly sand, grey, damp	B-20(20)@1725 (x2) 40 ml, (x1) 8 oz
					0		Finished at 20' bgs	
					1			

* Hottest soil @ (9), very wet soil - high silt content (10.5)
PID decreased to 0.3 ppm

Between 9-10' @ 410 ppm VOC

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Boring Log

Boring Location Latitude: Longitude:	EES Project: 1129-02 Project Name: PP112 Location:	Boring Number: S-27 Page: 1 of 1
North	Sampled By: A. Cromoe Contractor: Cascade Type of Drilling: AK Bit Diameter:	Start Date: 9/4/15 End Date: 9/4/15 Equipment Used: Air knife
Next to SS cleanout Approx. 2" off-set from SS piping	Water Level Depth: Date/Time Measured:	Elevation:

Inches Driven / Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description Surface Conditions:	Comments
					1		0-2" Asphalt Silty-sand; brown, moist, no odor Air knife to 2'11"	Air knife to 2'4"
	0.3	N	N		2		4" diam SS pipe	
					3	2'11"	Set vapor monitoring well,	S-27 (2.9) @ 1350
					4		screened between ~~2'10" to 2'4"~~ 2'9" to 2'3" (#10)	(x2) 40mL, (x1) 80z
					5		bedded in pea gravel 2.75' to 2.25'	
					6			
					7			
					8			
					9			
					0			
					1			
					2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					0			
					1			

EES Environmental Consulting, Inc.

Boring Log

Boring Location Latitude: Longitude: North	EES Project: 1179-02		Boring Number: S-28
	Project Name: PP112		
	Location:		Page: 1 of 1
Over located wye mark for SS	Sampled By: A. Grome		Start Date: 9/4/15
	Contractor: Cascade		End Date: 9/4/15
	Type of Drilling: AK	Bit Diameter:	Equipment Used: AK
Inches Driven	Water Level Depth:	Date/Time Measured:	Elevation:

Inches Driven / Inches Recovered	PID (ppm)	Sheen	Odor	Chemical Analysis	Sample Interval	Contact & Group Symbol	Soil Description (Surface Conditions:)	Comments
							0-0.19' Asphalt	
					1	ML	~~AK~~ - Air knife, sandy silt ~~silty sand~~, brown, moist, no odor	
	0.1	N	N					
					2	4"@	SS line at 1'8", just short of wye junction, Total depth 2.2'	S-28(2.1)@1440 (2)40ml, (x)8oz
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					0			
					1			
					2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					0			
					1			

Appendix C

EES
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Technical Memorandum

To: Mark Conan, Jonathan Polonsky, & Brent Chadwick, Plaid Pantries, Inc.
From: Paul Ecker LHG, and Chris Rhea, LG
Date: March 31, 2016

Subject: **Development of Site-Specific MTCA Method B Soil Cleanup Level for Gasoline**
Plaid Pantry Store #112
1002 West Fourth Plain Boulevard
Vancouver, Washington
Ecology VCP Project SW1314
EES Project 1179-01/03

This memorandum documents the methodology for and results of calculating the proposed soil cleanup level for gasoline at the Plaid Pantries, Inc. (Plaid) subject Site. The Site includes Plaid's active convenience market and retail fueling station known as Store #112, with gasoline-contaminated soil extending south of the Property boundary beneath the Fourth Plain Boulevard right-of-way.

EES Environmental Consulting, Inc. (EES) developed this Site-specific Method B soil cleanup level in accordance with MTCA regulations (WAC 173-340) and published Ecology guidance (2007 and 2011). Supporting information is provided below and attached in various data tables and site maps.

Figures 1 and 2 illustrate the Site location, layout, and soil sampling locations. Analytical testing results for Site soils are presented on Tables 1 and 2. Method B cleanup level calculations and model outputs are provided in Tables 3 and 3A-3E.

BACKGROUND

As discussed with Plaid and Washington Department of Ecology (Ecology) representatives, Remedial Investigation (RI) activities at the Site are nearly complete. RI data reports, planning documentation, and status updates are provided to Ecology as part of Plaid's participation in the Department's Voluntary Cleanup Program.

Based on Site characterization and the well-defined Conceptual Site Model (CSM) as discussed with Ecology in 2015-2016, we believe that the development and use of a site-specific Method B soil cleanup level for gasoline is appropriate and will be protective of human health and the environment (WAC 173-340-740). Basic elements of the CSM demonstrate the following:

- Gasoline impacts at the Site are well-defined. These impacts are limited to a localized pocket of shallow soil extending up to 13 feet in depth, within the area illustrated on Figure 2. Subsurface gasoline vapors associated with the historical release(s) are also present and are generally centered on the zone of soil contamination. As discussed with Ecology in December 2015 and early 2016, additional soil vapor assessment planning is underway in an effort to resolve potential RI vapor intrusion data gaps for the Property building.
- The local water table is anticipated at depths exceeding 80 feet and is not expected to be affected by historic gasoline release(s) originating at the Property. Recent evaluation of seasonally perched groundwater indicates no gasoline impacts to this media (EES, 3/30/2016).
- Current and reasonably likely future land use at the Property is commercial. No residential use of the Site is anticipated. Affected portions of the adjacent Fourth Plain Boulevard right-of-way will remain in use as a major local thoroughfare. Potential human receptors at the Site include store workers and customers, and potential future construction and excavation workers (including road and utility workers). Note that Method B calculations provided in this report are protective of unrestricted land use scenarios in accordance with Ecology's criteria.
- Terrestrial ecological exposure is unlikely. No adjustment to cleanup values to protect terrestrial ecological receptors is necessary.
- Plaid's operating soil vapor extraction (SVE) system provides source-area vapor control and mitigation. Gasoline concentrations in soil within the treatment zone are effectively reduced by SVE activity.

SITE-SPECIFIC MTCA METHOD B SOIL CLEANUP LEVELS (GASOLINE)

EES calculated a gasoline cleanup level in soil for unrestricted land use at the Site, using Ecology's default model inputs for the protection of human health (WAC 173-340-740). In accordance with published Ecology guidance (September 2011), EES collected and analyzed multiple soil samples from the high-concentration core of residual gasoline contamination, and these analytical findings were used to calculate a median soil cleanup level that is representative of what we believe to be "worst-case" Site conditions. Analytical data used in these calculations were obtained from soil samples collected in September 2015, including samples B-16(6), B-17(9), B-18(3), and B-18(9). Tables 1 and 2 summarize analytical testing results, and laboratory analytical reports are provided in Attachment A.

Soil cleanup level calculations were performed using Ecology's *Workbook for Calculating Soil and Groundwater Cleanup Levels* (2007), and included a combination of Site-specific chemical analytical data and default Ecology input parameters. The calculation results are summarized on Table 3, with detailed worksheets generated using Ecology's model provided as Tables 3A through 3E.

- The representative median Site-specific Method B soil cleanup level for gasoline was calculated at a concentration of 2,619 mg/kg.

EES proposes to use this Method B gasoline soil cleanup level of 2,619 mg/kg for unrestricted land use and future compliance evaluation purposes. As discussed with Ecology, soil vapor conditions must meet separate protective criteria, to be determined.

We request that Ecology provide a written opinion regarding the proposed soil cleanup level.

ATTACHMENTS

Tables
Table 1: Soil Analytical Results – Gasoline, Diesel, and Related Constituents
Table 2: Soil Analytical Results – Volatile Petroleum Hydrocarbons
Table 3: Summary of Site-Specific MTCA Method B Calculations

Figures
Figure 1: Vicinity Map
Figure 2: Maximum Gasoline Concentrations in Soil (September 2015)

Attachment A: Laboratory Analytical Data Reports

TABLES

TABLE 1
Soil Analytical Results - Gasoline, Diesel, and Related Constituents (mg/kg)
Plaid Pantry No. 112
Vancouver, Washington

Location	Date	Sample Depth (feet bgs)	Gasoline	Diesel	Heavy Oil/Lube	Benzene	Toluene	Ethylbenzene	Xylenes	EDB	EDC	MTBE	Naphthalene	Lead	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
Soil Screening Levels																			
MTCA Method A[1] Unrestricted Use			100/30[2]	2,000	2,000	0.03	7	6	9	0.005	NA	0.10	5	250	0.05	0.03	NA	NA	2
MTCA Method B[3]			2,619[4]	NC	NC	18.2	6,400[5]	8,000[5]	16,000[5]	0.5	11	556	1,600[5]	NC	476	12	NC	14.3	160,000[5]
September 2011 Initial Soil Sampling																			
B1-3	09/08/2011	3	24 U	59 U	118 U	0.011 U	0.044 U	0.022 U	0.065 U	*0.022 U*	0.022 U	0.044 U	0.087 U	-	0.022 U	0.022 U	0.44 U	0.022 U	0.022 U
B1-9	09/08/2011	9	22 U	54 U	108 U	0.013 U	0.051 U	0.026 U	0.077 U	*0.026 U*	0.026 U	0.051 U	0.10 U	8.3	0.026 U	0.026 U	0.51 U	0.026 U	0.026 U
B1-15	09/08/2011	15	21 U	52 U	103 U	0.013 U	0.052 U	0.026 U	0.078 U	*0.026 U*	0.026 U	0.052 U	0.10 U	-	0.026 U	0.026 U	0.52 U	0.026 U	0.026 U
B2-3	09/07/2011	3	21 U	53 U	107 U	0.011 U	0.043 U	0.022 U	0.065 U	*0.022 U*	0.022 U	0.043 U	0.087 U	-	0.022 U	0.022 U	0.43 U	0.022 U	0.022 U
B2-9	09/07/2011	9	25 U	25 U[b1]	54 [b1]	0.0088 U	0.035 U	0.018 U	0.053 U	*0.018 U*	0.018 U	0.035 U	0.010 U[d]	-	0.018 U	0.018 U	0.35 U	0.018 U	0.018 U
B2-15	09/09/2011	15	21 U	53 U	105 U	0.0068 U	0.027 U	0.014 U	0.041 U	*0.014 U*	0.014 U	0.027 U	0.054 U	-	0.014 U	0.014 U	0.27 U	0.014 U	0.014 U
B3-3	09/07/2011	3	23 U	57 U	113 U	0.012 U	0.047 U	0.024 U	0.071 U	*0.024 U*	0.024 U	0.047 U	0.094 U	-	0.024 U	0.024 U	0.47 U	0.024 U	0.024 U
B3-9	09/07/2011	9	26 U	64 U	128 U	0.014 U	0.055 U	0.028 U	0.083 U	*0.028 U*	0.028 U	0.055 U	0.11 U	12	0.028 U	0.028 U	0.55 U	0.028 U	0.028 U
B4-3	09/07/2011	3	23 U	57 U	114 U	0.013 U	0.051 U	0.026 U	0.076 U	*0.026 U*	0.026 U	0.051 U	0.10 U	-	0.026 U	0.026 U	0.51 U	0.026 U	0.026 U
B4-9	09/07/2011	9	21 U	53 U	106 U	0.012 U	0.049 U	0.024 U	0.073 U	*0.024 U*	0.024 U	0.049 U	0.097 U	-	0.024 U	0.024 U	0.49 U	0.024 U	0.024 U
B5-3	09/08/2011	3	22 U	56 U	112 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B5-6	09/08/2011	6	**2,900** [a]	>57 [c]	114 U	*0.28 U*	1.1 U	**12**	**74**	*0.56 U*	0.56 U	*1.1 U*	**14**	21	*0.56 U*	*0.56 U*	11 U	0.56 U	0.56 U
B5-9	09/08/2011	9	**4,070** [a]	>54 [c]	108 U	*0.24 U*	0.95 U	**29**	**121**	*0.48 U*	0.48 U	*0.95 U*	**8.8**	11	*0.48 U*	*0.48 U*	9.5 U	0.48 U	0.48 U
B5-12.5	09/08/2011	12.5	**444** [a]	638 [b,c]	50 U[b]	**2.1**	0.13 U	5.3	**21**	*0.063 U*	0.063 U	*0.13 U*	1.1	13	*0.063 U*	*0.063 U*	1.3 U	0.063 U	0.13 U
B5-20	09/08/2011	20	2.9 U[a]	-	-	0.0073 U	0.029 U	0.015 U	0.044 U	*0.015 U*	0.015 U	0.029 U	0.058 U	-	0.015 U	0.015 U	0.29 U	0.015 U	0.015 U
B6-3	09/08/2011	3	22 U	54 U	107 U	0.0096 U	0.038 U	0.019 U	0.057 U	*0.019 U*	0.019 U	0.038 U	0.077 U	-	0.019 U	0.019 U	0.38 U	0.019 U	0.019 U
B6-9	09/08/2011	9	23 U	58 U	116 U	0.0093 U	0.037 U	0.019 U	0.056 U	*0.019 U*	0.019 U	0.037 U	0.074 U	-	0.019 U	0.019 U	0.37 U	0.019 U	0.019 U
B6-12	09/09/2011	12	26 U	64 U	128 U	0.011 U	0.044 U	0.022 U	0.065 U	*0.022 U*	0.022 U	0.044 U	0.087 U	-	0.022 U	0.022 U	0.44 U	0.022 U	0.022 U
February 2012 Abandoned Tank Decommissioning																			
SVE-1/5.0	02/03/2012	5	22 U	55 U	110 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SVE-1/10.0	02/03/2012	10	**2,750** [a]	>56.1 [c]	112 U	**0.39**	**48**	**40**	**301**	*0.19 U*	0.16 U	*0.62 U*	**13**	7.6	*0.31 U*	*0.31 U*	6.2 U	0.31 U	0.31 U
PIT S/1.5	02/14/2012	1.5	23 U	25 U[b]	116 [b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tank Sludge	02/14/2012	NA	**2,410** [a]	172 U[c]	345 U	**0.040** J	1.9	2.7	**19**	*0.090 U*	0.090 U	*0.19 U*	**7.1** [e]	-	*0.094 U*	*0.094 U*	2.8 U	0.094 U	0.094 U
PIT N/2	02/14/2012	2	21 U	52 U	104 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT N/6	02/14/2012	6	8.7 U[a]	57 [c]	113 U	0.020 U	0.090 U	0.040 U	0.14	*0.040 U*	0.040 U	0.090 U	0.17 U	-	0.043 U	*0.043 U*	0.87 U	0.043 U	0.043 U
PIT S/2	02/14/2012	2	**1,320** [a]	54 [c]	109 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT S/6	02/14/2012	6	**5,800** [a]	62 [c]	124 U	**3.4**	**23**	**78**	**411**	*0.81 U*	0.81 U	*1.6 U*	**34**	-	*0.81 U*	*0.81 U*	16 U	0.81 U	0.81 U
PIT E/2	02/14/2012	2	24 U	60 U	120 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT E/6	02/14/2012	6	**64,200** [a]	62 [c]	123 U	**93**	**3,570**	**1,350**	**9,090**	*6.5 U*	6.5 U	*13 U*	**241**	-	*6.5 U*	*6.5 U*	182 U	6.5 U	*6.5 U*
PIT W/2	02/14/2012	2	**1,210** [a]	59 [c]	118 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PIT W/6	02/14/2012	6	**18,700** [a]	61 [c]	122 U	**26**	**572**	**296**	**1,693**	*1.6 U*	1.6 U	*3.2 U*	**67**	-	*1.6 U*	*1.6 U*	48 U	1.6 U	1.6 U
PIT Floor/6	02/14/2012	6	**34,900** [a]	**2,660** [b]	81 U[b]	**56**	**1,460**	**609**	**3,605**	*0.81 U*	0.81 U	*1.6 U*	**27** [e]	-	*0.81 U*	*0.81 U*	105 U	0.81 U	0.81 U
August 2012 Soil Sampling																			
B-7/6	08/16/2012	6	**473** [a]	-	-	*0.18 J*	0.86 U	2.1	**12**	*0.011 U*[e]	0.43 U	*0.51 U*[g]	1.7 U	-	*0.21 U*[g]	*0.31 U*[g]	8.6 U	0.43 U	0.43 U
B-7/9	08/16/2012	9	**1,730** [a]	-	-	**0.80**	0.82 U	0.89	1.2 U	*0.25 U*[g]	0.41 U	*0.49 U*[g]	1.6 U	-	*0.21 U*[g]	*0.30 U*[g]	8.2 U	0.41 U	0.41 U
B-7/13	08/16/2012	13	**303** [a]	-	-	**0.15**	0.089 U	0.17	0.25	*0.0089 U*[e]	0.045 U	0.089 U	0.30	-	0.045 U	*0.032 U*[g]	0.89 U	0.045 U	0.045 U
B-7/14	08/16/2012	14	5.8 U[a]	-	-	0.015 U	0.058 U	0.029 U	0.087 U	0.0029 U[e,g]	0.029 U	0.058 U	0.12 U	-	0.029 U	0.029 U	0.58 U	0.029 U	0.029 U
B-8/6	08/16/2012	6	8.4 U[a]	-	-	0.026	0.084 U	0.072	0.30	0.0042 U[e,g]	0.042 U	0.084 U	0.17 U	-	0.042 U	*0.031 U*[g]	0.84 U	0.042 U	0.042 U
B-8/9	08/16/2012	9	7.4 U[a]	-	-	**0.042**	0.074 U	0.037 U	0.25	*0.023 U*[g]	0.037 U	0.074 U	0.15 U	-	0.037 U	0.027 U[g]	0.74 U	0.037 U	0.037 U
B-8/13	08/16/2012	13	8.9 U[a]	-	-	0.022 U	0.089 U	0.044 U	0.13 U	0.0044 U[e,g]	0.044 U	0.089 U	0.18 U	-	0.044 U	*0.032 U*[g]	0.88 U	0.044 U	0.044 U
B-9/3	08/13/2012	3	5.7 U[a]	59 U	117 U	0.0143 U	0.057 U	0.029 U	0.086 U	*0.017 U*[g]	0.029 U	0.057 U	0.11 U	-	0.029 U	0.029 U	0.57 U	0.029 U	0.029 U
B-9/6	08/13/2012	6	5.2 U[a]	-	-	0.013 U	0.052 U	0.026 U	0.078 U	*0.016 U*[g]	0.026 U	0.052 U	0.10 U	-	0.026 U	0.026 U	0.52 U	0.026 U	0.026 U
B-9/9	08/13/2012	9	8.2 U[a]	-	-	0.020 U	0.082 U	0.041 U	0.12 U	*0.025 U*[g]	0.041 U	0.082 U	0.16 U	-	0.041 U	0.030 U[g]	0.82 U	0.041 U	0.041 U
B-9/13	08/13/2012	13	5.9 U[a]	-	-	0.015 U	0.059 U	0.029 U	0.088 U	*0.018 U*[g]	0.029 U	0.059 U	0.12 U	-	0.029 U	0.029 U	0.59 U	0.029 U	0.029 U
B-10/3	08/13/2012	3	5.4 U[a]	55 U	109 U	0.013 U	0.054 U	0.027 U	0.080 U	*0.016 U*[g]	0.027 U	0.054 U	0.11 U	-	0.027 U	0.027 U	0.54 U	0.027 U	0.027 U
B-10/6	08/13/2012	6	9.2 U[a]	-	-	0.023 U	0.092 U	0.046 U	0.14 U	*0.028 U*[g]	0.046 U	0.092 U	0.18 U	-	0.046 U	*0.033 U*[g]	0.92 U	0.046 U	0.046 U
B-10/9	08/13/2012	9	11 U[a]	-	-	0.028 U	0.11 U	0.056 U	0.17 U	*0.034 U*[g]	0.056 U	0.067 U[g]	0.22 U	-	0.028 U[g]	*0.041 U*[g]	1.1 U	0.056 U	0.056 U
B-10/13	08/13/2012	13	4.7 U[a]	-	-	0.012 U	0.047 U	0.024 U	0.071 U	*0.014 U*[g]	0.024 U	0.047 U	0.095 U	-	0.024 U	0.024 U	0.47 U	0.024 U	0.024 U
B-10/18	08/13/2012	18	20 U	51 U	102 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 1
Soil Analytical Results - Gasoline, Diesel, and Related Constituents (mg/kg)
Plaid Pantry No. 112
Vancouver, Washington

Location	Date	Sample Depth (feet bgs)	Gasoline	Diesel	Heavy Oil/Lube	Benzene	Toluene	Ethylbenzene	Xylenes	EDB	EDC	MTBE	Naphthalene	Lead	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
Soil Screening Levels																			
MTCA Method A[1] Unrestricted Use			100/30[2]	2,000	2,000	0.03	7	6	9	0.005	NA	0.10	5	250	0.05	0.03	NA	NA	2
MTCA Method B[3]			2,619[4]	NC	NC	18.2	6,400[5]	8,000[5]	16,000[5]	0.5	11	556	1,600[5]	NC	476	12	NC	14.3	160,000[5]
August 2012 Soil Sampling (continued)																			
B-11/3	08/14/2012	3	13 [a]	56 U	113 U	0.017 U	0.068 U	0.034 U	0.10 U	*0.021 U*[g]	0.034 U	0.068 U	0.14 U	-	0.034 U	0.025 U[g]	0.68 U	0.034 U	0.034 U
B-11/6	08/14/2012	6	**20,400** [a]	62 X	123 U	**3.7**	0.81 U	3.9	1.6 U	*0.25 U*[g]	0.41 U	*0.49 U*[g]	**57**	24	*0.20 U*[g]	*0.30 U*[g]	8.1 U	0.41 U	0.41 U
B-11/9	08/14/2012	9	**1,560** [a]	-	-	**0.47**	0.095 U	0.62	0.14 U	*0.029 U*[g]	0.048 U	0.095 U	1.9	-	0.048 U	*0.035 U*[g]	2.7 U	0.048 U	0.048 U
B-11/11	08/14/2012	11	5.7 U[a]	-	-	0.014 U	0.057 U	0.029 U	0.086 U	0.0029 U[e,g]	0.029 U	0.057 U	0.11 U	3.3	0.029 U	0.029 U	0.57 U	0.029 U	0.029 U
B-11/17	08/14/2012	17	5.6 U[a]	-	-	0.014 U	0.056 U	0.028 U	0.084 U	*0.017 U*[g]	0.028 U	0.056 U	0.11 U	-	0.028 U	0.028 U	0.56 U	0.028 U	0.028 U
B-11/23	08/14/2012	23	20 U	51 U	102 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-11/29	08/14/2012	29	20 U	51 U	102 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-12/3	08/14/2012	3	5.2 U[a]	58 U	116 U	0.013 U	0.052 U	0.026 U	0.078 U	*0.016 U*[g]	0.026 U	0.052 U	0.10 U	-	0.026 U	0.026 U	0.52 U	0.026 U	0.026 U
B-12/6	08/14/2012	6	8.1 U[a]	-	-	0.020 U	0.081 U	0.040 U	0.12 U	*0.024 U*[g]	0.040 U	0.081 U	0.16 U	-	0.040 U	0.029 U[g]	0.81 U	0.040 U	0.040 U
B-12/9	08/14/2012	9	9.6 U[a]	-	-	0.024 U	0.096 U	0.048 U	0.14 U	*0.029 U*[g]	0.048 U	0.096 U	0.19 U	-	0.048 U	*0.035 U*[g]	0.96 U	0.048 U	0.048 U
B-12/13	08/14/2012	13	8.1 U[a]	-	-	0.020 U	0.081 U	0.040 U	0.12 U	*0.025 U*[g]	0.040 U	0.081 U	0.16 U	-	0.040 U	0.029 U[g]	0.81 U	0.040 U	0.040 U
B-12/18	08/14/2012	18	20 U	50 U	100 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-13/3	08/15/2012	3	7.8 U[a]	-	-	0.019 U	0.078 U	0.039 U	0.12 U	*0.024 U*[g]	0.039 U	0.078 U	0.16 U	-	0.039 U	0.028 U[g]	0.78 U	0.039 U	0.039 U
B-13/6	08/15/2012	6	6.5 U[a]	-	-	0.016 U	0.065 U	0.032 U	0.097 U	*0.020 U*[g]	0.032 U	0.065 U	0.13 U	-	0.032 U	0.023 U[g]	0.65 U	0.032 U	0.032 U
B-13/9	08/15/2012	9	6.9 U[a]	-	-	0.017 U	0.069 U	0.034 U	0.10 U	*0.021 U*[g]	0.034 U	0.069 U	0.14 U	-	0.034 U	0.025 U[g]	0.69 U	0.034 U	0.034 U
B-13/13	08/15/2012	13	8.0 U[a]	-	-	0.020 U	0.080 U	0.040 U	0.12 U	*0.024 U*[g]	0.040 U	0.080 U	0.16 U	-	0.040 U	0.029 U[g]	0.80 U	0.040 U	0.040 U
B-14/3	08/15/2012	3	6.6 U[a]	-	-	0.017 U	0.066 U	0.033 U	0.099 U	*0.020 U*[g]	0.033 U	0.066 U	0.13 U	-	0.033 U	0.024 U[g]	0.66 U	0.033 U	0.033 U
B-14/6	08/15/2012	6	7.0 U[a]	-	-	0.018 U	0.070 U	0.035 U	0.11 U	*0.021 U*[g]	0.035 U	0.070 U	0.14 U	-	0.035 U	0.025 U[g]	0.70 U	0.035 U	0.035 U
B-14/9	08/15/2012	9	7.6 U[a]	-	-	0.019 U	0.076 U	0.038 U	0.11 U	*0.023 U*[g]	0.038 U	0.076 U	0.15 U	-	0.038 U	0.027 U[g]	0.76 U	0.038 U	0.038 U
B-14/13	08/15/2012	13	6.2 U[a]	-	-	0.016 U	0.062 U	0.031 U	0.094 U	*0.019 U*[g]	0.031 U	0.062 U	0.13 U	-	0.031 U	0.023 U[g]	0.62 U	0.031 U	0.031 U
B-15/3	08/15/2012	3	6.6 U[a]	-	-	0.017 U	0.066 U	0.033 U	0.099 U	*0.020 U*[g]	0.033 U	0.066 U	0.13 U	-	0.033 U	0.024 U[g]	0.66 U	0.033 U	0.033 U
B-15/6	08/15/2012	6	7.9 U[a]	-	-	0.020 U	0.079 U	0.040 U	0.12 U	*0.024 U*[g]	0.040 U	0.079 U	0.16 U	-	0.040 U	0.029 U[g]	0.79 U	0.040 U	0.040 U
B-15/9	08/15/2012	9	7.6 U[a]	-	-	0.019 U	0.076 U	0.038 U	0.11 U	*0.023 U*[g]	0.038 U	0.076 U	0.15 U	-	0.038 U	0.027 U[g]	0.76 U	0.038 U	0.038 U
B-15/13	08/15/2012	13	6.2 U[a]	-	-	0.016 U	0.062 U	0.031 U	0.093 U	*0.019 U*[g]	0.031 U	0.062 U	0.12 U	-	0.031 U	0.023 U[g]	0.62 U	0.031 U	0.031 U
B-16/6	08/16/2012	6	5.8 U[a]	-	-	0.015 U	0.058 U	0.029 U	0.087 U	0.0030 U[e,g]	0.029 U	0.058 U	0.17 U	11	0.029 U	0.029 U	0.58 U	0.029 U	0.029 U
B-16/9	08/16/2012	9	8.0 U[a]	-	-	0.020 U	0.080 U	0.040 U	1.2 U	*0.024 U*[g]	0.040 U	0.080 U	0.16 U	12	0.040 U	0.029 U[g]	0.80 U	0.040 U	0.040 U
B-16/13	08/16/2012	13	5.9 U[a]	-	-	0.015 U	0.059 U	0.030 U	0.089 U	0.0030 U[e,g]	0.030 U	0.059 U	0.12 U	-	0.030 U	0.030 U	0.59 U	0.030 U	0.030 U
SVE-2/8	08/16/2012	8	**6,800** [a]	-	-	**14**	**48**	**96**	**436**	*0.27 U*[g]	0.45 U	*0.54 U*[g]	**27**	11	*0.22 U*[g]	*0.32 U*[g]	9.0 U	0.45 U	0.45 U
SVE-2/12	08/16/2012	12	5.7 U[a]	-	-	0.014 U	0.057 U	0.029 U	0.086 U	0.0029 U[e,g]	0.029 U	0.057 U	0.11 U	2.8	0.029 U	0.029 U	0.57 U	0.029 U	0.029 U
SVE-2/16	08/16/2012	16	7.0 U[a]	-	-	0.018 U	0.070 U	0.035 U	0.11 U	0.0035 U[e,g]	0.035 U	0.070 U	0.14 U	-	0.035 U	0.025 U[g]	0.70 U	0.035 U	0.035 U
SVE-2/20	08/16/2012	20	5.9 U[a]	-	-	0.014 U	0.059 U	0.030 U	0.089 U	*0.018 U*[g]	0.030 U	0.059 U	0.12 U	-	0.030 U	0.030 U	0.59 U	0.030 U	0.030 U
SVE-3/5	08/16/2012	5	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-
SVE-3/8	08/16/2012	8	**3,820** [a]	-	-	**6.5**	**117**	**70**	**389**	*0.36 U*[g]	0.60 U	*0.72 U*[g]	**16**	10	*0.30 U*[g]	*0.43 U*[g]	12 U	0.60 U	0.60 U
SVE-3/12.5	08/16/2012	12.5	**216** [a]	-	-	**1.5**	4.8	3.9	**21**	0.0036 U[e,g]	0.36 U	*0.43 U*[g]	1.4 U	-	*0.18 U*[g]	*0.26 U*[g]	7.2 U	0.36 U	0.36 U
SVE-3/14	08/16/2012	14	6.3 U[a]	-	-	0.016 U	0.063 U	0.031 U	0.094 U	0.0031 U[e,g]	0.031 U	0.063 U	0.13 U	-	0.031 U	0.023 U[g]	0.63 U	0.031 U	0.031 U
SVE-3/20	08/16/2012	20	6.0 U[a]	-	-	0.015 U	0.060 U	0.030 U	0.089 U	*0.018 U*[g]	0.030 U	0.060 U	0.12 U	-	0.030 U	0.030 U	0.60 U	0.030 U	0.030 U
SVE-4/6	08/16/2012	6	8.1 U[a]	-	-	0.020 U	0.081 U	0.040 U	0.12 U	0.0040 U[e,g]	0.040 U	0.081 U	0.16 U	-	0.040 U	0.029 U[g]	0.81 U	0.040 U	0.040 U
SVE-4/9	08/16/2012	9	**97** [a]	-	-	0.018	0.072 U	0.30	0.58	*0.022 U*[g]	0.036 U	0.072 U	1.4	-	0.036 U	0.026 U[g]	0.72 U	0.036 U	0.036 U
SVE-4/11	08/16/2012	11	**54** [a]	-	-	**0.034**	0.15	0.82	1.5	0.0038 U[e,g]	0.038 U	0.076 U	1.4	-	0.038 U	0.028 U[g]	0.76 U	0.038 U	0.038 U
SVE-4/14	08/16/2012	14	6.0 U[a]	-	-	0.015 U	0.060 U	0.030 U	0.090 U	0.0030 U[e,g]	0.030 U	0.060 U	0.12 U	-	0.030 U	0.030 U	0.60 U	0.030 U	0.030 U
SVE-5/5	08/16/2012	5	6.1 U[a]	-	-	0.015 U	0.061 U	0.031 U	0.092 U	0.0031 U[e,g]	0.031 U	0.061 U	0.12 U	7.5	0.031 U	0.022 U[g]	0.61 U	0.031 U	0.031 U
SVE-5/7.5	08/16/2012	7.5	**793** [a]	-	-	**0.15**	**9.0**	**7.4**	**57**	*0.098 U*[g]	0.16 U	*0.19 U*[g]	**21**	11	*0.081 U*[g]	*0.12 U*[g]	3.2 U	0.16 U	0.16 U
September 2015 Soil Sampling																			
B-16(3)	09/02/2015	3	3.6 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-16(6)	09/02/2015	6	**1,080** J[1,a]	-	-	*0.18 U*	0.73 U	0.37 U	1.1 U	-	-	-	-	-	-	-	-	-	-
B-16(9)	09/02/2015	9	**928** J[1,a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-16(12)	09/02/2015	12	5.8 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-17(3)	09/02/2015	3	7.0 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-17(6)	09/02/2015	6	15 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-17(9)	09/02/2015	9	**9,180** [a]	-	-	*0.19 U*	0.77 U	0.63	1.2 U	-	-	-	-	-	-	-	-	-	-
B-17(12)	09/03/2015	12	5.8 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 1
Soil Analytical Results - Gasoline, Diesel, and Related Constituents (mg/kg)
Plaid Pantry No. 112
Vancouver, Washington

Location	Date	Sample Depth (feet bgs)	Gasoline	Diesel	Heavy Oil/Lube	Benzene	Toluene	Ethylbenzene	Xylenes	EDB	EDC	MTBE	Naphthalene	Lead	PCE	TCE	2-Butanone	Carbon Tetrachloride	1,1,1-Trichloroethane
Soil Screening Levels																			
MTCA Method A[1] Unrestricted Use			100/30[2]	2,000	2,000	0.03	7	6	9	0.005	NA	0.10	5	250	0.05	0.03	NA	NA	2
MTCA Method B[3]			2,619[4]	NC	NC	18.2	6,400[5]	8,000[5]	16,000[5]	0.5	11	556	1,600[5]	NC	476	12	NC	14.3	160,000[5]
September 2015 Soil Sampling (continued)																			
B-18(3)	09/03/2015	3	**4,770** [a]	-	-	*0.66 U*	2.6 U	2.6	3.9 U	-	-	-	-	-	-	-	-	-	-
B-18(6)	09/03/2015	6	**543** [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-18(9)	09/03/2015	9	**7,820** [a]	-	-	*0.19 U*	0.74 U	0.37 U	1.1 U	-	-	-	-	-	-	-	-	-	-
B-18(12)	09/04/2015	12	5.8 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-19(3)	09/03/2015	3	5.8 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-19(6)	09/03/2015	6	8.4 [a]	-	-	0.019 U	0.077 U	0.039 U	0.12 U	-	-	-	-	-	-	-	-	-	-
B-19(9)	09/03/2015	9	7.9 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-19(12)	09/03/2015	12	5.7 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-20(6)	09/03/2015	6	5.9 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B-20(9)	09/03/2015	9	**475** J[1,a,f]	-	-	0.018 U	0.073 U	0.036 U	0.11 U	-	-	-	-	-	-	-	-	-	-
B-20(12)	09/03/2015	12	5.7 U[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Gasoline, Diesel, and Heavy Oil/Lube by Method by NWTPH-HCID unless otherwise noted.

Volatiles by EPA Method 8260B

[1] Model Toxics Control Act (MTCA) Cleanup Amendments, Method A Soil Cleanup Levels for Unrestricted Land Use (WDOE, CLARC Database, August 2015)

[2] Per MTCA, the cleanup value for gasoline is 30 mg/kg if benzene is detected and/or if the sum of the toluene, ethylbenzene, and xylenes is greater than one percent of the gasoline concentration, and 100 mg/kg for all other gasoline mixtures.

[3] Model Toxics Control Act (MTCA) Cleanup Amendments, Method B Soil Cleanup Levels (cancer endpoint) (WDOE, CLARC Database, August 2015)

[4] MTCA modified Method B cleanup value calculated using Ecology's Workbook Tool for Calculating Soil and Groundwater Cleanup Levels (revised December 2007). The median soil concentration shown is based on site-specific analytical data combined with generic default assumptions.

[5] Stated cleanup level is a non-cancer value. No cancer value available.

[a] Gasoline by Method NWTPH-Gx/EPA 8260B

[b] Diesel and Heavy Oil/Lube by Method NWTPH-Dx

[b1] Diesel and Heavy Oil/Lube by Method NWTPH-Dx with silica-gel cleanup

[c] Results in the diesel organics range are due to overlap from a gasoline range product.

[d] Naphthalene analyzed by EPA Method 8270D SIM. No detections were reported for any of the PAH compounds.

[e] 1,2-Dibromoethane (EDB) analyzed by EPA 8260B SIM.

[f] The chromatographic pattern does not resemble the fuel pattern used for quantitation.

[g] The analyte is reported down to the method detection limit. Result is an estimated concentration.

MTBE = Methyl tert-butyl ether

EDB = 1,2-Dibromoethane

EDC = 1,2-Dichloroethane

PCE = Tetrachloroethene

TCE = Trichloroethene

mg/kg = milligrams per kilogram

Bold values indicate concentrations exceed the Method A cleanup level shown.

Highlighted values exceed Method B cleanup level shown.

Italics indicate analytical reporting limit exceeds lowest cleanup level shown.

U = Undetected at method limit shown

J = Estimated value. Result was below the method reporting limit, but above the method detection limit.

J[1] = Data Validation Qualifier. The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

X = The detection in the diesel range is due to overlap from a gasoline range product.

NA = Not Applicable/Not Available

NC = Not Calculated

- = Not analyzed for this parameter

TABLE 2

Soil Analytical Results - Volatile Petroleum Hydrocarbons (mg/Kg)

Plaid Pantry No. 112

Vancouver, Washington

Sample Identification	B-16(6)	B-17(9)	B-18(3)	B-18(9)
Sample Depth (feet bgs)	6	9	3	9
Collection Date	09/02/2015	09/02/2015	09/03/2015	09/03/2015
Aliphatic Hydrocarbon (C5-C6)	6.5	2.4	24	1.8 U
Aliphatic Hydrocarbon (C6-C8)	1.4 UJ	186 J	87 J	41 J
Aliphatic Hydrocarbon (C8-C10)	8.1 J	567 J	277 J	212 J
Aliphatic Hydrocarbon (C10-C12)	175	556	574	409
Aromatic Hydrocarbon (C8-C10)	36	945	548	387
Aromatic Hydrocarbon (C10-C12)	205 J	564 J	513 J	178 J
Aromatic Hydrocarbon (C12-C13)	155 J	180 J	114 J	44 J

Notes:

VPH = Volatile Petroleum Hydrocarbons by NWVPH Method

mg/Kg = Milligrams per kilogram (parts per million) wet weight

bgs = Below ground surface

U = Not detected at method reporting limit shown

J = Data Validation Qualifier. The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Data Validation Qualifier. The analyte was analyzed for, but not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

TABLE 3
SUMMARY OF SITE-SPECIFIC MTCA METHOD B CALCULATIONS
PLAID PANTRY NO. 112
VANCOUVER, WASHINGTON

Parameter	B-16(6)	B-17(9)	B-18(3)	B-18 (9)
Test Current Conditions				
Measured TPH	587.490	3002.110	2143.180	1273.300
HI	0.2824	1.083	0.8487	0.4694
ECR	4.956E-09	5.231E-09	1.817E-08	5.231E-09
Pass/Fail?	PASS	FAIL	PASS	PASS
Protective Conditions				
Set Criteria	HI = 1	NA	HI=1	HI=1
TPH Concentration	2080.25	NA	2525.20	2714.96
HI	1	NA	1	1
ECR	1.75E-08	NA	2.14E-08	1.12E-08
Pass/Fail	PASS	NA	PASS	PASS
Test Conditions				
Test TPH	NA	2760	NA	NA
HI	NA	0.995	NA	NA
ECR	NA	4.81E-09	NA	NA
Pass/Fail?	NA	PASS	NA	NA

- Arithmetic Average Concentration (based on protective and test conditions) = 2519.26 mg/Kg
- Calculated TPH using arithmetic average concentrations of constituents

Parameter	Average
Test Current Conditions	
Measured TPH	1751.250
HI	0.6708
ECR	8.397E-09
Pass/Fail?	PASS
Protective Conditions	
Set Criteria	HI = 1
TPH Concentration	2610.66
HI	1
ECR	1.25E-08
Pass/Fail	PASS
Test Conditions	
Test TPH	NA
HI	NA
ECR	NA
Pass/Fail?	NA

Median Concentration (as per guidance) = 2618.51 mg/Kg

TABLE 3A

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Soil Direct Contact: Method B - Unrestricted Land Use

A2. 1B Worksheet for Calculating Soil Cleanup Levels for Protection of Human Health: (Soil Direct Contact Pathway)

Method B: Unrestricted Land Use (WAC 173-340-740)

Date: 12/3/2015
Site Name: Plaid Pantry 112
Sample Name: B-16-6

Chemical of Concern or EC group	Current Condition				Adjusted Condition			
	Measured Soil Conc @dry basis	HQ	RISK	Pass or Fail?	Soil Conc being tested	HQ	RISK	Pass or Fail?
	mg/kg	unitless	unitless		mg/kg	unitless	unitless	
Petroleum EC Fraction								
AL_EC >5-6	6.5	5.17E-05			6.50E+00	5.17E-05		
AL_EC >6-8	0.7	5.57E-06			7.00E-01	5.57E-06		
AL_EC >8-10	8.1	3.65E-03			8.10E+00	3.65E-03		
AL_EC >10-12	175	7.89E-02			1.75E+02	7.89E-02		
AL_EC >12-16	0				0.00E+00			
AL_EC >16-21	0				0.00E+00			
AL_EC >21-34	0				0.00E+00			
AR_EC >8-10	36	4.87E-03			3.60E+01	4.87E-03		
AR_EC >10-12	205	1.39E-01			2.05E+02	1.39E-01		
AR_EC >12-16	155	5.58E-02			1.55E+02	5.58E-02		
AR_EC >16-21	0				0.00E+00			
AR_EC >21-34	0				0.00E+00			
Benzene	0.09	2.82E-04	4.96E-09		9.00E-02	2.82E-04	4.95E-09	
Toluene	0.365	6.08E-05			3.65E-01	6.08E-05		
Ethylbenzene	0.185	2.48E-05			1.85E-01	2.48E-05		
Total Xylenes	0.55	3.69E-05			5.50E-01	3.69E-05		
Naphthalene	0				0.00E+00	0.00E+00		
1-Methyl Naphthalene	0				0.00E+00	0.00E+00		
2-Methyl Naphthalene	0				0.00E+00	0.00E+00		
n-Hexane	0				0.00E+00	0.00E+00		
MTBE	0				0.00E+00			
Ethylene Dibromide (EDB)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
1,2 Dichloroethane (EDC)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
Benzo(a)anthracene	0		0.00E+00	*For*	0.00E+00		0.00E+00	*For*
Benzo(b)fluoranthene	0		0.00E+00	*all*	0.00E+00		0.00E+00	*all*
Benzo(k)fluoranthene	0		0.00E+00	*cPAHs*	0.00E+00		0.00E+00	*cPAHs*
Benzo(a)pyrene	0		0.00E+00		0.00E+00		0.00E+00	
Chrysene	0		0.00E+00		0.00E+00		0.00E+00	
Dibenz(a,h)anthracene	0		0.00E+00	Σ Risk=	0.00E+00		0.00E+00	Σ Risk=
Indeno(1,2,3-cd)pyrene	0		0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00
Sum	**587.49**	2.82E-01	4.96E-09		5.87E+02	2.82E-01	4.95E-09	

TEST CURRENT CONDITION

Measured TPH Soil Conc, mg/kg= 587.490
HI= 2.824E-01
RISK= 4.956E-09
Pass or Fail? Pass

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate protective TPH soil concentration based on various soil quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH Soil Conc

Selected Criterion: @HI=1
Most Stringent? YES
Protctive TPH Soil Conc, mg/kg = 2080.25
HI = 1.00E+00
RISK = 1.75E-08

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH Soil

Tested TPH Soil Conc, mg/kg = 587.4
HI = 2.82E-01
RISK = 4.95E-09
Pass or Fail? Pass

TABLE 3B

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Soil Direct Contact: Method B - Unrestricted Land Use

A2. 1B Worksheet for Calculating Soil Cleanup Levels for Protection of Human Health: (Soil Direct Contact Pathway)

Method B: Unrestricted Land Use (WAC 173-340-740)

Date: 12/3/2015
Site Name: Plaid Pantry 112
Sample Name: B-17(9)

Chemical of Concern or EC group	Current Condition				Adjusted Condition			
	Measured Soil Conc @dry basis	HQ	RISK	Pass or Fail?	Soil Conc being tested	HQ	RISK	Pass or Fail?
	mg/kg	unitless	unitless		mg/kg	unitless	unitless	
Petroleum EC Fraction								
AL_EC >5-6	2.4	1.91E-05			2.21E+00	1.76E-05		
AL_EC >6-8	186	1.48E-03			1.71E+02	1.36E-03		
AL_EC >8-10	567	2.56E-01			5.21E+02	2.35E-01		
AL_EC >10-12	556	2.51E-01			5.11E+02	2.31E-01		
AL_EC >12-16	0				0.00E+00			
AL_EC >16-21	0				0.00E+00			
AL_EC >21-34	0				0.00E+00			
AR_EC >8-10	945	1.28E-01			8.69E+02	1.18E-01		
AR_EC >10-12	564	3.82E-01			5.19E+02	3.51E-01		
AR_EC >12-16	180	6.48E-02			1.65E+02	5.96E-02		
AR_EC >16-21	0				0.00E+00			
AR_EC >21-34	0				0.00E+00			
Benzene	0.095	2.97E-04	5.23E-09		8.73E-02	2.73E-04	4.81E-09	
Toluene	0.385	6.41E-05			3.54E-01	5.90E-05		
Ethylbenzene	0.63	8.44E-05			5.79E-01	7.76E-05		
Total Xylenes	0.6	4.03E-05			5.52E-01	3.70E-05		
Naphthalene	0				0.00E+00	0.00E+00		
1-Methyl Naphthalene	0				0.00E+00	0.00E+00		
2-Methyl Naphthalene	0				0.00E+00	0.00E+00		
n-Hexane	0				0.00E+00	0.00E+00		
MTBE	0				0.00E+00			
Ethylene Dibromide (EDB)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
1,2 Dichloroethane (EDC)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
Benzo(a)anthracene	0		0.00E+00	*For*	0.00E+00		0.00E+00	*For*
Benzo(b)fluoranthene	0		0.00E+00	*all*	0.00E+00		0.00E+00	*all*
Benzo(k)fluoranthene	0		0.00E+00	*cPAHs*	0.00E+00		0.00E+00	*cPAHs*
Benzo(a)pyrene	0		0.00E+00		0.00E+00		0.00E+00	
Chrysene	0		0.00E+00		0.00E+00		0.00E+00	
Dibenz(a,h)anthracene	0		0.00E+00	Σ Risk=	0.00E+00		0.00E+00	Σ Risk=
Indeno(1,2,3-cd)pyrene	0		0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00
Sum	**3002.11**	1.08E+00	5.23E-09	Fail	2.76E+03	9.95E-01	4.81E-09	

TEST CURRENT CONDITION

Measured TPH Soil Conc, mg/kg= 3002.110
HI= 1.083E+00
RISK= 5.231E-09
Pass or Fail? ***Fail***

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate protective TPH soil concentration based on various soil quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH Soil Conc

Selected Criterion:
Most Stringent?
Protctive TPH Soil Conc, mg/kg =
HI =
RISK =

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH Soil

Tested TPH Soil Conc, mg/kg = 2760
HI = 9.95E-01
RISK = 4.81E-09
Pass or Fail? Pass
Check Residual Saturation (WAC340-747(10))

TABLE 3C

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Soil Direct Contact: Method B - Unrestricted Land Use

A2. 1B Worksheet for Calculating Soil Cleanup Levels for Protection of Human Health: (Soil Direct Contact Pathway)
Method B: Unrestricted Land Use (WAC 173-340-740)

Date: 12/3/2015
Site Name: Plaid Pantry 112
Sample Name: B-18(3)

Chemical of Concern or EC group	Current Condition				Adjusted Condition			
	Measured Soil Conc @dry basis	HQ	RISK	Pass or Fail?	Soil Conc being tested	HQ	RISK	Pass or Fail?
	mg/kg	unitless	unitless		mg/kg	unitless	unitless	
Petroleum EC Fraction								
AL_EC >5-6	24	1.91E-04			2.83E+01	2.25E-04		
AL_EC >6-8	87	6.92E-04			1.02E+02	8.16E-04		
AL_EC >8-10	277	1.25E-01			3.26E+02	1.47E-01		
AL_EC >10-12	574	2.59E-01			6.76E+02	3.05E-01		
AL_EC >12-16	0				0.00E+00			
AL_EC >16-21	0				0.00E+00			
AL_EC >21-34	0				0.00E+00			
AR_EC >8-10	548	7.42E-02			6.46E+02	8.73E-02		
AR_EC >10-12	513	3.47E-01			6.04E+02	4.09E-01		
AR_EC >12-16	114	4.10E-02			1.34E+02	4.83E-02		
AR_EC >16-21	0				0.00E+00			
AR_EC >21-34	0				0.00E+00			
Benzene	0.33	1.03E-03	1.82E-08		3.89E-01	1.22E-03	2.14E-08	
Toluene	1.3	2.17E-04			1.53E+00	2.55E-04		
Ethylbenzene	2.6	3.48E-04			3.06E+00	4.10E-04		
Total Xylenes	1.95	1.31E-04			2.30E+00	1.54E-04		
Naphthalene	0				0.00E+00	0.00E+00		
1-Methyl Naphthalene	0				0.00E+00	0.00E+00		
2-Methyl Naphthalene	0				0.00E+00	0.00E+00		
n-Hexane	0				0.00E+00	0.00E+00		
MTBE	0				0.00E+00			
Ethylene Dibromide (EDB)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
1,2 Dichloroethane (EDC)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
Benzo(a)anthracene	0		0.00E+00	*For*	0.00E+00		0.00E+00	*For*
Benzo(b)fluoranthene	0		0.00E+00	*all*	0.00E+00		0.00E+00	*all*
Benzo(k)fluoranthene	0		0.00E+00	*cPAHs*	0.00E+00		0.00E+00	*cPAHs*
Benzo(a)pyrene	0		0.00E+00		0.00E+00		0.00E+00	
Chrysene	0		0.00E+00		0.00E+00		0.00E+00	
Dibenz(a,h)anthracene	0		0.00E+00	Σ Risk=	0.00E+00		0.00E+00	Σ Risk=
Indeno(1,2,3-cd)pyrene	0		0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00
Sum	**2143.18**	8.49E-01	1.82E-08		2.52E+03	1.00E+00	2.14E-08	

TEST CURRENT CONDITION

Measured TPH Soil Conc, mg/kg= 2143.180
HI= 8.487E-01
RISK= 1.817E-08
Pass or Fail? Pass
Check Residual Saturation (WAC340-747(10))

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate protective TPH soil concentration based on various soil quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH Soil Conc

Selected Criterion: @HI=1
Most Stringent? YES
Protctive TPH Soil Conc, mg/kg = 2525.20
HI = 1.00E+00
RISK = 2.14E-08

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH Soil

Tested TPH Soil Conc, mg/kg = 2524.51
HI = 1.00E+00
RISK = 2.14E-08
Pass or Fail? Pass
Check Residual Saturation (WAC340-747(10))

TABLE 3D

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Soil Direct Contact: Method B - Unrestricted Land Use

A2. 1B Worksheet for Calculating Soil Cleanup Levels for Protection of Human Health: (Soil Direct Contact Pathway)

Method B: Unrestricted Land Use (WAC 173-340-740)

Date: 12/3/2015
Site Name: Plaid Pantry 112
Sample Name: B-18(9)

Chemical of Concern or EC group	Current Condition				Adjusted Condition			
	Measured Soil Conc @dry basis	HQ	RISK	Pass or Fail?	Soil Conc being tested	HQ	RISK	Pass or Fail?
	mg/kg	unitless	unitless		mg/kg	unitless	unitless	
Petroleum EC Fraction								
AL_EC >5-6	0.9	7.16E-06			1.92E+00	1.53E-05		
AL_EC >6-8	41.4	3.30E-04			8.82E+01	7.02E-04		
AL_EC >8-10	212	9.56E-02			4.52E+02	2.04E-01		
AL_EC >10-12	409	1.84E-01			8.71E+02	3.93E-01		
AL_EC >12-16	0				0.00E+00			
AL_EC >16-21	0				0.00E+00			
AL_EC >21-34	0				0.00E+00			
AR_EC >8-10	387	5.24E-02			8.24E+02	1.12E-01		
AR_EC >10-12	178	1.20E-01			3.79E+02	2.57E-01		
AR_EC >12-16	43.8	1.58E-02			9.33E+01	3.36E-02		
AR_EC >16-21	0				0.00E+00			
AR_EC >21-34	0				0.00E+00			
Benzene	0.095	2.97E-04	5.23E-09		2.02E-01	6.33E-04	1.11E-08	
Toluene	0.37	6.16E-05			7.88E-01	1.31E-04		
Ethylbenzene	0.185	2.48E-05			3.94E-01	5.28E-05		
Total Xylenes	0.55	3.69E-05			1.17E+00	7.86E-05		
Naphthalene	0				0.00E+00	0.00E+00		
1-Methyl Naphthalene	0				0.00E+00	0.00E+00		
2-Methyl Naphthalene	0				0.00E+00	0.00E+00		
n-Hexane	0				0.00E+00	0.00E+00		
MTBE	0				0.00E+00			
Ethylene Dibromide (EDB)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
1,2 Dichloroethane (EDC)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
Benzo(a)anthracene	0		0.00E+00	*For*	0.00E+00		0.00E+00	*For*
Benzo(b)fluoranthene	0		0.00E+00	*all*	0.00E+00		0.00E+00	*all*
Benzo(k)fluoranthene	0		0.00E+00	*cPAHs*	0.00E+00		0.00E+00	*cPAHs*
Benzo(a)pyrene	0		0.00E+00		0.00E+00		0.00E+00	
Chrysene	0		0.00E+00		0.00E+00		0.00E+00	
Dibenz(a,h)anthracene	0		0.00E+00	Σ Risk=	0.00E+00		0.00E+00	Σ Risk=
Indeno(1,2,3-cd)pyrene	0		0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00
Sum	**1273.3**	4.69E-01	5.23E-09		2.71E+03	1.00E+00	1.11E-08	

TEST CURRENT CONDITION

Measured TPH Soil Conc, mg/kg= 1273.300
HI= 4.694E-01
RISK= 5.231E-09
Pass or Fail? Pass
Check Residual Saturation (WAC340-747(10))

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate protective TPH soil concentration based on various soil quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH Soil Conc

Selected Criterion: @HI=1
Most Stringent? YES
Protctive TPH Soil Conc, mg/kg = 2714.96
HI = 1.00E+00
RISK = 1.12E-08

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH Soil

Tested TPH Soil Conc, mg/kg = 2712.52
HI = 1.00E+00
RISK = 1.11E-08
Pass or Fail? Pass
Check Residual Saturation (WAC340-747(10))

TABLE 3E

Washington State Department of Ecology, Toxics Cleanup Program: Soil Cleanup Level for TPH Sites - Soil Direct Contact: Method B - Unrestricted Land Use

A2. 1B Worksheet for Calculating Soil Cleanup Levels for Protection of Human Health: (Soil Direct Contact Pathway)
Method B: Unrestricted Land Use (WAC 173-340-740)

Date: 12/3/2015
Site Name: Plaid Pantry 112
Sample Name: Average

Chemical of Concern or EC group	Current Condition				Adjusted Condition			
	Measured Soil Conc @dry basis	HQ	RISK	Pass or Fail?	Soil Conc being tested	HQ	RISK	Pass or Fail?
	mg/kg	unitless	unitless		mg/kg	unitless	unitless	
Petroleum EC Fraction								
AL_EC >5-6	8.41	6.69E-05			1.25E+01	9.98E-05		
AL_EC >6-8	78.65	6.26E-04			1.17E+02	9.33E-04		
AL_EC >8-10	266.02	1.20E-01			3.96E+02	1.79E-01		
AL_EC >10-12	428.5	1.93E-01			6.39E+02	2.88E-01		
AL_EC >12-16	0				0.00E+00			
AL_EC >16-21	0				0.00E+00			
AL_EC >21-34	0				0.00E+00			
AR_EC >8-10	478.9	6.48E-02			7.14E+02	9.66E-02		
AR_EC >10-12	365	2.47E-01			5.44E+02	3.68E-01		
AR_EC >12-16	123.2	4.44E-02			1.84E+02	6.61E-02		
AR_EC >16-21	0				0.00E+00			
AR_EC >21-34	0				0.00E+00			
Benzene	0.1525	4.77E-04	8.40E-09		2.27E-01	7.11E-04	1.25E-08	
Toluene	0.605	1.01E-04			9.02E-01	1.50E-04		
Ethylbenzene	0.9	1.21E-04			1.34E+00	1.80E-04		
Total Xylenes	0.9125	6.12E-05			1.36E+00	9.12E-05		
Naphthalene	0				0.00E+00	0.00E+00		
1-Methyl Naphthalene	0				0.00E+00	0.00E+00		
2-Methyl Naphthalene	0				0.00E+00	0.00E+00		
n-Hexane	0				0.00E+00	0.00E+00		
MTBE	0				0.00E+00			
Ethylene Dibromide (EDB)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
1,2 Dichloroethane (EDC)	0		0.00E+00		0.00E+00	0.00E+00	0.00E+00	
Benzo(a)anthracene	0		0.00E+00	*For*	0.00E+00		0.00E+00	*For*
Benzo(b)fluoranthene	0		0.00E+00	*all*	0.00E+00		0.00E+00	*all*
Benzo(k)fluoranthene	0		0.00E+00	*cPAHs*	0.00E+00		0.00E+00	*cPAHs*
Benzo(a)pyrene	0		0.00E+00		0.00E+00		0.00E+00	
Chrysene	0		0.00E+00		0.00E+00		0.00E+00	
Dibenz(a,h)anthracene	0		0.00E+00	Σ Risk=	0.00E+00		0.00E+00	Σ Risk=
Indeno(1,2,3-cd)pyrene	0		0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00
Sum	**1751.25**	6.71E-01	8.40E-09		2.61E+03	1.00E+00	1.25E-08	

TEST CURRENT CONDITION

Measured TPH Soil Conc, mg/kg= 1751.250
HI= 6.708E-01
RISK= 8.397E-09
Pass or Fail? Pass
Check Residual Saturation (WAC340-747(10))

CALCULATE PROTECTIVE CONDITION

This tool allows the user to calculate protective TPH soil concentration based on various soil quality criteria. The Workbook uses the same composition ratio as for the measured data.

Calculate Protective TPH Soil Conc

Selected Criterion: @HI=1
Most Stringent? YES
Protctive TPH Soil Conc, mg/kg = 2610.66
HI = 1.00E+00
RISK = 1.25E-08

TEST ADJUSTED CONDITION

This tool allows the user to test whether a particular TPH soil concentration is protective of human health. The Workbook uses the same composition ratio as for the measured data.

Test Adjusted TPH Soil

Tested TPH Soil Conc, mg/kg = 2610
HI = 1.00E+00
RISK = 1.25E-08
Pass or Fail? Pass
Check Residual Saturation (WAC340-747(10))

FIGURES

SOURCE:
USGS, VANCOUVER QUADRANGLE
WASHINGTON–OREGON
7.5 MINUTE SERIES (TOPOGRAPHIC)

N

APPROXIMATE SCALE IN FEET

0 1000 2000 4000

EES
ENVIRONMENTAL CONSULTING, INC.
240 N Broadway #203, Portland, OR 97227
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www.ees-environmental.com

VICINITY MAP

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
VANCOUVER, WA.

DATE:	12–18–13	PROJECT NO.	
FILE:	1179–01		1179–01
DRAWN:	JJT	FIGURE NO.	
APPROVED:	CR		1

Y:\EES-Autocad\1179-01 Plaid Pantry #112\2013\Nov 2013\1179-01_VM.dwg, Layout3-VM, 12/18/2013 10:31:27 AM

LEGEND

- Property Boundary
- Direct-Push Boring (Sept 2011)
- Direct-Push Boring (Aug 2012)
- Catch Basin
- Dry Well
- Bollards
- Soil Boring and Shallow Vapor Monitoring Well (Sept 2015)
- Soil Boring and Deep Vapor Monitoring Well (Sept 2015)
- Soil Boring (Sept 2015)
- Vault
- SVE Piping
- SVE-1 — Shallow SVE Well (screened 5-10' bgs)
- SVE-2 — Deep SVE Well (screened 15-20' bgs)
- G = 1,080 (See Figure 4)
- 10 — Approximate Gasoline Isoconcentration Contour (mg/kg, Sept 2015)

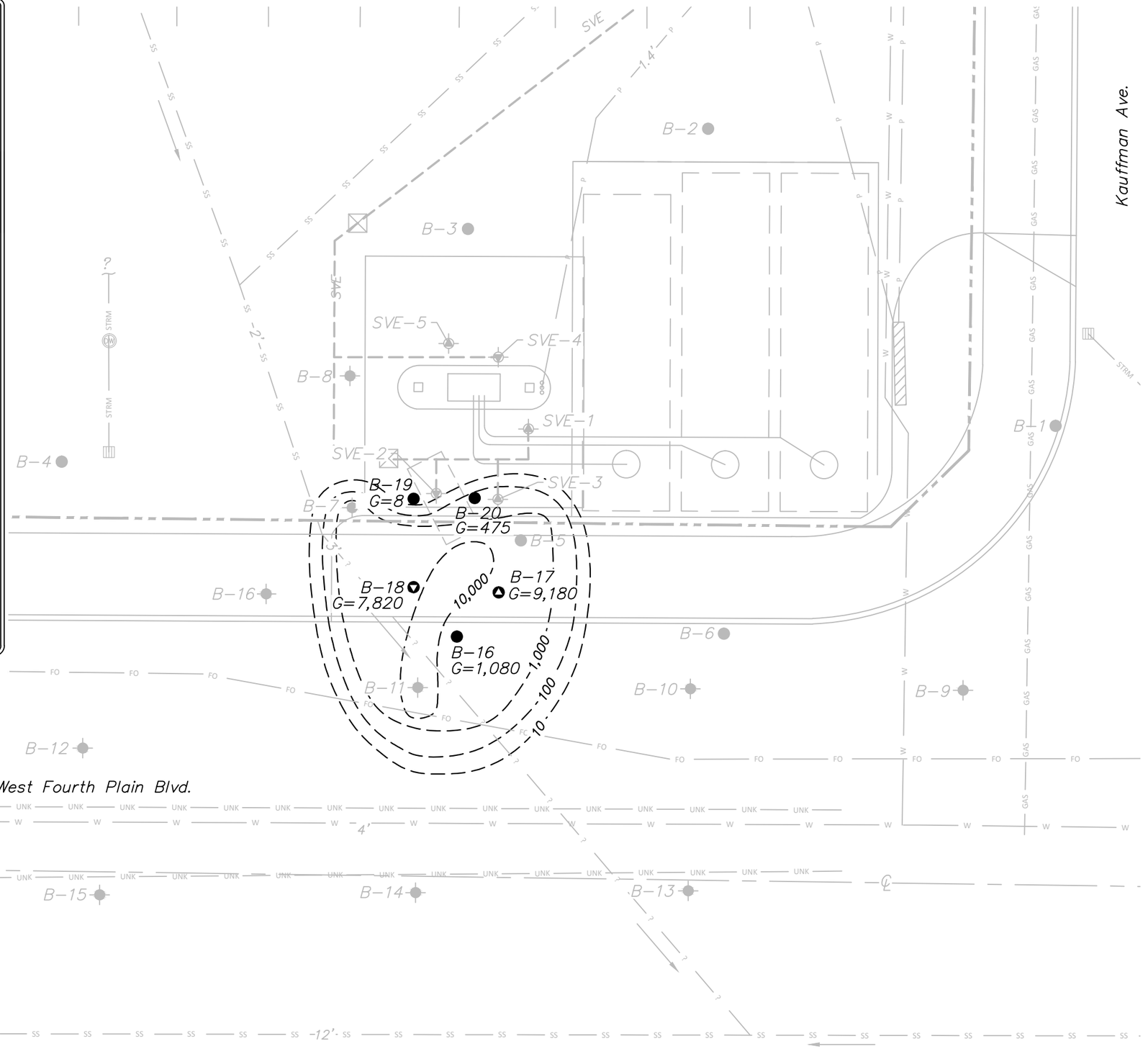
Results Reported in Milligrams per Kilogram (mg/kg)

SITE FEATURES ARE APPROXIMATE.

APPROXIMATE SCALE IN FEET

0 5 10 20

N



DATE:	3-28-16
FILE:	1179-01
DRAWN:	JJT
APPROVED:	CR
PROJECT NO.	1179-01
FIGURE NO.	2

MAXIMUM GASOLINE CONCENTRATIONS IN SOIL (SEPTEMBER 2015)

PLAID PANTRY #112
1002 W. FOURTH PLAIN BLVD.
VANCOUVER, WA.

EES
ENVIRONMENTAL CONSULTING, INC.
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ATTACHMENT A

Apex Labs

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Monday, September 28, 2015

Chris Rhea
EES Environmental Inc
240 N Broadway Ste 203
Portland, OR 97227

RE: PP112 / 1179-03

Enclosed are the results of analyses for work order A5I0103, which was received by the laboratory on 9/3/2015 at 12:25:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Apex Labs

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-16(3)	A5I0103-03	Soil	09/02/15 12:10	09/03/15 12:25
B-16(6)	A5I0103-04	Soil	09/02/15 12:28	09/03/15 12:25
B-16(9)	A5I0103-05	Soil	09/02/15 12:40	09/03/15 12:25
B-16(12)	A5I0103-07	Soil	09/02/15 14:40	09/03/15 12:25
B-17(3)	A5I0103-10	Soil	09/02/15 15:05	09/03/15 12:25
B-17(6)	A5I0103-11	Soil	09/02/15 15:10	09/03/15 12:25
B-17(9)	A5I0103-12	Soil	09/02/15 15:15	09/03/15 12:25

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Philip Nerenberg

Philip Nerenberg, Lab Director

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-16(3) (A5I0103-03)			**Matrix: Soil**		**Batch: 5090392**			
Gasoline Range Organics	ND	---	3.64	mg/kg dry	50	09/16/15 17:14	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 78 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*82 %*	*Limits: 50-150 %*	"	"	"	
B-16(6) (A5I0103-04)			**Matrix: Soil**		**Batch: 5090184**			
Gasoline Range Organics	**1080**	---	73.2	mg/kg dry	500	09/08/15 18:59	NWTPH-Gx (MS)	Q-42
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 111 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*92 %*	*Limits: 50-150 %*	"	"	"	
B-16(9) (A5I0103-05)			**Matrix: Soil**		**Batch: 5090184**			
Gasoline Range Organics	**928**	---	83.1	mg/kg dry	500	09/08/15 19:53	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 109 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*93 %*	*Limits: 50-150 %*	"	"	"	
B-16(12) (A5I0103-07RE1)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	ND	---	5.80	mg/kg dry	50	09/09/15 10:55	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 101 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*100 %*	*Limits: 50-150 %*	"	"	"	
B-17(3) (A5I0103-10)			**Matrix: Soil**		**Batch: 5090392**			
Gasoline Range Organics	ND	---	7.04	mg/kg dry	50	09/16/15 17:38	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 84 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*83 %*	*Limits: 50-150 %*	"	"	"	
B-17(6) (A5I0103-11RE1)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	**14.8**	---	8.67	mg/kg dry	50	09/09/15 11:20	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 113 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*102 %*	*Limits: 50-150 %*	"	"	"	
B-17(9) (A5I0103-12RE1)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	**9180**	---	1530	mg/kg dry	10000	09/09/15 11:44	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 119 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*104 %*	*Limits: 50-150 %*	"	"	"	

Apex Laboratories

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Philip Nerenberg, Lab Director

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

ANALYTICAL SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-16(6) (A5I0103-04)			**Matrix: Soil**		**Batch: 5090184**			
Benzene	ND	---	183	ug/kg dry	500	09/08/15 18:59	5035/8260B	
Toluene	ND	---	732	"	"	"	"	
Ethylbenzene	ND	---	366	"	"	"	"	
Xylenes, total	ND	---	1100	"	"	"	"	
Surrogate: Dibromofluoromethane (Surr)			*Recovery: 96 %*	*Limits: 70-130 %*	1	"	"	
1,4-Difluorobenzene (Surr)			*99 %*	*Limits: 70-130 %*	"	"	"	
Toluene-d8 (Surr)			*99 %*	*Limits: 70-130 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*103 %*	*Limits: 70-130 %*	"	"	"	
B-17(9) (A5I0103-12)			**Matrix: Soil**		**Batch: 5090184**			
Benzene	ND	---	192	ug/kg dry	500	09/08/15 21:14	5035/8260B	
Toluene	ND	---	767	"	"	"	"	
Ethylbenzene	**629**	---	383	"	"	"	"	
Xylenes, total	ND	---	1230	"	"	"	"	R-02
Surrogate: Dibromofluoromethane (Surr)			*Recovery: 97 %*	*Limits: 70-130 %*	1	"	"	
1,4-Difluorobenzene (Surr)			*100 %*	*Limits: 70-130 %*	"	"	"	
Toluene-d8 (Surr)			*98 %*	*Limits: 70-130 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*101 %*	*Limits: 70-130 %*	"	"	"	

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

ANALYTICAL SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-16(6) (A5I0103-04)			**Matrix: Soil**					
Batch: 5090318								
Total Organic Carbon	**1400**	---	200	mg/kg	1	09/16/15 14:35	SM 5310B MOD	
B-17(9) (A5I0103-12)			**Matrix: Soil**					
Batch: 5090318								
Total Organic Carbon	**1100**	---	200	mg/kg	1	09/16/15 14:35	SM 5310B MOD	

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240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-16(3) (A5I0103-03)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**82.8**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	
B-16(6) (A5I0103-04)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**77.6**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38
B-16(9) (A5I0103-05)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**76.4**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38
B-16(12) (A5I0103-07)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**95.3**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38
B-17(3) (A5I0103-10)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**87.2**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	
B-17(6) (A5I0103-11)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**78.2**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38
B-17(9) (A5I0103-12)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**82.0**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090184 - EPA 5035A							Soil					
Blank (5090184-BLK1)					Prepared: 09/08/15 08:28		Analyzed: 09/08/15 14:51					
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 102 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*96 %*	*50-150 %*			*"*					
LCS (5090184-BS2)					Prepared: 09/08/15 08:28		Analyzed: 09/08/15 13:28					
NWTPH-Gx (MS)												
Gasoline Range Organics	25.7	---	5.00	mg/kg wet	50	25.0	---	103	70-130%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 102 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*98 %*	*50-150 %*			*"*					
Duplicate (5090184-DUP1)					Prepared: 09/02/15 12:28		Analyzed: 09/08/15 19:26					
QC Source Sample: B-16(6) (A5I0103-04)												
NWTPH-Gx (MS)												
Gasoline Range Organics	**517**	---	57.4	mg/kg dry	500	---	1080	---	---	70	30%	Q-04
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 107 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*92 %*	*50-150 %*			*"*					
Batch 5090205 - EPA 5035A							Soil					
Blank (5090205-BLK1)					Prepared: 09/09/15 08:00		Analyzed: 09/09/15 10:31					
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 105 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*99 %*	*50-150 %*			*"*					
LCS (5090205-BS2)					Prepared: 09/09/15 08:00		Analyzed: 09/09/15 10:07					
NWTPH-Gx (MS)												
Gasoline Range Organics	23.5	---	5.00	mg/kg wet	50	25.0	---	94	70-130%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 100 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*97 %*	*50-150 %*			*"*					
Duplicate (5090205-DUP1)					Prepared: 09/03/15 08:25		Analyzed: 09/09/15 12:33					
QC Source Sample: Other (A5I0181-01)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	5.19	mg/kg dry	50	---	ND	---	---	---	30%	

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090205 - EPA 5035A							**Soil**					
Duplicate (5090205-DUP1)					Prepared: 09/03/15 08:25 Analyzed: 09/09/15 12:33							
QC Source Sample: Other (A5I0181-01)												
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 104 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*102 %*	*50-150 %*			*"*					
Duplicate (5090205-DUP2)					Prepared: 09/09/15 14:26 Analyzed: 09/09/15 17:57							V-15
QC Source Sample: Other (A5I0226-01)												
NWTPH-Gx (MS)												
Gasoline Range Organics	**1460**	---	229	mg/kg dry	2000	---	2820	---	---	63	30%	Q-04
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 118 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*97 %*	*50-150 %*			*"*					

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090392 - EPA 5035A									Soil			
Blank (5090392-BLK1)					Prepared: 09/16/15 08:32 Analyzed: 09/16/15 11:01							
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 95 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*97 %*	*50-150 %*			*"*					
LCS (5090392-BS2)					Prepared: 09/16/15 08:32 Analyzed: 09/16/15 10:37							
NWTPH-Gx (MS)												
Gasoline Range Organics	22.7	---	5.00	mg/kg wet	50	25.0	---	91	70-130%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 92 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*98 %*	*50-150 %*			*"*					
Duplicate (5090392-DUP1)					Prepared: 09/11/15 19:15 Analyzed: 09/16/15 18:52							V-15
QC Source Sample: Other (A5I0331-02)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	6.04	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 78 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*85 %*	*50-150 %*			*"*					

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240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090184 - EPA 5035A							**Soil**					
Blank (5090184-BLK1)					Prepared: 09/08/15 08:28		Analyzed: 09/08/15 14:51					
5035/8260B												
Benzene	ND	---	8.33	ug/kg wet	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	"	"	---	---	---	---	---	---	
Xylenes, total	ND	---	50.0	"	"	---	---	---	---	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 99 %*		*Limits: 70-130 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Surr)			*100 %*		*70-130 %*		*"*					
Toluene-d8 (Surr)			*100 %*		*70-130 %*		*"*					
4-Bromofluorobenzene (Surr)			*103 %*		*70-130 %*		*"*					
LCS (5090184-BS3)					Prepared: 09/08/15 12:28		Analyzed: 09/08/15 13:55					
5035/8260B												
Benzene	1010	---	12.5	ug/kg wet	50	1000	---	101	65-135%	---	---	
Toluene	1000	---	50.0	"	"	"	---	100	"	---	---	
Ethylbenzene	1010	---	25.0	"	"	"	---	101	"	---	---	
Xylenes, total	3080	---	75.0	"	"	3000	---	103	"	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 105 %*		*Limits: 70-130 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Surr)			*100 %*		*70-130 %*		*"*					
Toluene-d8 (Surr)			*99 %*		*70-130 %*		*"*					
4-Bromofluorobenzene (Surr)			*101 %*		*70-130 %*		*"*					
Duplicate (5090184-DUP1)					Prepared: 09/02/15 12:28		Analyzed: 09/08/15 19:26					
QC Source Sample: B-16(6) (A5I0103-04)												
5035/8260B												
Benzene	ND	---	143	ug/kg dry	500	---	ND	---	---	---	30%	
Toluene	ND	---	574	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	287	"	"	---	ND	---	---	---	30%	
Xylenes, total	ND	---	861	"	"	---	ND	---	---	---	30%	
Surr: Dibromofluoromethane (Surr)			*Recovery: 96 %*		*Limits: 70-130 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Surr)			*99 %*		*70-130 %*		*"*					
Toluene-d8 (Surr)			*99 %*		*70-130 %*		*"*					
4-Bromofluorobenzene (Surr)			*101 %*		*70-130 %*		*"*					
Matrix Spike (5090184-MS1)					Prepared: 09/08/15 14:06		Analyzed: 09/08/15 23:55					V-15
QC Source Sample: Other (A5I0185-08)												
5035/8260B												

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Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090184 - EPA 5035A							**Soil**					
Matrix Spike (5090184-MS1)					Prepared: 09/08/15 14:06 Analyzed: 09/08/15 23:55							V-15
QC Source Sample: Other (A5I0185-08)												
Benzene	1650	---	18.7	ug/kg dry	50	1490	ND	110	65-135%	---	---	
Toluene	1610	---	74.6	"	"	"	ND	108	"	---	---	
Ethylbenzene	1620	---	37.3	"	"	"	ND	108	"	---	---	
Xylenes, total	4900	---	112	"	"	4480	ND	109	"	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 105 %*		*Limits: 70-130 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*101 %*		*70-130 %*			*"*				
Toluene-d8 (Surr)			*97 %*		*70-130 %*			*"*				
4-Bromofluorobenzene (Surr)			*102 %*		*70-130 %*			*"*				

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QUALITY CONTROL (QC) SAMPLE RESULTS

Conventional Chemistry Parameters

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090318 - PSEP TOC												**Soil**
Blank (5090318-BLK1)					Prepared: 09/14/15 07:17		Analyzed: 09/16/15 14:35					
SM 5310B MOD												
Total Organic Carbon	ND	---	200	mg/kg	1	---	---	---	---	---	---	
LCS (5090318-BS1)					Prepared: 09/14/15 07:17		Analyzed: 09/16/15 14:35					
SM 5310B MOD												
Total Organic Carbon	10000	---		mg/kg	1	10000	---	101	85-115%	---	---	
Duplicate (5090318-DUP1)					Prepared: 09/14/15 07:17		Analyzed: 09/16/15 14:35					
QC Source Sample: B-16(6) (A5I0103-04)												
SM 5310B MOD												
Total Organic Carbon	**1400**	---	200	mg/kg	1	---	1400	---	---	0.4	20%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090259 - Total Solids (Dry Weight)							**Soil**					
Duplicate (5090259-DUP1)					Prepared: 09/10/15 12:05		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0181-05)												
EPA 8000C												
% Solids	**83.6**	---	1.00	% by Weight	1	---	83.5	---	---	0.1	10%	Q-38
Duplicate (5090259-DUP2)					Prepared: 09/10/15 12:05		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0231-02)												
EPA 8000C												
% Solids	**84.6**	---	1.00	% by Weight	1	---	84.8	---	---	0.2	10%	Q-38
Duplicate (5090259-DUP3)					Prepared: 09/10/15 12:05		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0238-10)												
EPA 8000C												
% Solids	**87.5**	---	1.00	% by Weight	1	---	88.2	---	---	0.7	10%	Q-38
Duplicate (5090259-DUP4)					Prepared: 09/10/15 12:05		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0249-06)												
EPA 8000C												
% Solids	**90.6**	---	1.00	% by Weight	1	---	91.1	---	---	0.5	10%	Q-38
Duplicate (5090259-DUP5)					Prepared: 09/10/15 14:43		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0244-02)												
EPA 8000C												
% Solids	**90.8**	---	1.00	% by Weight	1	---	90.5	---	---	0.3	10%	Q-38
Duplicate (5090259-DUP6)					Prepared: 09/10/15 19:44		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0286-01)												
EPA 8000C												
% Solids	**86.6**	---	1.00	% by Weight	1	---	86.7	---	---	0.2	10%	Q-38
Duplicate (5090259-DUP7)					Prepared: 09/10/15 19:44		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0293-01)												
EPA 8000C												
% Solids	**87.0**	---	1.00	% by Weight	1	---	87.4	---	---	0.5	10%	Q-38

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240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090337 - Total Solids (Dry Weight)							**Soil**					
Duplicate (5090337-DUP1)					Prepared: 09/14/15 13:12		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0346-03)												
EPA 8000C												
% Solids	**99.9**	---	1.00	% by Weight	1	---	99.9	---	---	0.01	10%	
Duplicate (5090337-DUP2)					Prepared: 09/14/15 14:11		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0188-10)												
EPA 8000C												
% Solids	**92.3**	---	1.00	% by Weight	1	---	92.2	---	---	0.09	10%	
Duplicate (5090337-DUP3)					Prepared: 09/14/15 14:11		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0330-04)												
EPA 8000C												
% Solids	**87.5**	---	1.00	% by Weight	1	---	87.2	---	---	0.3	10%	
Duplicate (5090337-DUP4)					Prepared: 09/14/15 14:11		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0343-08)												
EPA 8000C												
% Solids	**82.4**	---	1.00	% by Weight	1	---	82.7	---	---	0.3	10%	
Duplicate (5090337-DUP5)					Prepared: 09/14/15 17:20		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0363-02)												
EPA 8000C												
% Solids	**85.6**	---	1.00	% by Weight	1	---	88.1	---	---	3	10%	
Duplicate (5090337-DUP6)					Prepared: 09/14/15 19:21		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0373-02)												
EPA 8000C												
% Solids	**85.5**	---	1.00	% by Weight	1	---	85.8	---	---	0.3	10%	
Duplicate (5090337-DUP7)					Prepared: 09/14/15 19:21		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0379-02)												
EPA 8000C												
% Solids	**82.0**	---	1.00	% by Weight	1	---	86.5	---	---	5	10%	
Duplicate (5090337-DUP8)					Prepared: 09/14/15 19:21		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0383-02)												

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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090337 - Total Solids (Dry Weight)												**Soil**
Duplicate (5090337-DUP8)						Prepared: 09/14/15 19:21	Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0383-02)												
EPA 8000C												
% Solids	**94.3**	---	1.00	% by Weight	1	---	94.6	---	---	0.3	10%	

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SAMPLE PREPARATION INFORMATION

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090184							
A5I0103-04	Soil	NWTPH-Gx (MS)	09/02/15 12:28	09/02/15 12:28	5.49g/5mL	10g/10mL	0.91
A5I0103-05	Soil	NWTPH-Gx (MS)	09/02/15 12:40	09/02/15 12:40	4.84g/5mL	10g/10mL	1.03
Batch: 5090205							
A5I0103-07RE1	Soil	NWTPH-Gx (MS)	09/02/15 14:40	09/02/15 14:40	4.72g/5mL	10g/10mL	1.06
A5I0103-11RE1	Soil	NWTPH-Gx (MS)	09/02/15 15:10	09/02/15 15:10	4.4g/5mL	10g/10mL	1.14
A5I0103-12RE1	Soil	NWTPH-Gx (MS)	09/02/15 15:15	09/02/15 15:15	4.64g/5mL	10g/10mL	1.08
Batch: 5090392							
A5I0103-03	Soil	NWTPH-Gx (MS)	09/02/15 12:10	09/02/15 12:10	11.64g/5mL	10g/10mL	0.43
A5I0103-10	Soil	NWTPH-Gx (MS)	09/02/15 15:05	09/02/15 15:05	4.54g/5mL	10g/10mL	1.10

BTEX Compounds by EPA 8260B

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090184							
A5I0103-04	Soil	5035/8260B	09/02/15 12:28	09/02/15 12:28	5.49g/5mL	10g/10mL	0.91
A5I0103-12	Soil	5035/8260B	09/02/15 15:15	09/02/15 15:15	4.64g/5mL	10g/10mL	1.08

Conventional Chemistry Parameters

Prep: PSEP TOC

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090318							
A5I0103-04	Soil	SM 5310B MOD	09/02/15 12:28	09/14/15 07:17	5g/5g	5g/5g	NA
A5I0103-12	Soil	SM 5310B MOD	09/02/15 15:15	09/14/15 07:17	5g/5g	5g/5g	NA

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090259							
A5I0103-04	Soil	EPA 8000C	09/02/15 12:28	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA
A5I0103-05	Soil	EPA 8000C	09/02/15 12:40	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA
A5I0103-07	Soil	EPA 8000C	09/02/15 14:40	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA

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SAMPLE PREPARATION INFORMATION

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A5I0103-11	Soil	EPA 8000C	09/02/15 15:10	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA
A5I0103-12	Soil	EPA 8000C	09/02/15 15:15	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA
Batch: 5090337							
A5I0103-03	Soil	EPA 8000C	09/02/15 12:10	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA
A5I0103-10	Soil	EPA 8000C	09/02/15 15:05	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA

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Notes and Definitions

Qualifiers:

Q-04	Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
Q-38	Oven outside of control limits during drying step.
Q-42	Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
R-02	The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
V-15	Sample aliquot was subsampled from the sample container. The subsampled aliquot was preserved in the laboratory within 48 hours of sampling.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

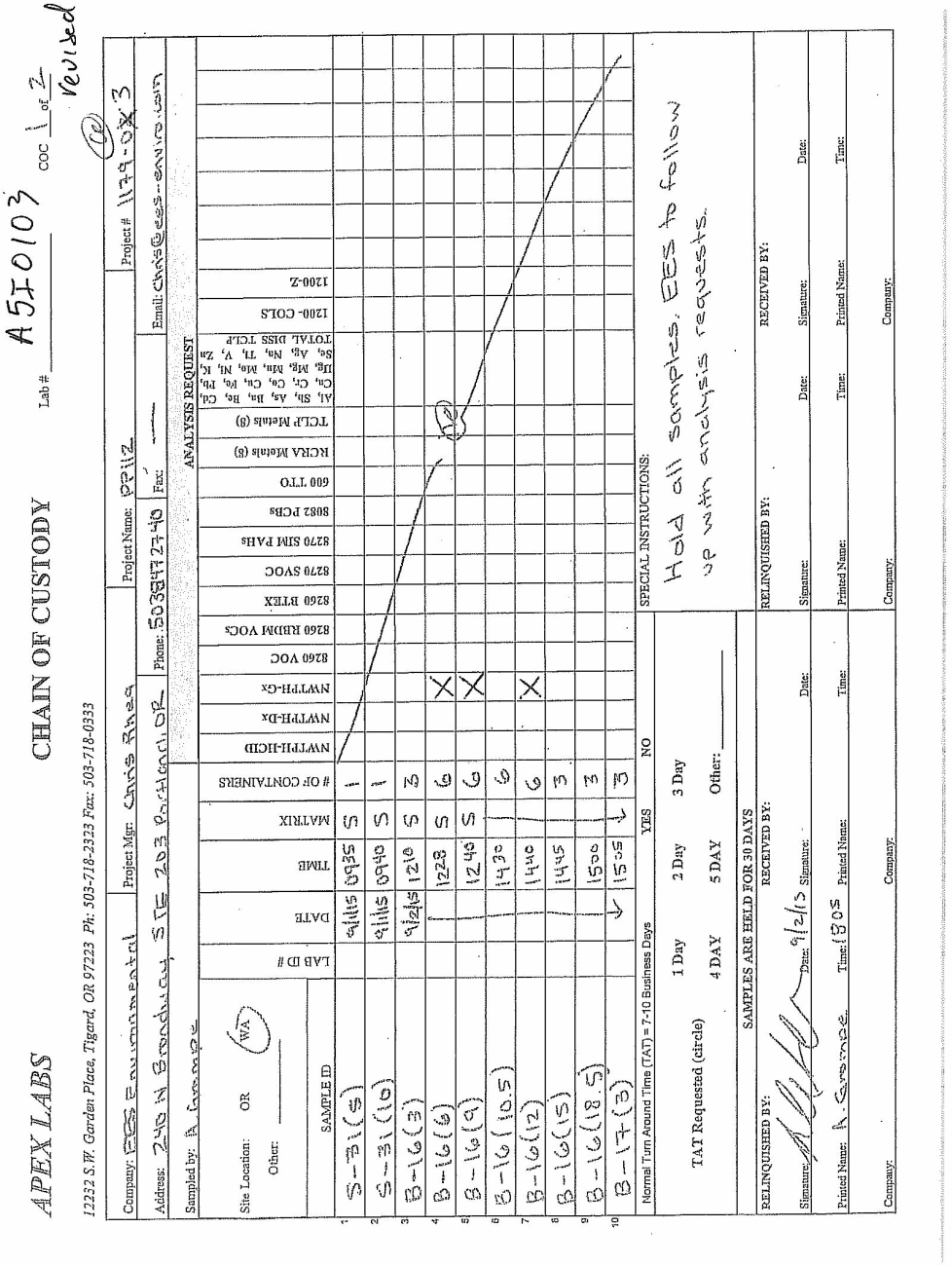
Philip Nerenberg

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 13:59



Apex Laboratories

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EES Environmental Inc	Project: **PP112**	
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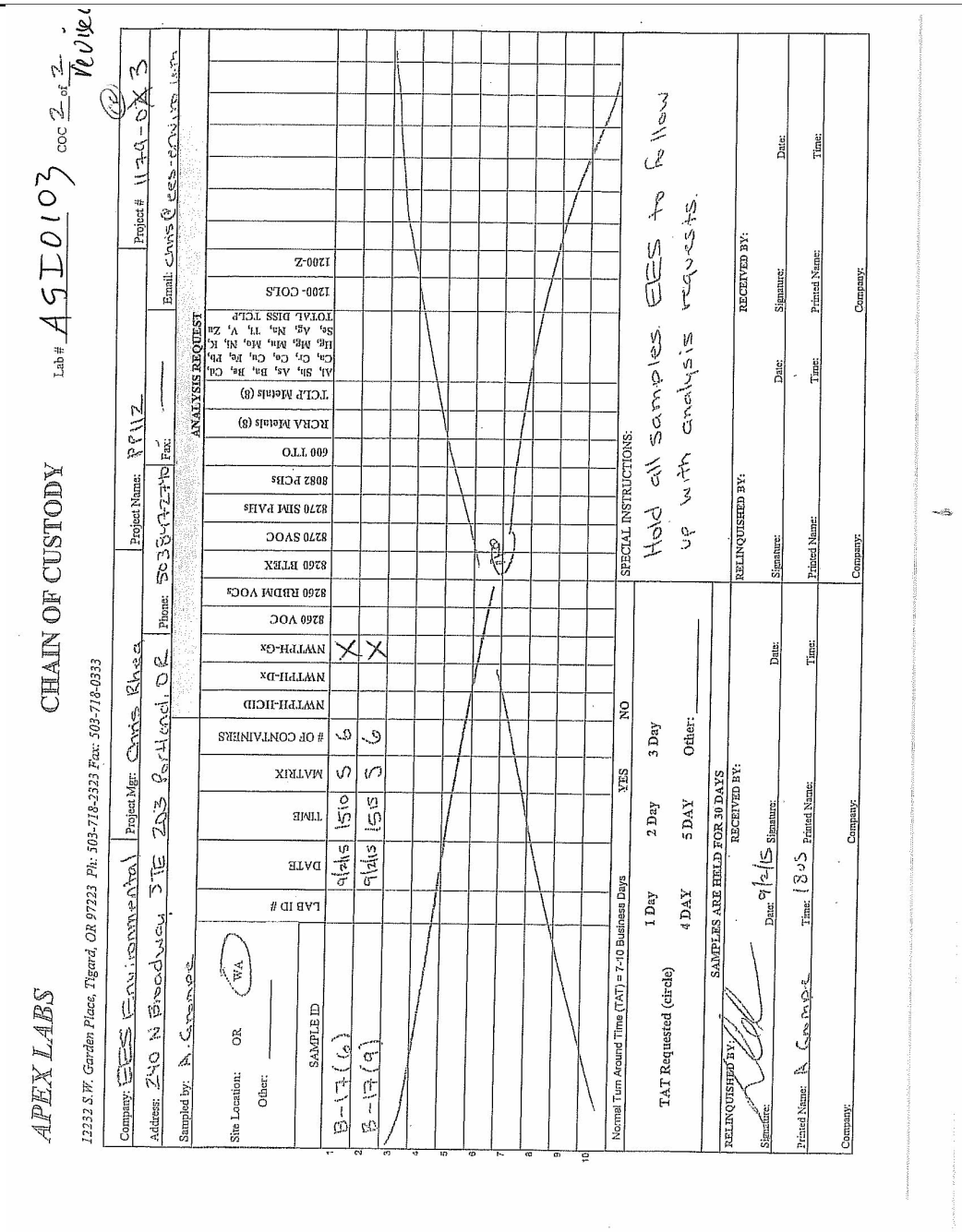

Apex Laboratories

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Philip Nerenberg

Philip Nerenberg, Lab Director

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Apex Laboratories
Philip Nerenberg
12232 S.W. Garden Place
Tigard, OR 97223

RE: A5I0103
Lab ID: 1509193

September 22, 2015

Attention Philip Nerenberg:

Fremont Analytical, Inc. received 2 sample(s) on 9/15/2015 for the analyses presented in the following report.

Volatile Petroleum Hydrocarbons by NWVPH

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
President

Date: *09/22/2015*

CLIENT: Apex Laboratories
Project: A5I0103
Lab Order: 1509193

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1509193-001	B-16(6)	09/02/2015 12:28 PM	09/15/2015 3:10 PM
1509193-002	B-17(9)	09/02/2015 3:15 PM	09/15/2015 3:10 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1509193**
Date: **9/22/2015**

CLIENT: Apex Laboratories
Project: A5I0103

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below LOQ
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

WO#: **1509193**

Date Reported: **9/22/2015**

Client: Apex Laboratories

Collection Date: 9/2/2015 12:28:00 PM

Project: A5I0103

Lab ID: 1509193-001

Matrix: Soil

Client Sample ID: B-16(6)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Petroleum Hydrocarbons by NWVPH				Batch ID: 11845		Analyst: BC
Aliphatic Hydrocarbon (C5-C6)	6.50	1.39		mg/Kg	1	9/16/2015 5:41:00 AM
Aliphatic Hydrocarbon (C6-C8)	ND	1.39		mg/Kg	1	9/16/2015 5:41:00 AM
Aliphatic Hydrocarbon (C8-C10)	8.07	1.39		mg/Kg	1	9/16/2015 5:41:00 AM
Aliphatic Hydrocarbon (C10-C12)	175	27.8	D	mg/Kg	20	9/16/2015 12:16:00 PM
Aromatic Hydrocarbon (C8-C10)	35.6	1.39	Q	mg/Kg	1	9/16/2015 5:41:00 AM
Aromatic Hydrocarbon (C10-C12)	205	27.8	D	mg/Kg	20	9/16/2015 12:16:00 PM
Aromatic Hydrocarbon (C12-C13)	155	27.8	D	mg/Kg	20	9/16/2015 12:16:00 PM
Surr: 1,4-Difluorobenzene	100	65-140		%REC	1	9/16/2015 5:41:00 AM
Surr: Bromofluorobenzene	111	65-140		%REC	1	9/16/2015 5:41:00 AM

NOTES:

Q - Indicates an analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Analytical Report

WO#: **1509193**

Date Reported: **9/22/2015**

Client: Apex Laboratories

Collection Date: 9/2/2015 3:15:00 PM

Project: A5I0103

Lab ID: 1509193-002

Matrix: Soil

Client Sample ID: B-17(9)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Petroleum Hydrocarbons by NWVPH				Batch ID: 11845		Analyst: BC
Aliphatic Hydrocarbon (C5-C6)	2.35	2.24		mg/Kg	1	9/16/2015 12:51:00 PM
Aliphatic Hydrocarbon (C6-C8)	186	22.4	D	mg/Kg	10	9/16/2015 6:17:00 AM
Aliphatic Hydrocarbon (C8-C10)	567	22.4	D	mg/Kg	10	9/16/2015 6:17:00 AM
Aliphatic Hydrocarbon (C10-C12)	556	22.4	D	mg/Kg	10	9/16/2015 6:17:00 AM
Aromatic Hydrocarbon (C8-C10)	945	22.4	DQ	mg/Kg	10	9/16/2015 6:17:00 AM
Aromatic Hydrocarbon (C10-C12)	564	22.4	D	mg/Kg	10	9/16/2015 6:17:00 AM
Aromatic Hydrocarbon (C12-C13)	180	22.4	D	mg/Kg	10	9/16/2015 6:17:00 AM
Surr: 1,4-Difluorobenzene	109	65-140		%REC	1	9/16/2015 12:51:00 PM
Surr: Bromofluorobenzene	129	65-140	D	%REC	10	9/16/2015 6:17:00 AM

NOTES:

Q - Indicates an analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Work Order: 1509193
CLIENT: Apex Laboratories
Project: A5I0103

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **LCS-11845**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **9/15/2015**		RunNo: **24895**			
Client ID: **LCSS**	Batch ID: **11845**					Analysis Date: **9/16/2015**		SeqNo: **468958**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	30.4	2.00	30.00	0	101	70	130				
Aliphatic Hydrocarbon (C6-C8)	11.0	2.00	10.00	0	110	70	130				
Aliphatic Hydrocarbon (C8-C10)	9.96	2.00	10.00	0	99.6	70	130				
Aliphatic Hydrocarbon (C10-C12)	9.10	2.00	10.00	0	91.0	70	130				
Aromatic Hydrocarbon (C8-C10)	52.0	2.00	40.00	0	130	70	130				
Aromatic Hydrocarbon (C10-C12)	11.4	2.00	10.00	0	114	70	130				
Aromatic Hydrocarbon (C12-C13)	11.3	2.00	10.00	0	113	70	130				
Surr: 1,4-Difluorobenzene	3.16		2.500		126	65	140				
Surr: Bromofluorobenzene	2.88		2.500		115	65	140				

Sample ID: **MB-11845**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **9/15/2015**		RunNo: **24895**			
Client ID: **MBLKS**	Batch ID: **11845**					Analysis Date: **9/16/2015**		SeqNo: **468959**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C8-C10)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	2.00		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	2.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	2.00		0	0						
Aromatic Hydrocarbon (C12-C13)	ND	2.00		0	0						
Surr: 1,4-Difluorobenzene	2.71		2.500		108	65	140				
Surr: Bromofluorobenzene	2.71		2.500		108	65	140				

Sample ID: **1509194-001ADUP**	SampType: **DUP**			Units: **mg/Kg**		Prep Date: **9/15/2015**		RunNo: **24895**			
Client ID: **BATCH**	Batch ID: **11845**					Analysis Date: **9/16/2015**		SeqNo: **468955**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	19.3	1.92		0	0			23.89	21.3	25	
Aliphatic Hydrocarbon (C6-C8)	58.2	1.92		0	0			65.70	12.1	25	E

Work Order: 1509193
CLIENT: Apex Laboratories
Project: A5I0103

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **1509194-001ADUP** SampType: **DUP** Units: **mg/Kg** Prep Date: **9/15/2015** RunNo: **24895**
Client ID: **BATCH** Batch ID: **11845** Analysis Date: **9/16/2015** SeqNo: **468955**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	557	1.92		0	0			389.4	35.5	25	RE
Aliphatic Hydrocarbon (C10-C12)	474	1.92		0	0			474.9	0.182	25	E
Aromatic Hydrocarbon (C8-C10)	431	1.92		0	0			413.2	4.22	25	EQ
Aromatic Hydrocarbon (C10-C12)	355	1.92		0	0			362.1	2.03	25	E
Aromatic Hydrocarbon (C12-C13)	110	1.92		0	0			140.2	23.9	25	E
Surr: 1,4-Difluorobenzene	2.69		2.395		112	65	140		0		
Surr: Bromofluorobenzene	7.15		2.395		299	65	140		0	0	S

NOTES:
R - High RPD observed. The method is in control as indicated by the LCS.
S - High surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).
Q - Indicates an analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID: **1509194-002AMS** SampType: **MS** Units: **mg/Kg** Prep Date: **9/15/2015** RunNo: **24895**
Client ID: **BATCH** Batch ID: **11845** Analysis Date: **9/16/2015** SeqNo: **468956**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	38.4	1.78	53.29	0	72.1	70	130				
Aliphatic Hydrocarbon (C6-C8)	48.3	1.78	17.76	41.44	38.6	70	130				SE
Aliphatic Hydrocarbon (C8-C10)	237	1.78	17.76	177.6	336	70	130				SE
Aliphatic Hydrocarbon (C10-C12)	224	1.78	17.76	210.6	76.2	70	130				E
Aromatic Hydrocarbon (C8-C10)	295	1.78	71.05	264.4	43.3	70	130				SE
Aromatic Hydrocarbon (C10-C12)	156	1.78	17.76	154.8	8.92	70	130				SE
Aromatic Hydrocarbon (C12-C13)	46.9	1.78	17.76	43.79	17.5	70	130				S
Surr: 1,4-Difluorobenzene	2.44		2.220		110	65	140				
Surr: Bromofluorobenzene	5.27		2.220		237	65	140				S

NOTES:
S - Analyte concentration was too high for accurate spike recoveries.
S - High surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Sample Log-In Check List

Client Name:	**APEX**	Work Order Number:	**1509193**
Logged by:	**Mike Ridgeway**	Date Received:	**9/15/2015 3:10:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	No ☐	Not Present	☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	No ☐	NA	☐
4.	Shipping container/cooler in good condition?	Yes	☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	No ☐	Not Required	☑
6.	Was an attempt made to cool the samples?	Yes	☑	No ☐	NA	☐
7.	Were all items received at a temperature of >0°C to 10.0°C *	Yes	☑	No ☐	NA	☐
8.	Sample(s) in proper container(s)?	Yes	☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	No ☐		
10.	Are samples properly preserved?	Yes	☑	No ☐		
11.	Was preservative added to bottles?	Yes	☐	No ☑	NA	☐
12.	Is there headspace in the VOA vials?	Yes	☐	No ☐	NA	☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	No ☐		
14.	Does paperwork match bottle labels?	Yes	☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No ☐		
16.	Is it clear what analyses were requested?	Yes	☑	No ☐		
17.	Were all holding times able to be met?	Yes	☑	No ☐		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes	☐	No ☐	NA	☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

19. Additional remarks:

Sample jars not provided to conduct sample moisture check

Item Information

Item #	Temp ºC
Cooler	2.3
Sample	7.5
Temp Blank	8.5

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT ORDER

Apex Laboratories

A5I0103

CR 9/14/15.

1509193

SENDING LABORATORY:

Apex Laboratories
12232 S.W. Garden Place
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 718-0333
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Fremont Analytical
3600 Fremont Avenue N.
Seattle, WA 98103
Phone :(206) 352-3790
Fax: (206) 352-7178

Sample Name: B-16(6) **Soil** **Sampled: 09/02/15 12:28** (A5I0103-04)

Analysis	Due	Expires	Comments
NWTPH-VPH (Sub)	09/25/15 17:00	09/16/15 12:28	
Containers Supplied:			
(E)40 mL VOA - 5035 (MeOH)			

Sample Name: B-17(9) **Soil** **Sampled: 09/02/15 15:15** (A5I0103-12)

Analysis	Due	Expires	Comments
NWTPH-VPH (Sub)	09/25/15 17:00	09/16/15 15:15	
Containers Supplied:			
(E)40 mL VOA - 5035 (MeOH)			

Be sure weights are on VOA.
STANDARD TAT
Watch Expiration
DA

Released By Date — UPS (Shipper) — Received By Date

Released By Date — UPS (Shipper) — Received By 09/15/15 3:10PM Date

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Monday, September 28, 2015

Chris Rhea
EES Environmental Inc
240 N Broadway Ste 203
Portland, OR 97227

RE: PP112 / 1179-03

Enclosed are the results of analyses for work order A5I0181, which was received by the laboratory on 9/4/2015 at 11:40:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-17(12)	A5I0181-01	Soil	09/03/15 08:25	09/04/15 11:40
B-18(3)	A5I0181-04	Soil	09/03/15 11:00	09/04/15 11:40
B-18(6)	A5I0181-05	Soil	09/03/15 11:25	09/04/15 11:40
B-18(9)	A5I0181-06	Soil	09/03/15 11:35	09/04/15 11:40
B-18(12)	A5I0181-07	Soil	09/04/15 10:05	09/04/15 11:40

Apex Laboratories

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Philip Nerenberg

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-17(12) (A5I0181-01)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	ND	---	5.76	mg/kg dry	50	09/09/15 12:09	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 101 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*100 %*	*Limits: 50-150 %*	"	"	"	
B-18(3) (A5I0181-04)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	**4770**	---	263	mg/kg dry	2000	09/09/15 12:58	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 137 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*107 %*	*Limits: 50-150 %*	"	"	"	
B-18(6) (A5I0181-05)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	**543**	---	59.1	mg/kg dry	500	09/09/15 13:22	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 125 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*100 %*	*Limits: 50-150 %*	"	"	"	
B-18(9) (A5I0181-06RE1)			**Matrix: Soil**		**Batch: 5090205**			V-15
Gasoline Range Organics	**7820**	---	744	mg/kg dry	5000	09/09/15 17:07	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 142 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*105 %*	*Limits: 50-150 %*	"	"	"	
B-18(12) (A5I0181-07)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	ND	---	5.77	mg/kg dry	50	09/09/15 14:11	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 106 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*99 %*	*Limits: 50-150 %*	"	"	"	

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

ANALYTICAL SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-18(3) (A5I0181-04)			**Matrix: Soil**		**Batch: 5090205**			
Benzene	ND	---	657	ug/kg dry	2000	09/09/15 12:58	5035/8260B	
Toluene	ND	---	2630	"	"	"	"	
Ethylbenzene	**2600**	---	1310	"	"	"	"	
Xylenes, total	ND	---	3940	"	"	"	"	
Surrogate: Dibromofluoromethane (Surr)			*Recovery: 114 %*	*Limits: 70-130 %*	1	"	"	
1,4-Difluorobenzene (Surr)			*107 %*	*Limits: 70-130 %*	"	"	"	
Toluene-d8 (Surr)			*97 %*	*Limits: 70-130 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*102 %*	*Limits: 70-130 %*	"	"	"	
B-18(9) (A5I0181-06)			**Matrix: Soil**		**Batch: 5090205**			
Benzene	ND	---	186	ug/kg dry	500	09/09/15 13:47	5035/8260B	
Toluene	ND	---	744	"	"	"	"	
Ethylbenzene	ND	---	372	"	"	"	"	
Xylenes, total	ND	---	1120	"	"	"	"	
Surrogate: Dibromofluoromethane (Surr)			*Recovery: 105 %*	*Limits: 70-130 %*	1	"	"	
1,4-Difluorobenzene (Surr)			*105 %*	*Limits: 70-130 %*	"	"	"	
Toluene-d8 (Surr)			*101 %*	*Limits: 70-130 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*98 %*	*Limits: 70-130 %*	"	"	"	

Apex Laboratories

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Philip Nerenberg, Lab Director

Apex Labs

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-17(12) (A5I0181-01)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**93.6**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38
B-18(3) (A5I0181-04)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**84.3**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38
B-18(6) (A5I0181-05)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**83.5**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38
B-18(9) (A5I0181-06)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**76.5**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38
B-18(12) (A5I0181-07)			**Matrix: Soil**		**Batch: 5090259**			
% Solids	**95.5**	---	1.00	% by Weight	1	09/11/15 08:18	EPA 8000C	Q-38

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090205 - EPA 5035A												**Soil**
Blank (5090205-BLK1)					Prepared: 09/09/15 08:00		Analyzed: 09/09/15 10:31					
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 105 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*99 %*	*50-150 %*			*"*					
LCS (5090205-BS2)					Prepared: 09/09/15 08:00		Analyzed: 09/09/15 10:07					
NWTPH-Gx (MS)												
Gasoline Range Organics	23.5	---	5.00	mg/kg wet	50	25.0	---	94	70-130%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 100 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*97 %*	*50-150 %*			*"*					
Duplicate (5090205-DUP1)					Prepared: 09/03/15 08:25		Analyzed: 09/09/15 12:33					
QC Source Sample: B-17(12) (A5I0181-01)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	5.19	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 104 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*102 %*	*50-150 %*			*"*					
Duplicate (5090205-DUP2)					Prepared: 09/09/15 14:26		Analyzed: 09/09/15 17:57					V-15
QC Source Sample: Other (A5I0226-01)												
NWTPH-Gx (MS)												
Gasoline Range Organics	**1460**	---	229	mg/kg dry	2000	---	2820	---	---	63	30%	Q-04
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 118 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*97 %*	*50-150 %*			*"*					

Apex Laboratories

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Philip Nerenberg, Lab Director

Apex Labs

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090205 - EPA 5035A							**Soil**					
Blank (5090205-BLK1)					Prepared: 09/09/15 08:00 Analyzed: 09/09/15 10:31							
5035/8260B												
Benzene	ND	---	8.33	ug/kg wet	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	"	"	---	---	---	---	---	---	
Xylenes, total	ND	---	50.0	"	"	---	---	---	---	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 108 %*		*Limits: 70-130 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*104 %*		*70-130 %*			*"*				
Toluene-d8 (Surr)			*101 %*		*70-130 %*			*"*				
4-Bromofluorobenzene (Surr)			*103 %*		*70-130 %*			*"*				
LCS (5090205-BS1)					Prepared: 09/09/15 08:00 Analyzed: 09/09/15 09:43							
5035/8260B												
Benzene	1010	---	12.5	ug/kg wet	50	1000	---	101	65-135%	---	---	
Toluene	988	---	50.0	"	"	"	---	99	"	---	---	
Ethylbenzene	995	---	25.0	"	"	"	---	100	"	---	---	
Xylenes, total	3120	---	75.0	"	"	3000	---	104	"	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 104 %*		*Limits: 70-130 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*100 %*		*70-130 %*			*"*				
Toluene-d8 (Surr)			*98 %*		*70-130 %*			*"*				
4-Bromofluorobenzene (Surr)			*98 %*		*70-130 %*			*"*				
Duplicate (5090205-DUP1)					Prepared: 09/03/15 08:25 Analyzed: 09/09/15 12:33							
QC Source Sample: B-17(12) (A5I0181-01)												
5035/8260B												
Benzene	ND	---	13.0	ug/kg dry	50	---	ND	---	---	---	30%	
Toluene	ND	---	51.9	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	25.9	"	"	---	ND	---	---	---	30%	
Xylenes, total	ND	---	77.8	"	"	---	ND	---	---	---	30%	
Surr: Dibromofluoromethane (Surr)			*Recovery: 111 %*		*Limits: 70-130 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*105 %*		*70-130 %*			*"*				
Toluene-d8 (Surr)			*103 %*		*70-130 %*			*"*				
4-Bromofluorobenzene (Surr)			*102 %*		*70-130 %*			*"*				
Matrix Spike (5090205-MS1)					Prepared: 09/09/15 14:26 Analyzed: 09/09/15 20:02							V-15
QC Source Sample: Other (A5I0226-05)												
5035/8260B												

Apex Laboratories

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090205 - EPA 5035A							**Soil**					
Matrix Spike (5090205-MS1)					Prepared: 09/09/15 14:26		Analyzed: 09/09/15 20:02					V-15
QC Source Sample: Other (A5I0226-05)												
Benzene	980	---	13.0	ug/kg dry	50	1040	ND	94	65-135%	---	---	
Toluene	980	---	51.9	"	"	"	ND	94	"	---	---	
Ethylbenzene	975	---	25.9	"	"	"	ND	94	"	---	---	
Xylenes, total	3030	---	77.8	"	"	3120	ND	97	"	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 105 %*		*Limits: 70-130 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*101 %*		*70-130 %*			*"*				
Toluene-d8 (Surr)			*101 %*		*70-130 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*70-130 %*			*"*				

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090259 - Total Solids (Dry Weight)							Soil					
Duplicate (5090259-DUP1)					Prepared: 09/10/15 12:05		Analyzed: 09/11/15 08:18					
QC Source Sample: B-18(6) (A5I0181-05)												
EPA 8000C												
% Solids	**83.6**	---	1.00	% by Weight	1	---	83.5	---	---	0.1	10%	Q-38
Duplicate (5090259-DUP2)					Prepared: 09/10/15 12:05		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0231-02)												
EPA 8000C												
% Solids	**84.6**	---	1.00	% by Weight	1	---	84.8	---	---	0.2	10%	Q-38
Duplicate (5090259-DUP3)					Prepared: 09/10/15 12:05		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0238-10)												
EPA 8000C												
% Solids	**87.5**	---	1.00	% by Weight	1	---	88.2	---	---	0.7	10%	Q-38
Duplicate (5090259-DUP4)					Prepared: 09/10/15 12:05		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0249-06)												
EPA 8000C												
% Solids	**90.6**	---	1.00	% by Weight	1	---	91.1	---	---	0.5	10%	Q-38
Duplicate (5090259-DUP5)					Prepared: 09/10/15 14:43		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0244-02)												
EPA 8000C												
% Solids	**90.8**	---	1.00	% by Weight	1	---	90.5	---	---	0.3	10%	Q-38
Duplicate (5090259-DUP6)					Prepared: 09/10/15 19:44		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0286-01)												
EPA 8000C												
% Solids	**86.6**	---	1.00	% by Weight	1	---	86.7	---	---	0.2	10%	Q-38
Duplicate (5090259-DUP7)					Prepared: 09/10/15 19:44		Analyzed: 09/11/15 08:18					
QC Source Sample: Other (A5I0293-01)												
EPA 8000C												
% Solids	**87.0**	---	1.00	% by Weight	1	---	87.4	---	---	0.5	10%	Q-38

Apex Laboratories

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Philip Nerenberg, Lab Director

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

SAMPLE PREPARATION INFORMATION

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090205							
A5I0181-01	Soil	NWTPH-Gx (MS)	09/03/15 08:25	09/03/15 08:25	4.93g/5mL	10g/10mL	1.01
A5I0181-04	Soil	NWTPH-Gx (MS)	09/03/15 11:00	09/03/15 11:00	5.25g/5mL	10g/10mL	0.95
A5I0181-05	Soil	NWTPH-Gx (MS)	09/03/15 11:25	09/03/15 11:25	6.09g/5mL	10g/10mL	0.82
A5I0181-06RE1	Soil	NWTPH-Gx (MS)	09/03/15 11:35	09/03/15 11:35	5.53g/5mL	10g/10mL	0.90
A5I0181-07	Soil	NWTPH-Gx (MS)	09/04/15 10:05	09/04/15 10:05	4.73g/5mL	10g/10mL	1.06

BTEX Compounds by EPA 8260B

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090205							
A5I0181-04	Soil	5035/8260B	09/03/15 11:00	09/03/15 11:00	5.25g/5mL	10g/10mL	0.95
A5I0181-06	Soil	5035/8260B	09/03/15 11:35	09/03/15 11:35	5.53g/5mL	10g/10mL	0.90

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090259							
A5I0181-01	Soil	EPA 8000C	09/03/15 08:25	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA
A5I0181-04	Soil	EPA 8000C	09/03/15 11:00	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA
A5I0181-05	Soil	EPA 8000C	09/03/15 11:25	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA
A5I0181-06	Soil	EPA 8000C	09/03/15 11:35	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA
A5I0181-07	Soil	EPA 8000C	09/04/15 10:05	09/10/15 12:05	1N/A/1N/A	1N/A/1N/A	NA

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06

Notes and Definitions

Qualifiers:

Q-04	Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
Q-38	Oven outside of control limits during drying step.
V-15	Sample aliquot was subsampled from the sample container. The subsampled aliquot was preserved in the laboratory within 48 hours of sampling.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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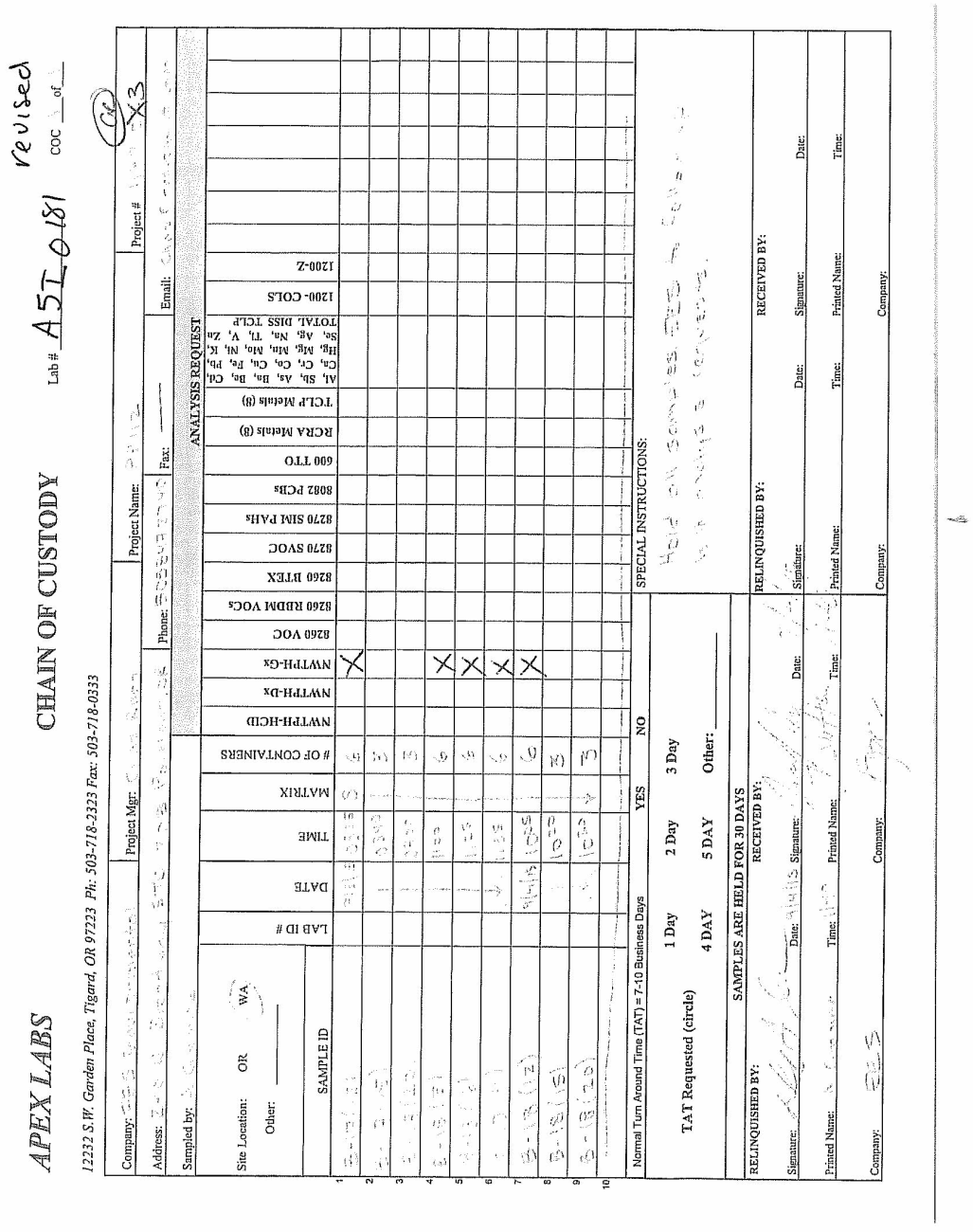
EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-03	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:06



Apex Laboratories

Philip Nerenberg

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Apex Laboratories
Philip Nerenberg
12232 S.W. Garden Place
Tigard, OR 97223

RE: A5I0181
Lab ID: 1509194

September 22, 2015

Attention Philip Nerenberg:

Fremont Analytical, Inc. received 2 sample(s) on 9/15/2015 for the analyses presented in the following report.

Volatile Petroleum Hydrocarbons by NWVPH

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
President

Date: *09/22/2015*

CLIENT: Apex Laboratories
Project: A5I0181
Lab Order: 1509194

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1509194-001	B-18(3)	09/03/2015 11:00 AM	09/15/2015 3:10 PM
1509194-002	B-18(9)	09/03/2015 11:35 AM	09/15/2015 3:10 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **1509194**
Date: **9/22/2015**

CLIENT: Apex Laboratories
Project: A5I0181

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below LOQ
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

WO#: **1509194**

Date Reported: **9/22/2015**

Client: Apex Laboratories

Collection Date: 9/3/2015 11:00:00 AM

Project: A5I0181

Lab ID: 1509194-001

Matrix: Soil

Client Sample ID: B-18(3)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Petroleum Hydrocarbons by NWVPH				Batch ID: 11845		Analyst: BC
Aliphatic Hydrocarbon (C5-C6)	23.9	1.92		mg/Kg	1	9/16/2015 6:53:00 AM
Aliphatic Hydrocarbon (C6-C8)	86.5	38.3	D	mg/Kg	20	9/16/2015 4:45:00 PM
Aliphatic Hydrocarbon (C8-C10)	277	38.3	DQ	mg/Kg	20	9/16/2015 4:45:00 PM
Aliphatic Hydrocarbon (C10-C12)	574	38.3	DQ	mg/Kg	20	9/16/2015 4:45:00 PM
Aromatic Hydrocarbon (C8-C10)	548	38.3	DQ	mg/Kg	20	9/16/2015 4:45:00 PM
Aromatic Hydrocarbon (C10-C12)	513	38.3	D	mg/Kg	20	9/16/2015 4:45:00 PM
Aromatic Hydrocarbon (C12-C13)	114	38.3	D	mg/Kg	20	9/16/2015 4:45:00 PM
Surr: 1,4-Difluorobenzene	112	65-140		%REC	1	9/16/2015 6:53:00 AM
Surr: Bromofluorobenzene	114	65-140	D	%REC	20	9/16/2015 4:45:00 PM

NOTES:

Q - Indicates an analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Analytical Report

WO#: **1509194**

Date Reported: **9/22/2015**

Client: Apex Laboratories

Collection Date: 9/3/2015 11:35:00 AM

Project: A5I0181

Lab ID: 1509194-002

Matrix: Soil

Client Sample ID: B-18(9)

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Petroleum Hydrocarbons by NWVPH				Batch ID: 11845		Analyst: BC
Aliphatic Hydrocarbon (C5-C6)	ND	1.78		mg/Kg	1	9/16/2015 8:05:00 AM
Aliphatic Hydrocarbon (C6-C8)	41.4	1.78		mg/Kg	1	9/16/2015 8:05:00 AM
Aliphatic Hydrocarbon (C8-C10)	212	35.5	DQ	mg/Kg	20	9/16/2015 5:20:00 PM
Aliphatic Hydrocarbon (C10-C12)	409	35.5	DQ	mg/Kg	20	9/16/2015 5:20:00 PM
Aromatic Hydrocarbon (C8-C10)	387	35.5	DQ	mg/Kg	20	9/16/2015 5:20:00 PM
Aromatic Hydrocarbon (C10-C12)	178	35.5	D	mg/Kg	20	9/16/2015 5:20:00 PM
Aromatic Hydrocarbon (C12-C13)	43.8	1.78		mg/Kg	1	9/16/2015 8:05:00 AM
Surr: 1,4-Difluorobenzene	120	65-140		%REC	1	9/16/2015 8:05:00 AM
Surr: Bromofluorobenzene	116	65-140	D	%REC	20	9/16/2015 5:20:00 PM

NOTES:

S - High surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Q - Indicates an analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Work Order: 1509194
CLIENT: Apex Laboratories
Project: A5I0181

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **LCS-11845**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **9/15/2015**			RunNo: **24895**		
Client ID: **LCSS**	Batch ID: **11845**					Analysis Date: **9/16/2015**			SeqNo: **468958**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	30.4	2.00	30.00	0	101	70	130				
Aliphatic Hydrocarbon (C6-C8)	11.0	2.00	10.00	0	110	70	130				
Aliphatic Hydrocarbon (C8-C10)	9.96	2.00	10.00	0	99.6	70	130				
Aliphatic Hydrocarbon (C10-C12)	9.10	2.00	10.00	0	91.0	70	130				
Aromatic Hydrocarbon (C8-C10)	52.0	2.00	40.00	0	130	70	130				
Aromatic Hydrocarbon (C10-C12)	11.4	2.00	10.00	0	114	70	130				
Aromatic Hydrocarbon (C12-C13)	11.3	2.00	10.00	0	113	70	130				
Surr: 1,4-Difluorobenzene	3.16		2.500		126	65	140				
Surr: Bromofluorobenzene	2.88		2.500		115	65	140				

Sample ID: **MB-11845**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **9/15/2015**			RunNo: **24895**		
Client ID: **MBLKS**	Batch ID: **11845**					Analysis Date: **9/16/2015**			SeqNo: **468959**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C6-C8)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C8-C10)	ND	2.00		0	0						
Aliphatic Hydrocarbon (C10-C12)	ND	2.00		0	0						
Aromatic Hydrocarbon (C8-C10)	ND	2.00		0	0						
Aromatic Hydrocarbon (C10-C12)	ND	2.00		0	0						
Aromatic Hydrocarbon (C12-C13)	ND	2.00		0	0						
Surr: 1,4-Difluorobenzene	2.71		2.500		108	65	140				
Surr: Bromofluorobenzene	2.71		2.500		108	65	140				

Sample ID: **1509194-001ADUP**	SampType: **DUP**			Units: **mg/Kg**		Prep Date: **9/15/2015**			RunNo: **24895**		
Client ID: **B-18(3)**	Batch ID: **11845**					Analysis Date: **9/16/2015**			SeqNo: **468955**		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	19.3	1.92		0	0			23.89	21.3	25	
Aliphatic Hydrocarbon (C6-C8)	58.2	1.92		0	0			65.70	12.1	25	E

Work Order: 1509194
CLIENT: Apex Laboratories
Project: A5I0181

QC SUMMARY REPORT

Volatile Petroleum Hydrocarbons by NWVPH

Sample ID: **1509194-001ADUP** SampType: **DUP** Units: **mg/Kg** Prep Date: **9/15/2015** RunNo: **24895**
Client ID: **B-18(3)** Batch ID: **11845** Analysis Date: **9/16/2015** SeqNo: **468955**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C8-C10)	557	1.92		0	0			389.4	35.5	25	RE
Aliphatic Hydrocarbon (C10-C12)	474	1.92		0	0			474.9	0.182	25	E
Aromatic Hydrocarbon (C8-C10)	431	1.92		0	0			413.2	4.22	25	EQ
Aromatic Hydrocarbon (C10-C12)	355	1.92		0	0			362.1	2.03	25	E
Aromatic Hydrocarbon (C12-C13)	110	1.92		0	0			140.2	23.9	25	E
Surr: 1,4-Difluorobenzene	2.69		2.395		112	65	140		0		
Surr: Bromofluorobenzene	7.15		2.395		299	65	140		0	0	S

NOTES:
R - High RPD observed. The method is in control as indicated by the LCS.
S - High surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).
Q - Indicates an analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID: **1509194-002AMS** SampType: **MS** Units: **mg/Kg** Prep Date: **9/15/2015** RunNo: **24895**
Client ID: **B-18(9)** Batch ID: **11845** Analysis Date: **9/16/2015** SeqNo: **468956**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aliphatic Hydrocarbon (C5-C6)	38.4	1.78	53.29	0	72.1	70	130				
Aliphatic Hydrocarbon (C6-C8)	48.3	1.78	17.76	41.44	38.6	70	130				SE
Aliphatic Hydrocarbon (C8-C10)	237	1.78	17.76	177.6	336	70	130				SE
Aliphatic Hydrocarbon (C10-C12)	224	1.78	17.76	210.6	76.2	70	130				E
Aromatic Hydrocarbon (C8-C10)	295	1.78	71.05	264.4	43.3	70	130				SE
Aromatic Hydrocarbon (C10-C12)	156	1.78	17.76	154.8	8.92	70	130				SE
Aromatic Hydrocarbon (C12-C13)	46.9	1.78	17.76	43.79	17.5	70	130				S
Surr: 1,4-Difluorobenzene	2.44		2.220		110	65	140				
Surr: Bromofluorobenzene	5.27		2.220		237	65	140				S

NOTES:
S - Analyte concentration was too high for accurate spike recoveries.
S - High surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Sample Log-In Check List

Client Name:	**APEX**	Work Order Number:	**1509194**
Logged by:	**Clare Griggs**	Date Received:	**9/15/2015 3:10:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	UPS		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >0°C to 10.0°C *	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

19. Additional remarks:

Sample jars not provided to conduct sample moisture check

Item Information

Item #	Temp ºC
Cooler	2.3
Sample	7.5
Temp Blank	8.5

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

SUBCONTRACT ORDER

Apex Laboratories

A5I0181

1509194

SENDING LABORATORY:

Apex Laboratories
12232 S.W. Garden Place
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 718-0333
Project Manager: Philip Nerenberg

RECEIVING LABORATORY:

Fremont Analytical
3600 Fremont Avenue N.
Seattle, WA 98103
Phone :(206) 352-3790
Fax: (206) 352-7178

Sample Name: B-18(3) **Soil** **Sampled: 09/03/15 11:00** (A5I0181-04)

Analysis	Due	Expires	Comments
NWTPH-VPH (Sub)	09/25/15 17:00	09/17/15 11:00	
Containers Supplied:			
(F)40 mL VOA - 5035 (MeOH)			

Sample Name: B-18(9) **Soil** **Sampled: 09/03/15 11:35** (A5I0181-06)

Analysis	Due	Expires	Comments
NWTPH-VPH (Sub)	09/25/15 17:00	09/17/15 11:35	
Containers Supplied:			
(F)40 mL VOA - 5035 (MeOH)			

Be sure weights are on VOAs.

STANDARD TAT

WATCH Expiration

Released By — Date — UPS (Shipper) — Received By — Date

Released By — Date — Received By — 09/15/15 3:10pm — Date

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Monday, September 28, 2015

Chris Rhea
EES Environmental Inc
240 N Broadway Ste 203
Portland, OR 97227

RE: PP112 / 1179-01

Enclosed are the results of analyses for work order A5I0188, which was received by the laboratory on 9/4/2015 at 11:40:00AM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Apex Labs

12232 S.W. Garden Place
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503-718-2323 Phone
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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-19 (3)	A5I0188-01	Soil	09/03/15 14:10	09/04/15 11:40
B-19 (6)	A5I0188-02	Soil	09/03/15 14:20	09/04/15 11:40
B-19 (9)	A5I0188-03	Soil	09/03/15 14:30	09/04/15 11:40
B-19 (12)	A5I0188-04	Soil	09/03/15 16:20	09/04/15 11:40
B-20 (6)	A5I0188-07	Soil	09/03/15 15:45	09/04/15 11:40
B-20 (9)	A5I0188-08	Soil	09/03/15 16:00	09/04/15 11:40
B-20 (12)	A5I0188-10	Soil	09/03/15 17:10	09/04/15 11:40

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg

Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-19 (3) (A5I0188-01)			**Matrix: Soil**		**Batch: 5090392**			
Gasoline Range Organics	ND	---	5.75	mg/kg dry	50	09/16/15 18:03	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 79 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*83 %*	*Limits: 50-150 %*	"	"	"	
B-19 (6) (A5I0188-02)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	**8.40**	---	7.71	mg/kg dry	50	09/09/15 14:36	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 109 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*98 %*	*Limits: 50-150 %*	"	"	"	
B-19 (9) (A5I0188-03)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	ND	---	7.91	mg/kg dry	50	09/09/15 15:01	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 108 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*97 %*	*Limits: 50-150 %*	"	"	"	
B-19 (12) (A5I0188-04)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	ND	---	5.73	mg/kg dry	50	09/09/15 15:26	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 106 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*99 %*	*Limits: 50-150 %*	"	"	"	
B-20 (6) (A5I0188-07)			**Matrix: Soil**		**Batch: 5090205**			
Gasoline Range Organics	ND	---	5.90	mg/kg dry	50	09/09/15 15:51	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 108 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*99 %*	*Limits: 50-150 %*	"	"	"	
B-20 (9) (A5I0188-08RE1)			**Matrix: Soil**		**Batch: 5090244**			
Gasoline Range Organics	**475**	---	145	mg/kg dry	1000	09/10/15 12:17	NWTPH-Gx (MS)	F-13
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 127 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*104 %*	*Limits: 50-150 %*	"	"	"	
B-20 (12) (A5I0188-10RE1)			**Matrix: Soil**		**Batch: 5090244**			
Gasoline Range Organics	ND	---	5.67	mg/kg dry	50	09/10/15 11:53	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 108 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*103 %*	*Limits: 50-150 %*	"	"	"	

Apex Laboratories

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Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

ANALYTICAL SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-19 (6) (A5I0188-02)			**Matrix: Soil**		**Batch: 5090205**			
Benzene	ND	---	19.3	ug/kg dry	50	09/09/15 14:36	5035/8260B	
Toluene	ND	---	77.1	"	"	"	"	
Ethylbenzene	ND	---	38.6	"	"	"	"	
Xylenes, total	ND	---	116	"	"	"	"	
Surrogate: Dibromofluoromethane (Surr)			*Recovery: 105 %*	*Limits: 70-130 %*	1	"	"	
1,4-Difluorobenzene (Surr)			*104 %*	*Limits: 70-130 %*	"	"	"	
Toluene-d8 (Surr)			*102 %*	*Limits: 70-130 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*100 %*	*Limits: 70-130 %*	"	"	"	
B-20 (9) (A5I0188-08)			**Matrix: Soil**		**Batch: 5090205**			
Benzene	ND	---	18.1	ug/kg dry	50	09/09/15 16:16	5035/8260B	
Toluene	ND	---	72.5	"	"	"	"	
Ethylbenzene	ND	---	36.2	"	"	"	"	
Xylenes, total	ND	---	109	"	"	"	"	
Surrogate: Dibromofluoromethane (Surr)			*Recovery: 106 %*	*Limits: 70-130 %*	1	"	"	
1,4-Difluorobenzene (Surr)			*103 %*	*Limits: 70-130 %*	"	"	"	
Toluene-d8 (Surr)			*95 %*	*Limits: 70-130 %*	"	"	"	
4-Bromofluorobenzene (Surr)			*96 %*	*Limits: 70-130 %*	"	"	"	

Apex Laboratories

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Philip Nerenberg, Lab Director

Apex Labs

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Tigard, OR 97223
503-718-2323 Phone
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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
B-19 (3) (A5I0188-01)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**86.0**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	
B-19 (6) (A5I0188-02)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**80.9**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	
B-19 (9) (A5I0188-03)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**75.6**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	
B-19 (12) (A5I0188-04)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**91.6**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	
B-20 (6) (A5I0188-07)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**86.5**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	
B-20 (9) (A5I0188-08)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**82.0**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	
B-20 (12) (A5I0188-10)			**Matrix: Soil**		**Batch: 5090337**			
% Solids	**92.2**	---	1.00	% by Weight	1	09/15/15 09:07	EPA 8000C	

Apex Laboratories

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Philip Nerenberg, Lab Director

Apex Labs

12232 S.W. Garden Place
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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090205 - EPA 5035A							Soil					
Blank (5090205-BLK1)					Prepared: 09/09/15 08:00		Analyzed: 09/09/15 10:31					
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 105 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*99 %*	*50-150 %*			*"*					
LCS (5090205-BS2)					Prepared: 09/09/15 08:00		Analyzed: 09/09/15 10:07					
NWTPH-Gx (MS)												
Gasoline Range Organics	23.5	---	5.00	mg/kg wet	50	25.0	---	94	70-130%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 100 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*97 %*	*50-150 %*			*"*					
Duplicate (5090205-DUP1)					Prepared: 09/03/15 08:25		Analyzed: 09/09/15 12:33					
QC Source Sample: Other (A5I0181-01)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	5.19	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 104 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*102 %*	*50-150 %*			*"*					
Duplicate (5090205-DUP2)					Prepared: 09/09/15 14:26		Analyzed: 09/09/15 17:57					V-15
QC Source Sample: Other (A5I0226-01)												
NWTPH-Gx (MS)												
Gasoline Range Organics	**1460**	---	229	mg/kg dry	2000	---	2820	---	---	63	30%	Q-04
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 118 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*97 %*	*50-150 %*			*"*					
Batch 5090244 - EPA 5035A							Soil					
Blank (5090244-BLK1)					Prepared: 09/10/15 08:00		Analyzed: 09/10/15 11:04					
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 107 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*104 %*	*50-150 %*			*"*					
LCS (5090244-BS2)					Prepared: 09/10/15 08:00		Analyzed: 09/10/15 10:39					
NWTPH-Gx (MS)												
Gasoline Range Organics	21.6	---	5.00	mg/kg wet	50	25.0	---	86	70-130%	---	---	

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090244 - EPA 5035A												**Soil**
LCS (5090244-BS2)					Prepared: 09/10/15 08:00		Analyzed: 09/10/15 10:39					
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 97 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*102 %*	*50-150 %*			*"*					
Duplicate (5090244-DUP1)					Prepared: 09/08/15 14:06		Analyzed: 09/10/15 15:11					V-15
QC Source Sample: Other (A5I0185-12)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	5.99	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 122 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*106 %*	*50-150 %*			*"*					
Duplicate (5090244-DUP2)					Prepared: 09/08/15 14:06		Analyzed: 09/10/15 17:19					V-15
QC Source Sample: Other (A5I0185-16)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	6.65	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 124 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*111 %*	*50-150 %*			*"*					

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240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090392 - EPA 5035A									Soil			
Blank (5090392-BLK1)					Prepared: 09/16/15 08:32 Analyzed: 09/16/15 11:01							
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 95 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*97 %*	*50-150 %*			*"*					
LCS (5090392-BS2)					Prepared: 09/16/15 08:32 Analyzed: 09/16/15 10:37							
NWTPH-Gx (MS)												
Gasoline Range Organics	22.7	---	5.00	mg/kg wet	50	25.0	---	91	70-130%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 92 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*98 %*	*50-150 %*			*"*					
Duplicate (5090392-DUP1)					Prepared: 09/11/15 19:15 Analyzed: 09/16/15 18:52							V-15
QC Source Sample: Other (A5I0331-02)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	6.04	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 78 %*	*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*85 %*	*50-150 %*			*"*					

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240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090205 - EPA 5035A							**Soil**					
Blank (5090205-BLK1)					Prepared: 09/09/15 08:00		Analyzed: 09/09/15 10:31					
5035/8260B												
Benzene	ND	---	8.33	ug/kg wet	50	---	---	---	---	---	---	
Toluene	ND	---	33.3	"	"	---	---	---	---	---	---	
Ethylbenzene	ND	---	16.7	"	"	---	---	---	---	---	---	
Xylenes, total	ND	---	50.0	"	"	---	---	---	---	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 108 %*		*Limits: 70-130 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Surr)			*104 %*		*70-130 %*		*"*					
Toluene-d8 (Surr)			*101 %*		*70-130 %*		*"*					
4-Bromofluorobenzene (Surr)			*103 %*		*70-130 %*		*"*					
LCS (5090205-BS1)					Prepared: 09/09/15 08:00		Analyzed: 09/09/15 09:43					
5035/8260B												
Benzene	1010	---	12.5	ug/kg wet	50	1000	---	101	65-135%	---	---	
Toluene	988	---	50.0	"	"	"	---	99	"	---	---	
Ethylbenzene	995	---	25.0	"	"	"	---	100	"	---	---	
Xylenes, total	3120	---	75.0	"	"	3000	---	104	"	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 104 %*		*Limits: 70-130 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Surr)			*100 %*		*70-130 %*		*"*					
Toluene-d8 (Surr)			*98 %*		*70-130 %*		*"*					
4-Bromofluorobenzene (Surr)			*98 %*		*70-130 %*		*"*					
Duplicate (5090205-DUP1)					Prepared: 09/03/15 08:25		Analyzed: 09/09/15 12:33					
QC Source Sample: Other (A5I0181-01)												
5035/8260B												
Benzene	ND	---	13.0	ug/kg dry	50	---	ND	---	---	---	30%	
Toluene	ND	---	51.9	"	"	---	ND	---	---	---	30%	
Ethylbenzene	ND	---	25.9	"	"	---	ND	---	---	---	30%	
Xylenes, total	ND	---	77.8	"	"	---	ND	---	---	---	30%	
Surr: Dibromofluoromethane (Surr)			*Recovery: 111 %*		*Limits: 70-130 %*		*Dilution: 1x*					
1,4-Difluorobenzene (Surr)			*105 %*		*70-130 %*		*"*					
Toluene-d8 (Surr)			*103 %*		*70-130 %*		*"*					
4-Bromofluorobenzene (Surr)			*102 %*		*70-130 %*		*"*					
Matrix Spike (5090205-MS1)					Prepared: 09/09/15 14:26		Analyzed: 09/09/15 20:02					V-15
QC Source Sample: Other (A5I0226-05)												
5035/8260B												

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240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

QUALITY CONTROL (QC) SAMPLE RESULTS

BTEX Compounds by EPA 8260B

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090205 - EPA 5035A							**Soil**					
Matrix Spike (5090205-MS1)					Prepared: 09/09/15 14:26		Analyzed: 09/09/15 20:02					V-15
QC Source Sample: Other (A5I0226-05)												
Benzene	980	---	13.0	ug/kg dry	50	1040	ND	94	65-135%	---	---	
Toluene	980	---	51.9	"	"	"	ND	94	"	---	---	
Ethylbenzene	975	---	25.9	"	"	"	ND	94	"	---	---	
Xylenes, total	3030	---	77.8	"	"	3120	ND	97	"	---	---	
Surr: Dibromofluoromethane (Surr)			*Recovery: 105 %*		*Limits: 70-130 %*			*Dilution: 1x*				
1,4-Difluorobenzene (Surr)			*101 %*		*70-130 %*			*"*				
Toluene-d8 (Surr)			*101 %*		*70-130 %*			*"*				
4-Bromofluorobenzene (Surr)			*97 %*		*70-130 %*			*"*				

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240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090337 - Total Solids (Dry Weight)							Soil					
Duplicate (5090337-DUP1)					Prepared: 09/14/15 13:12		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0346-03)												
EPA 8000C												
% Solids	**99.9**	---	1.00	% by Weight	1	---	99.9	---	---	0.01	10%	
Duplicate (5090337-DUP2)					Prepared: 09/14/15 14:11		Analyzed: 09/15/15 09:07					
QC Source Sample: B-20 (12) (A5I0188-10)												
EPA 8000C												
% Solids	**92.3**	---	1.00	% by Weight	1	---	92.2	---	---	0.09	10%	
Duplicate (5090337-DUP3)					Prepared: 09/14/15 14:11		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0330-04)												
EPA 8000C												
% Solids	**87.5**	---	1.00	% by Weight	1	---	87.2	---	---	0.3	10%	
Duplicate (5090337-DUP4)					Prepared: 09/14/15 14:11		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0343-08)												
EPA 8000C												
% Solids	**82.4**	---	1.00	% by Weight	1	---	82.7	---	---	0.3	10%	
Duplicate (5090337-DUP5)					Prepared: 09/14/15 17:20		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0363-02)												
EPA 8000C												
% Solids	**85.6**	---	1.00	% by Weight	1	---	88.1	---	---	3	10%	
Duplicate (5090337-DUP6)					Prepared: 09/14/15 19:21		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0373-02)												
EPA 8000C												
% Solids	**85.5**	---	1.00	% by Weight	1	---	85.8	---	---	0.3	10%	
Duplicate (5090337-DUP7)					Prepared: 09/14/15 19:21		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0379-02)												
EPA 8000C												
% Solids	**82.0**	---	1.00	% by Weight	1	---	86.5	---	---	5	10%	
Duplicate (5090337-DUP8)					Prepared: 09/14/15 19:21		Analyzed: 09/15/15 09:07					

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 5090337 - Total Solids (Dry Weight)											**Soil**	
Duplicate (5090337-DUP8)					Prepared: 09/14/15 19:21		Analyzed: 09/15/15 09:07					
QC Source Sample: Other (A5I0383-02)												
EPA 8000C												
% Solids	**94.3**	---	1.00	% by Weight	1	---	94.6	---	---	0.3	10%	

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EES Environmental Inc	Project: **PP112**	
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

SAMPLE PREPARATION INFORMATION

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090205							
A5I0188-02	Soil	NWTPH-Gx (MS)	09/03/15 14:20	09/03/15 14:20	4.73g/5mL	10g/10mL	1.06
A5I0188-03	Soil	NWTPH-Gx (MS)	09/03/15 14:30	09/03/15 14:30	5.25g/5mL	10g/10mL	0.95
A5I0188-04	Soil	NWTPH-Gx (MS)	09/03/15 16:20	09/03/15 16:20	5.17g/5mL	10g/10mL	0.97
A5I0188-07	Soil	NWTPH-Gx (MS)	09/03/15 15:45	09/03/15 15:45	5.65g/5mL	10g/10mL	0.89
Batch: 5090244							
A5I0188-08RE1	Soil	NWTPH-Gx (MS)	09/03/15 16:00	09/03/15 16:00	4.96g/5mL	10g/10mL	1.01
A5I0188-10RE1	Soil	NWTPH-Gx (MS)	09/03/15 17:10	09/03/15 17:10	5.17g/5mL	10g/10mL	0.97
Batch: 5090392							
A5I0188-01	Soil	NWTPH-Gx (MS)	09/03/15 14:10	09/03/15 14:10	5.9g/5mL	10g/10mL	0.85

BTEX Compounds by EPA 8260B

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090205							
A5I0188-02	Soil	5035/8260B	09/03/15 14:20	09/03/15 14:20	4.73g/5mL	10g/10mL	1.06
A5I0188-08	Soil	5035/8260B	09/03/15 16:00	09/03/15 16:00	4.96g/5mL	10g/10mL	1.01

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 5090337							
A5I0188-01	Soil	EPA 8000C	09/03/15 14:10	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA
A5I0188-02	Soil	EPA 8000C	09/03/15 14:20	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA
A5I0188-03	Soil	EPA 8000C	09/03/15 14:30	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA
A5I0188-04	Soil	EPA 8000C	09/03/15 16:20	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA
A5I0188-07	Soil	EPA 8000C	09/03/15 15:45	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA
A5I0188-08	Soil	EPA 8000C	09/03/15 16:00	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA
A5I0188-10	Soil	EPA 8000C	09/03/15 17:10	09/14/15 14:11	1N/A/1N/A	1N/A/1N/A	NA

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240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46

Notes and Definitions

Qualifiers:

F-13	The chromatographic pattern does not resemble the fuel standard used for quantitation
Q-04	Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
V-15	Sample aliquot was subsampled from the sample container. The subsampled aliquot was preserved in the laboratory within 48 hours of sampling.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
***	Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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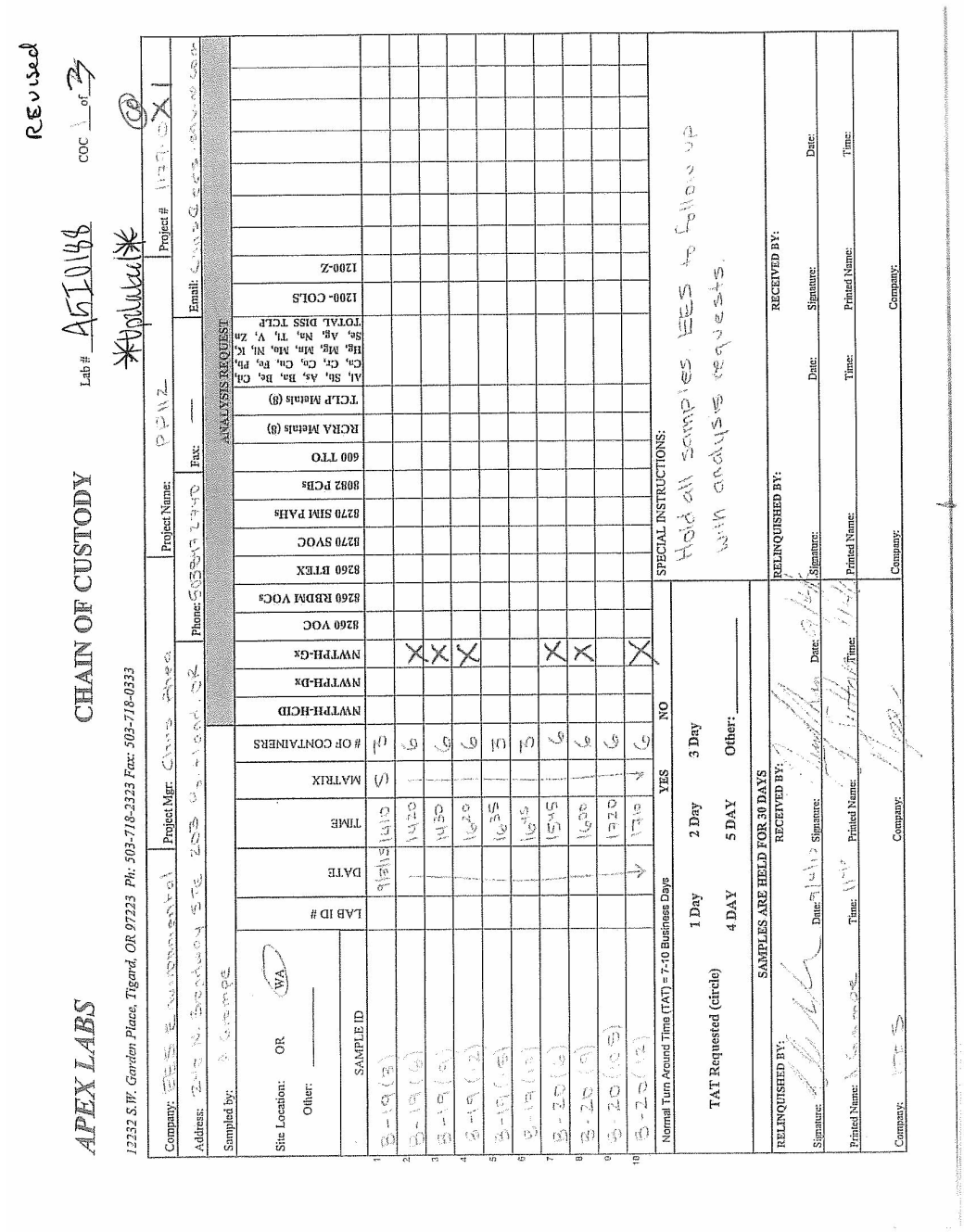
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46



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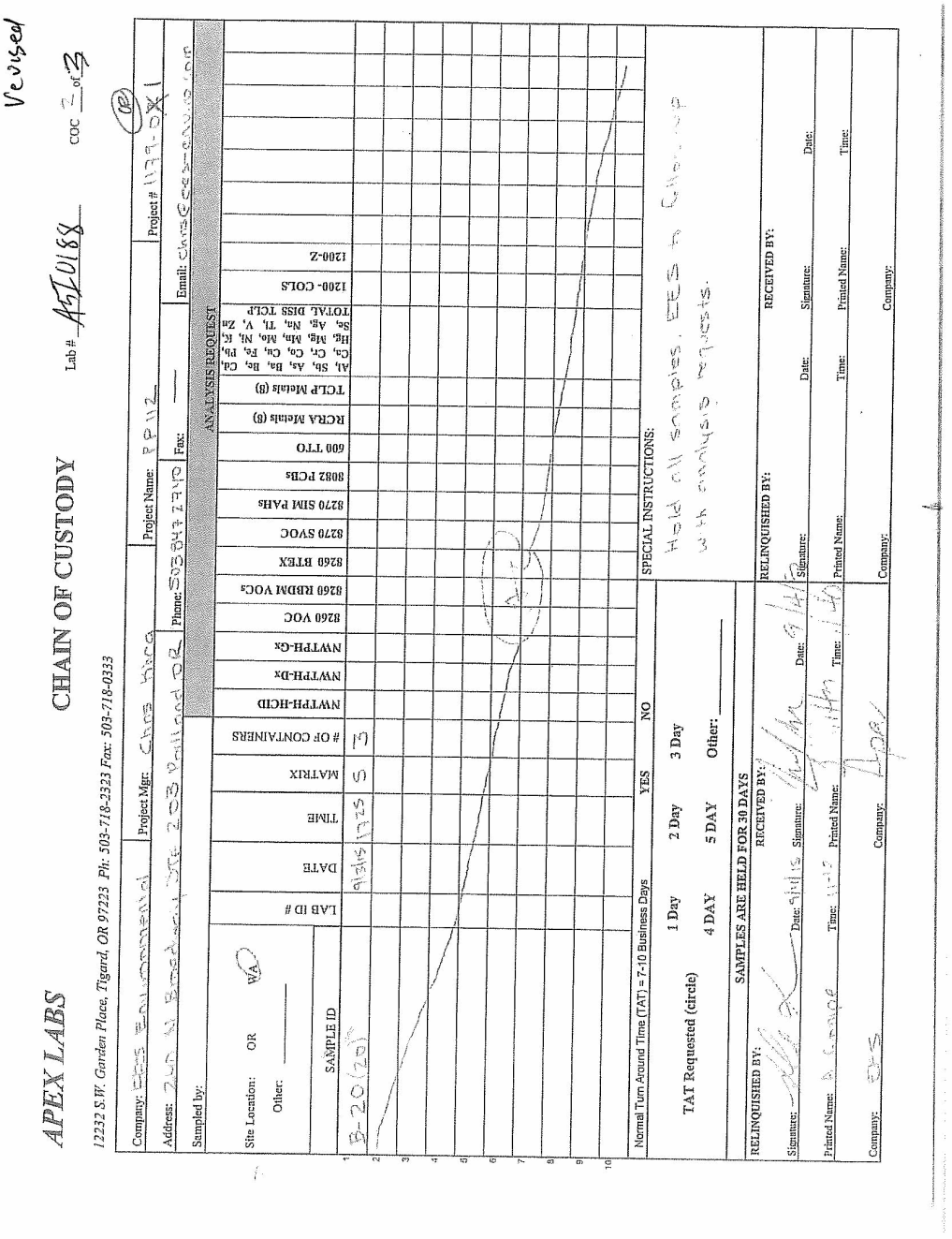

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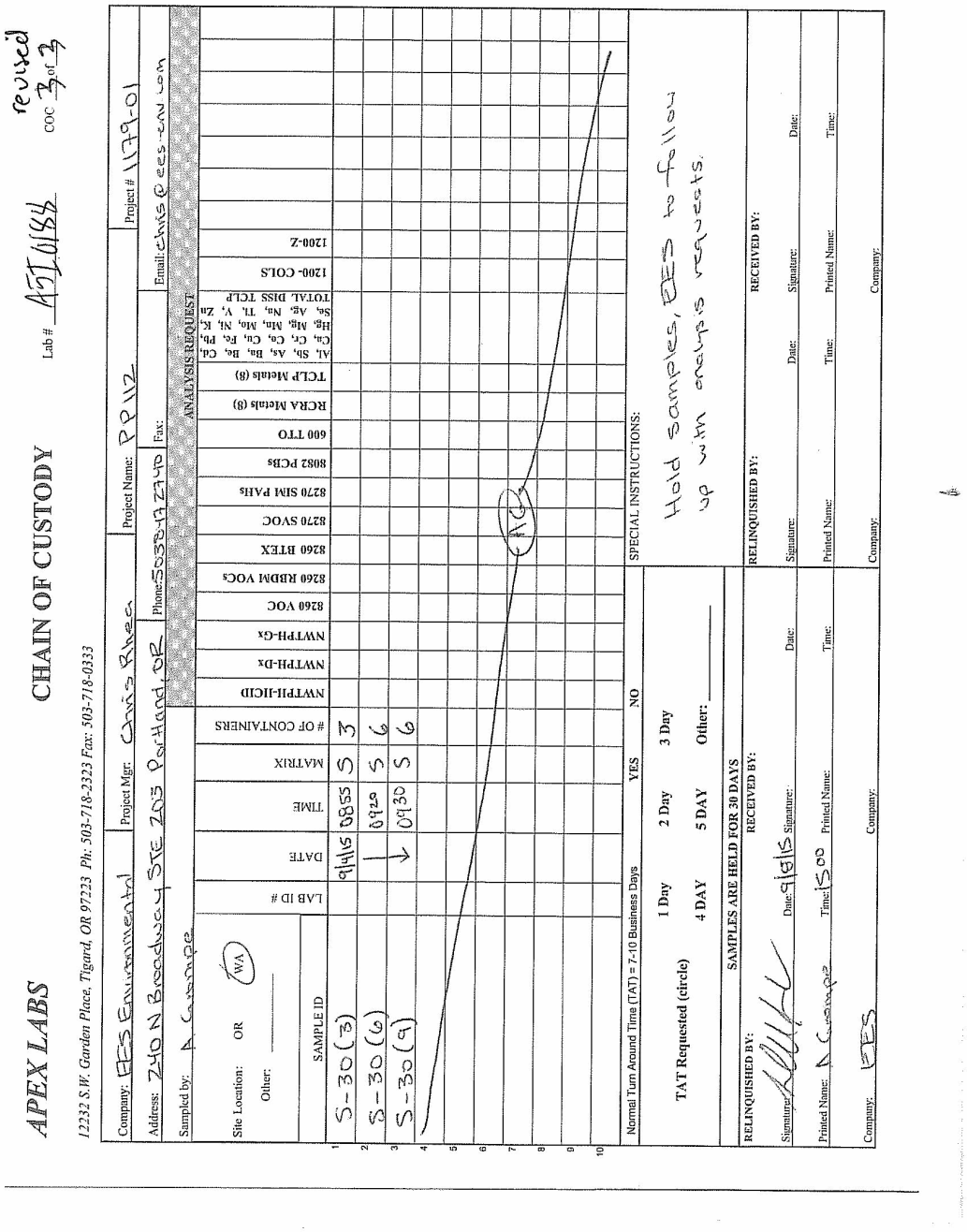
240 N Broadway Ste 203	Project Number: 1179-01	**Reported:**
Portland, OR 97227	Project Manager: Chris Rhea	09/28/15 14:46



Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Philip Nerenberg

Philip Nerenberg, Lab Director

Appendix D

Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

TERRESTRIAL ECOLOGICAL EVALUATION FORM

Under the Model Toxics Control Act (MTCA), a terrestrial ecological evaluation is necessary if hazardous substances are released into the soils at a Site. In the event of such a release, you must take one of the following three actions as part of your investigation and cleanup of the Site:

1. Document an exclusion from further evaluation using the criteria in WAC 173-340-7491.
2. Conduct a simplified evaluation as set forth in WAC 173-340-7492.
3. Conduct a site-specific evaluation as set forth in WAC 173-340-7493.

When requesting a written opinion under the Voluntary Cleanup Program (VCP), you must complete this form and submit it to the Department of Ecology (Ecology). The form documents the type and results of your evaluation.

Completion of this form is not sufficient to document your evaluation. You still need to document your analysis and the basis for your conclusion in your cleanup plan or report.

If you have questions about how to conduct a terrestrial ecological evaluation, please contact the Ecology site manager assigned to your Site. For additional guidance, please refer to www.ecy.wa.gov/programs/tcp/policies/terrestrial/TEEHome.htm.

Step 1: IDENTIFY HAZARDOUS WASTE SITE	
Please identify below the hazardous waste site for which you are documenting an evaluation.	
Facility/Site Name: Plaid Pantry Store #112	
Facility/Site Address: 1002 West Fourth Plain Blvd., Vancouver, WA	
Facility/Site No: 11759	VCP Project No.: SW1314

Step 2: IDENTIFY EVALUATOR			
Please identify below the person who conducted the evaluation and their contact information.			
Name: Chris Rhea			Title: Project Manager
Organization: EES Environmental Consulting, Inc.			
Mailing address: 240 N Broadway, Suite 203			
City: Portland		State: OR	Zip code: 97227
Phone: 971.302.7234	Fax: --	E-mail: Chris@ees-env.com	

Step 3: DOCUMENT EVALUATION TYPE AND RESULTS

A. Exclusion from further evaluation.

1. Does the Site qualify for an exclusion from further evaluation?

☐ Yes *If you answered **"YES,"** then answer **Question 2**.*

☒ No or Unknown *If you answered **"NO" or "UKNOWN,"** then skip to **Step 3B** of this form.*

2. What is the basis for the exclusion? *Check all that apply. Then skip to **Step 4** of this form.*

Point of Compliance: WAC 173-340-7491(1)(a)

☐ All soil contamination is, or will be,* at least 15 feet below the surface.

☐ All soil contamination is, or will be,* at least 6 feet below the surface (or alternative depth if approved by Ecology), and institutional controls are used to manage remaining contamination.

Barriers to Exposure: WAC 173-340-7491(1)(b)

☐ All contaminated soil, is or will be,* covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.

Undeveloped Land: WAC 173-340-7491(1)(c)

☐ There is less than 0.25 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site and any of the following chemicals is present: chlorinated dioxins or furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.

☐ For sites not containing any of the chemicals mentioned above, there is less than 1.5 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site.

Background Concentrations: WAC 173-340-7491(1)(d)

☐ Concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and 173-340-709.

* An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.

[±] "Undeveloped land" is land that is not covered by building, roads, paved areas, or other barriers that would prevent wildlife from feeding on plants, earthworms, insects, or other food in or on the soil.

[#] "Contiguous" undeveloped land is an area of undeveloped land that is not divided into smaller areas of highways, extensive paving, or similar structures that are likely to reduce the potential use of the overall area by wildlife.

B. Simplified evaluation.

1. Does the Site qualify for a simplified evaluation?

- ☒ Yes — *If you answered **"YES,"** then answer **Question 2** below.*
- ☐ No or Unknown — *If you answered **"NO"** or **"UNKNOWN,"** then skip to **Step 3C** of this form.*

2. Did you conduct a simplified evaluation?

- ☒ Yes — *If you answered **"YES,"** then answer **Question 3** below.*
- ☐ No — *If you answered **"NO,"** then skip to **Step 3C** of this form.*

3. Was further evaluation necessary?

- ☐ Yes — *If you answered **"YES,"** then answer **Question 4** below.*
- ☒ No — *If you answered **"NO,"** then answer **Question 5** below.*

4. If further evaluation was necessary, what did you do?

- ☐ Used the concentrations listed in Table 749-2 as cleanup levels. *If so, then skip to **Step 4** of this form.*
- ☐ Conducted a site-specific evaluation. *If so, then skip to **Step 3C** of this form.*

5. If no further evaluation was necessary, what was the reason? *Check all that apply. Then skip to **Step 4** of this form.*

Exposure Analysis: WAC 173-340-7492(2)(a)

- ☐ Area of soil contamination at the Site is not more than 350 square feet.
- ☒ Current or planned land use makes wildlife exposure unlikely. Used Table 749-1.

Table 749-1 is attached.

Pathway Analysis: WAC 173-340-7492(2)(b)

- ☐ No potential exposure pathways from soil contamination to ecological receptors.

Contaminant Analysis: WAC 173-340-7492(2)(c)

- ☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations that exceed the values listed in Table 749-2.
- ☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations that exceed the values listed in Table 749-2, and institutional controls are used to manage remaining contamination.
- ☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays.
- ☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays, and institutional controls are used to manage remaining contamination.

C. Site-specific evaluation. A site-specific evaluation process consists of two parts: (1) formulating the problem, and (2) selecting the methods for addressing the identified problem. Both steps require consultation with and approval by Ecology. *See* WAC 173-340-7493(1)(c).

1. Was there a problem? *See* WAC 173-340-7493(2).

☐ Yes *If you answered **"YES,"** then answer **Question 2** below.*

☐ No *If you answered **"NO,"** then identify the reason here and then skip to **Question 5** below:*

- ☐ No issues were identified during the problem formulation step.
- ☐ While issues were identified, those issues were addressed by the cleanup actions for protecting human health.

2. What did you do to resolve the problem? *See* WAC 173-340-7493(3).

☐ Used the concentrations listed in Table 749-3 as cleanup levels. *If so, then skip to **Question 5** below.*

☐ Used one or more of the methods listed in WAC 173-340-7493(3) to evaluate and address the identified problem. *If so, then answer **Questions 3 and 4** below.*

3. If you conducted further site-specific evaluations, what methods did you use?
Check all that apply. See WAC 173-340-7493(3).

- ☐ Literature surveys.
- ☐ Soil bioassays.
- ☐ Wildlife exposure model.
- ☐ Biomarkers.
- ☐ Site-specific field studies.
- ☐ Weight of evidence.
- ☐ Other methods approved by Ecology. If so, please specify:

4. What was the result of those evaluations?

- ☐ Confirmed there was no problem.
- ☐ Confirmed there was a problem and established site-specific cleanup levels.

5. Have you already obtained Ecology's approval of both your problem formulation and problem resolution steps?

☐ Yes If so, please identify the Ecology staff who approved those steps:

☐ No

Step 4: SUBMITTAL

Please mail your completed form to the Ecology site manager assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.

Northwest Region: Attn: VCP Coordinator 3190 160th Ave. SE Bellevue, WA 98008-5452	**Central Region:** Attn: VCP Coordinator 1250 West Alder St. Union Gap, WA 98903-0009
Southwest Region: Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775	**Eastern Region:** Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295

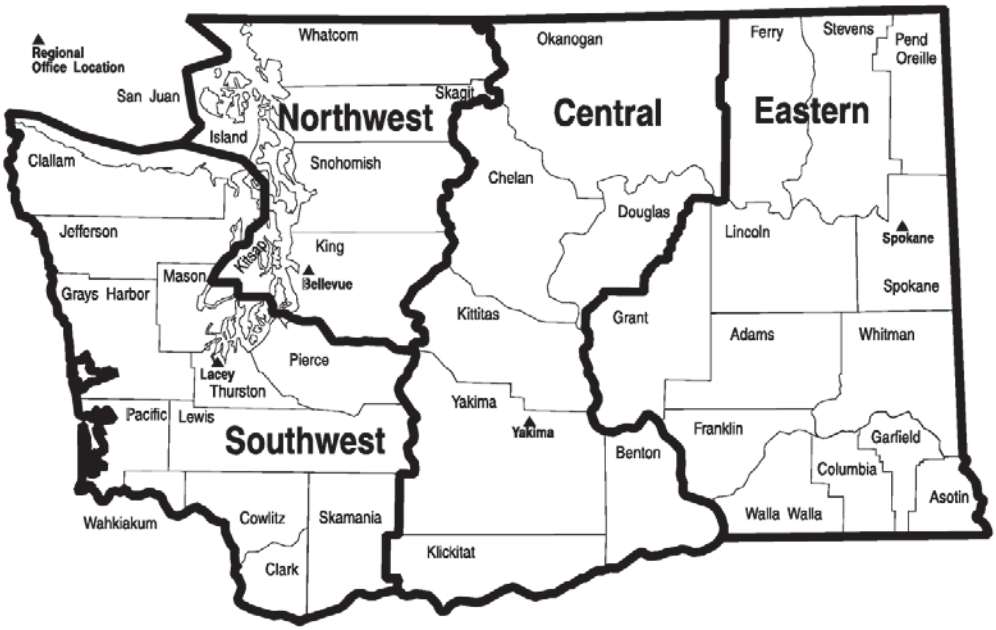


Table 749-1

Simplified Terrestrial Ecological Evaluation-Exposure Analysis Procedure

Estimate the area of contiguous (connected) undeveloped land on the site or within 500 feet of any area of the site to the nearest 1/2 acre (1/4 acre if the area is less than 0.5 acre).	
1) From the table below, find the number of points corresponding to the area and enter this number in the field to the right.	
Area (acres) / Points 0.25 or less / 4 0.5 / 5 1.0 / 6 1.5 / 7 2.0 / 8 2.5 / 9 3.0 / 10 3.5 / 11 4.0 or more / 12	8
2) Is this an industrial or commercial property? If yes, enter a score of 3. If no, enter a score of 1	3
3)[a] Enter a score in the box to the right for the habitat quality of the site, using the following rating system[b]. High=1, Intermediate=2, Low=3	3
4) Is the undeveloped land likely to attract wildlife? If yes, enter a score of 1 in the box to the right. If no, enter a score of 2.[c]	2
5) Are there any of the following soil contaminants present: Chlorinated dioxins/furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, pentachlorobenzene? If yes, enter a score of 1 in the box to the right. If no, enter a score of 4.	4
6) Add the numbers in the boxes on lines 2-5 and enter this number in the box to the right. If this number is larger than the number in the box on line 1, the simplified evaluation may be ended.	12

Notes for Table 749-1

[a] It is expected that this habitat evaluation will be undertaken by an experienced field biologist. If this is not the case, enter a conservative score of (1) for questions 3 and 4.

[b] **Habitat rating system.** Rate the quality of the habitat as high, intermediate or low based on your professional judgment as a field biologist. The following are suggested factors to consider in making this evaluation:

> **Low:** Early successional vegetative stands; vegetation predominantly noxious, nonnative, exotic plant species or weeds. Areas severely disturbed by human activity, including intensively cultivated croplands. Areas isolated from other habitat used by wildlife.

High: Area is ecologically significant for one or more of the following reasons: Late-successional native plant communities present; relatively high species diversity; used by an uncommon or rare species; priority habitat (as defined by the Washington Department of fish and Wildlife); part of a larger area of habitat where size or fragmentation may be important for the retention of some species.

Intermediate: Area does not rate as either high or low.

[c] Indicate "yes" if the area attracts wildlife or is likely to do so. Examples: Birds frequently visit the area to feed; evidence of high use b mammals (tracks, scat, etc.); habitat "island" in an industrial area; unusual features of an area that make it important for feeding animals; heavy use during seasonal migrations.

[Area Calculation Aid] [Aerial Photo with Area Designations] [TEE Table 749-1] [Index of Tables]

[Exclusions Main] [TEE Definitions] [Simplified or Site-Specific?] [Simplified Ecological Evaluation] [Site-Specific Ecological Evaluation] [WAC 173-340-7493]

[TEE Home]