September 25, 2020

Terracon

CVS Health
One CVS Drive
Mail Code 2340
Woonsocket, RI 02895
501 Pennsylvania Parkway, Suite 160

Attn: Department of Environmental Quality
Leaking Under Storage Tank Division

Re: Underground Storage Tank Decommissioning and Remedial Excavation Report
CVS Pharmacy Store No. 11185
8145 SE 17th Avenue
Portland, Oregon
Terracon Project No. 82187157
LUST ID 26-19-0489

Whom it may Concern:

Terracon Consultants, Inc. (Terracon), on behalf of CVS Heath (CVS) is submitting the attached Underground Storage Tank Decommissioning and Remedial Excavation Report (report) for the Site located at 8145 SE 17th Avenue Multnomah County, Oregon.

The report summarizes historical and current environmental conditions at the Site following the identification of two underground storage tanks (USTs) and two remedial excavations completed at the Site. Based on the results of the remedial actions completed at the Site, Terracon, on behalf of CVS, requests a No Further Action (NFA) determination be issued for the Site. If you have any questions or comments regarding this report or application, please contact us.

Sincerely,
Terracon Consultants, Inc.

Rick Rodriguez
Department Manager

for: Dana Wagner, CHMM
National Director

REGISTERED OREGON JAMIE HOFFMAN No. G2483 GEOLOGIST

Jamie Hoffman, RG
Project Geologist

Underground Storage Tank Decommissioning and Remedial Excavation Report

CVS Pharmacy Store No. 11185
8145 SE 17th Avenue
Portland, Oregon
Terracon Project No. 82187157
LUST ID 26-19-0489

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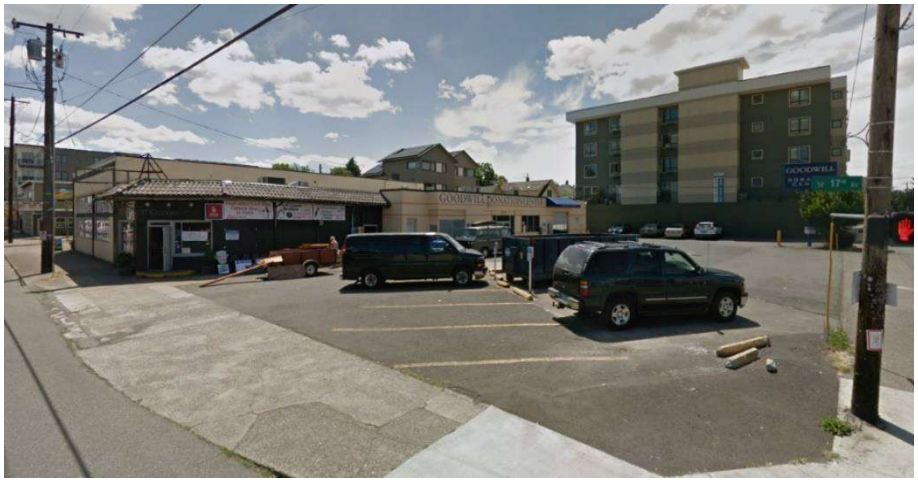

Prepared for:
CVS Pharmacy, Inc.
and

T.M. Crowley & Associates
Indianapolis, Indiana

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

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1.0 INTRODUCTION

Terracon Consultants, Inc (Terracon) has prepared the following Underground Storage Tank (UST) Decommissioning and Remedial Excavation Report (report) to summarize the Site history and environmental response actions completed at the abovementioned Site. The Site was recently redeveloped as a CVS Pharmacy in 2019 and 2020. During redevelopment of the Site, a previously undocumented UST was identified at the northeast corner of the Site, adjacent to the intersection of SE 17th Avenue and SE Tacoma Street. In addition, petroleum impacted soils were observed in the vicinity of a former fuel dispenser island, also formerly located in the northeast portion of the Site. The Site location and a topographic map are presented as Exhibit 1 in Appendix A.

2.0 BACKGROUND

2.1 Site Description

The Site is located at 8145 SE 17th Avenue, Portland, Multnomah County, Oregon. The Site consists of an approximately 0.57-acre tract of land comprised of single parcel (Multnomah Parcel No. R267565). The Site is currently improved with an approximately 12,000-square foot single-story commercial retail structure situated along the northern portion of the Site, a parking area and water retention infiltration galley on the south portion of the Site. An aerial photo depicting the former Site features is included as Exhibit 2 in Appendix A.

2.2 Site History

The Site has formerly consisted of two parcels, Multnomah Parcel Nos. Parcel Nos. R267565 and R267566, hereafter referred to as the northern and southern parcels, respectively. The Site was formerly improved with two buildings and associated parking areas. The northern parcel consisted of single-story building with partial basement that originally operated as a gas station with auto repair operations and was later occupied by a restaurant/bar and Goodwill Donation Center. Building records indicated that a potential waste pit, a sump, and auto repair operations were historically present in the northern parcel of the Site. Additionally, seven documented USTs were formerly located in the parking area across the northern portion of the Site.

The southern parcel consisted of a single-story building that was operated by various commercial retail business (paint and printing shop and retail clothing store).

A historical diagram of the Site is included as Exhibit 3 in Appendix A.

3.0 PREVIOUS SITE ENVIRONMENTAL INVESTIGATIONS

In August 2016, EarthTouch performed a Phase I Environmental Site Assessment (ESA) on the southern parcel, which at that time consisted of Sam's Attic retail store, paved parking areas, and storage areas. The EarthTouch report stated that the southern parcel had consisted of a paint shop and printing company in the mid-1900s and referenced a record regarding a former sump in a former commercial building on the southern parcel. The report identified the historical use of the Site as a paint store, print shop and vinyl print shop as a Recognized Environmental Condition (REC), and listed past gasoline service station operations on the northern parcel of the current Site as an "additional environmental concern." The report recommended an investigation, including sub-slab vapor sampling and indoor air sampling to assess for possible vapor migration concerns from the northern parcel and impacts from past potentially hazardous uses on the Site.

In August 2016, sub-slab soil vapor and indoor air sampling was performed by EarthTouch and RMEC Environmental, Inc. in the Sam's Attic building (located on the southern portion of the site). One indoor and one outdoor air sample and two interior sub-slab soil vapor samples were collected. The four samples were analyzed for volatile organic compounds (VOCs). No VOCs were detected in the sub-slab soil vapor samples above generic screening levels (GSLs). 1,2-dichloroethane was detected in the indoor air sample at 0.98 micrograms per cubic meter of air ($\mu g/m^3$), which exceeded the GSL of 0.47 $\mu g/m^3$ for industrial air and benzene was detected in the indoor air sample at 3.1 $\mu g/m^3$, in excess of the GSL of 0.47 $\mu g/m^3$ for industrial air. It was noted that the outdoor air sample reported benzene at 10 $\mu g/m^3$, which was higher than the concentrations in the indoor air sample. Based on the laboratory result of benzene being reported at higher concentrations in the outdoor air sample (collected on the southside of Sam's Attic on the southern parcel) the report concluded that the indoor air concentration of benzene was likely attributable to an outdoor source and not a sub-slab source. It was also concluded that the indoor levels of 1,2-dichloroethane were attributable to the older furniture, decorations and other home furnishings in the store. EarthTouch concluded that there does not appear to be a vapor migration or encroachment hazard and no further investigation was recommended for the southern parcel. Reported concentrations of sub-slabs samples were further evaluated against Oregon Department of Environmental Quality (DEQ) Risk-Based Concentration (RBCs) for soil gas vapor intrusion into buildings. Reported concentrations of VOCs were below their respective DEQ RBCs. A copy of this report is included in Appendix C.

Terracon Consultants, Inc. (Terracon) prepared a Draft Phase I Environmental Site Assessment (ESA) report (Terracon Project No. 82177205) on January 11, 2017 for the Proposed CVS

Pharmacy/Store No. 11185. At that time, the Site was occupied by a Goodwill Donation Center and the Penguin Pub in the northern portion, and Sam's Attic Thrift shop in the southern portion. Based on the information obtained during the ESA, Terracon identified the following RECs in connection with the Site:

- Two in-ground hydraulic lifts were located in the west bay of the Goodwill Donation Center. Additionally, building records indicate two lifts were located in the east bay of the Goodwill Donation Center. The lifts were likely associated with past auto repair operations and no prior testing was reported for these lifts.
- Building records indicate the presence or past presence of a potential waste pit in the east bay of the Goodwill Donation Center. This area of the building is covered with carpet and a pit was not observed during the Phase I ESA Site reconnaissance.
- Building records indicate the presence or past presence of a sump in the west bay of the Goodwill Donation Center. The sump was not observed during the Site reconnaissance.
- Seven USTs were decommissioned by removal in 1989; and the Site received a No Further Action (NFA) determination from the Oregon DEQ in 1989. However, it does not appear that adequate confirmation soil sampling was performed and there may be remaining subsurface impacts in connection with the former USTs. In addition, remnant fuel dispenser island features remain on the Site, which may overlay remaining subsurface impacts.
- Auto repair operations previously took place in the Goodwill Donation Center portion of the Site building for an undetermined amount of time.

Based on the findings of the ESA, Terracon recommended additional investigation in connection with the above-identified RECs on the Site.

Subsequently, Terracon prepared a Limited Site Investigation (LSI) report for the Site (Terracon Project Number 82177209, dated January 17, 2018). As part of the LSI, a geophysical survey was performed which indicated two disturbed soil zones that were interpreted as pits related to former USTs previously removed from beneath the parking lot. A total of eight soil borings (B1 through B8) were advanced on the Site in the vicinity of the two disturbed soil zones, former dispenser islands, and within the former auto repair station where a waste sump and two hydraulic lifts were present using direct-push drilling methods during the LSI. Soil samples were analyzed for Total Petroleum Hydrocarbons (TPH) as gasoline range organics (GRO) by Northwest Method NWTPH-Gx, TPH as diesel range organic and residual (oil) range organics (RRO), VOCs by Environmental Protection Agency (EPA) Method 8260, Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270SIM, and Lead by EPA Method 6000, and Polychlorinated Biphenyls (PCBs) by EPA Method 8082. Series. Compounds of concern (COCs) were not detected in the collected soil samples above DEQ Residential, Urban Residential, Occupational, and Construction and Excavation Worker receptor (RBCs). However, lead was present above the DEQ Clean Fill Determination Values (CFV) of 28 milligrams per kilograms in a soil sample collected from B3. This sample was analyzed by Toxicity Characteristic Leaching Procedure

(TCLP) for lead. Lead was not detected in the extraction fluid above the laboratory reporting limit for the TCLP lead sample. Based on the findings of the investigation, adverse soil impacts associated with the former UST systems were not identified. Therefore, no further investigation was recommended to assess the former service station UST systems at the Site. However, in the LSI report, Terracon noted that although the COCs were below applicable DEQ RBCs, it was suspected that there are likely unidentified impacts in soils located closer to the trench or source area, and impacted soils near remnant buried features (sumps, waste pits, etc.) may also be discovered after the existing building is demolished and the concrete floor slab is removed. A summary of soil boring analytical results is presented in Tables 1 and 2 in Appendix B. A copy of the LSI report is included for reference in Appendix C.

Based on the findings of the LSI, and given Terracon's understanding that the Site is proposed to be redeveloped, it was expected that additional impacted soils would be discovered during earthwork phases of Site redevelopment. Therefore, preparation of a Soil Management Plan was recommended in order to establish actions to be taken when subsurface remnant features were discovered and removed and impacted soils were excavated during redevelopment of the Site.

A Soil Management Plan (SMP) was therefore prepared for the Site, dated February 5, 2019. The purpose of the SMP was to serve as a risk management advisory to developers and contractors and assist in protecting human health and the environment by providing a proposed approach for managing known environmental conditions at the Site. The SMP also provided guidance relative to sampling and confirming potentially impacted soils if encountered during redevelopment. Soil sample results obtained from potentially impacted soils during redevelopment were evaluated against DEQ Clean Fill Value (CFV) determination guidance to appreciate end use of soil disturbed as well as DEQ RBCs to evaluate remedial action needs for the Site.

4.0 REMEDIAL ACTIONS

Two undocumented USTs were identified in the northeast corner of the Site on May 22, 2019, during redevelopment activities. On May 29, 2019, the USTs were exposed, and a release of petroleum hydrocarbons were visually confirmed, and a notification of a release was submitted to DEQ Leaking Underground Storage Tanks (LUST) program. Based on the location of the USTs and the Site history fueling operations dating back to 1934, it is assumed these may have been first generation USTs that were likely installed prior to the fueling station that was developed on the Site in 1960. The USTs were decommissioned in-place and a subsequent remedial excavation in the vicinity of the USTs was completed to removed impacted soil and support redevelopment of the Site. Further details of decommissioning activities are presented in Section 4.1.

In addition, during the removal of a former dispenser island concrete foundations, also located in the northeast portion of the Site, petroleum-impacted soils were observed by the excavation contractor supporting redevelopment activities. Terracon collected three stockpile samples (SS-

1A, SS-2A, and SS-2B) from excavated soil associated with the former dispenser island. A summary of stockpile sample results is included as Tables 3 and 4 in Appendix B. The samples were collected in accordance with the SMP prepared for the Site prior to redevelopment. Samples reported concentrations of lead and PAHs above applicable DEQ RBCs. In response to these findings a remedial and structural excavation was extended to the former dispenser island. Additional over-excavation was completed following receipt of initial confirmation results. Additional confirmation samples were collected after the second excavation event and results were reported below applicable DEQ RBCs A summary of the UST decommissioning and remedial excavations is summarized in Section 4.2.

Further remedial soil excavations were completed in the southern portion of the Site during the construction of the Site stormwater infiltration gallery and retention basin and are discussed in further detail in Section 4.3

4.1 Underground Storage Tank Decommissioning

Terracon contracted Anderson Environmental Contractors, LLC (AEC) to complete the UST decommissioning activities at the Site. The two USTs were located in the northeast corner of the Site aligned southwest to northeast. The USTs were approximately 4.5 feet in diameter and 8 feet in length with an approximate 750-gallon capacity each. The tops of USTs are located approximately 4 feet bgs with the bottom of tank at approximately 8.5 to 9 feet bgs. The northeast ends of the tanks extended into the public Right-of-Way (ROW), sidewalk/intersection of SE Tacoma Street and SE 17th Avenue. Due to the location of the UST being partially present beneath the sidewalk and a nearby traffic pole, AEC recommended that the USTs be abandon in placed so not to compromise the integrity of existing infrastructure located within the ROW. Prior to decommissioning, the undocumented USTs were registered, the request to abandon the UST in place and an emergency notification for decommissioning was requested and acknowledged via email by DEQ LUST program on May 29, 2019. Decommissioning activities were completed on June 3 and June 4, 2019.

On June 3, 2020, the SW ends of the UST were exposed and soils were over-excavated to enable access to the tanks. Once the full extent of the southwest side of the USTs were exposed, two confirmation soil samples (UST-1-S-B-9 and UST-2-S-B-9) were collected at the base of each UST along the southwest ends and submitted for laboratory analysis. Samples were analyzed for GRO by Northwest Method NWTPH-Gx, DRO and RRO by northwest Method NWTPH-Dx, VOCs by EPA Method 8260, PAHs by EPA Method 8270 SIM and lead by EPA Method 6010. Concentrations of lead were detected at concentrations exceeding applicable DEQ RBCs. Detection of GRO, RRO, VOCs and PAHs were also detected, however, below all applicable DEQ RBCs. Analytical results from confirmation samples collected at the Site are presented in Table 5 and 6 located in Appendix B.

Following confirmation sampling, the USTs were opened and tested for explosive atmospheres using a lower explosion limit (LEL) meter. UST-1 was observed to be empty with no elevated LEL readings. UST-2 recorded an elevated LEL; therefore, AEC vented UST-2 using an air blower. Once the LEL on both USTs were measuring zero percent, the UST was cut open in order to gain entry (under a confined space permit) and cleaned prior to in-place abandonment. The USTs contained minimal liquids and sludge, which was shoveled out by hand. Once all material in the USTs were removed, the USTs were secured in preparation of filling with controlled density fill (CDF).

On June 4, 2019, the USTs were filled in with CDF. Upon completion of in-place decommissioning of the USTs, the southeast portions of the USTs previously exposed were backfilled to existing grade pending further excavations planned for the northeast portion of the Site.

Site plans depicting the location of the USTs, sample locations, and area of excavation is included as Exhibits 5 and 6 in Appendix A

4.2 Remedial Excavations

Two remedial excavation events were completed at the Site. The first excavation was completed in June 2019 and involved removal of soils in northeast corner of the Site in relation to the decommissioned USTs, petroleum impacted soils associated with a former dispenser island, and subsurface materials (assumed imported fill) not suitable for construction. The second remedial excavation was a continuation of the initial remedial excavation that was performed based on analytical results. The remedial over-excavation was performed in July 2019 in the vicinity of the former dispenser island where petroleum-impacted soils were observed. Further discussion of the remedial excavations is presented below. Exhibits depicting the approximate limits of the excavation and locations of confirmation soils samples is presented in Exhibit 5 and 6 in Appendix A.

4.2.1 June 2019 Remedial Excavation

AEC, at the direction of Terracon, completed a remedial excavation in the northeast corner of the Site. The purpose of this excavation was to remove soils that were insufficient for the development of the Site and remove impacted soils that were identified in the vicinity of a former dispenser island located in the northeast portion of the Site. Excavation activities were performed on June 17 through June 19, 2019 and included an excavation area that extended from the northeast corner off the Site to the south 30 feet and to the west 30 feet Site. The total depth of the excavation ranged from 8 feet bgs to 10 feet bgs. No groundwater was observed within the excavation on reaching the terminal depth. A Site plan depicting the approximate extent of the excavation is included as Exhibit 5 of Appendix A. A total of 576.91 tons of soil was excavated and transported to the Hillsboro Landfill operated by Waste Management, located

in Hillsboro, Oregon. Waste disposal tickets for soils excavated and transported off-site is included in Appendix D.

Following excavation activities four confirmation soil samples were collected from the base of the excavation. The excavation floor was sectioned into four quadrants and one confirmation soil sample (NWC, NEC, SEC, and SWC-Bottom) were collected from each. Samples were placed in laboratory supplied jars and submitted to Pace Analytical Laboratories in Mt, Juliet, TN, for analysis under standard chain of custody protocols. Confirmation soil samples were analyzed for GRO, VOCs, PAHs, and lead. Results from the confirmation sampling reported concentrations petroleum related impacts were still present following the remedial excavation as follows:

- Analytical results reported concentrations of one or more VOCs (1,2,4-trimethylbenzene, 1,2,5-trimethylbenzene and total xylenes) in soils samples NEC, NWC, and SWC-Bottom at concentrations above DEQ RBCs for leaching to groundwater pathway (RBCsw).
- Ethylbenzene was detected at a concentration of 17.1 mg/kg in the confirmation samples collected from SWC-Bottom, which exceeds the DEQ RBC for vapor intrusion into building (RBCsi) of 17 mg/kg.
- Naphthalene were detected in soil samples NEC, NWC and SWC-Bottom at concentrations ranging from 1.44 mg/kg to 38.9 mg/kg, exceeding DEQ RBCsw of 0.34 mg/kg and the DEQ RBC for soil ingestions, dermal contact and inhalation (RBCss) of 23 mg/kg.
- Lead was detected in confirmation soil sample SWC-Bottom at a concentration of 72.1 mg/kg, exceeding DEQ RBCsw of 30 mg/kg.
- All other reported concentration of GRO, VOCs, PAHs, and lead in confirmation soil samples collected from the remedial excavations were below applicable DEQ RBCs.

Due to the exceedances of ethylbenzene, naphthalene, and lead above their respective RBCs identified in confirmation samples, additional over-excavation within the northeast corner of the site was completed and discussed in further detail in Section 4.2.2. Analytical results from the confirmation sampling completed during this remedial excavation event are summarized in Tables 5 and 6 in Appendix B. A Site plan depicting the approximate extent of the excavation and confirmation soil sample locations is included in Exhibit 5 of Appendix A.

4.2.2 July 2019 Remedial Excavation

AEC at the direction of Terracon completed additional remedial over-excavation in the in the vicinity of the former dispenser island where petroleum-impacted soils were identified following the initial remedial excavations. The over-excavation was completed on July 20 through July 26, 2019 and included an excavation area that was approximately 25 feet long on the west wall, 20 feet long on the north wall, and approximately 10 to 12 feet long on the south and west sides of the excavation. The depth of the excavation ranged from 12 feet to 15 feet bgs. The area directly

beneath the former dispenser island was excavated to the approximate depth of 15 deep, and the remaining areas of the excavation reached a depth of approximately 10 to 12 feet bgs. Soils in the vicinity of confirmation samples NWC and SWC-Bottom from the June 2019 remedial excavation were over-excavated at this time. No groundwater was observed within the excavation on reaching the terminal depth. A Site plan depicting the approximate extent of the over-excavation is presented in Exhibit 6 of Appendix A. A total of 341.36 tons of soil was excavated and transported off-site to Hillsboro Landfill for disposal during this remedial over-excavation event. Waste disposal tickets for soils excavated and transported off-site is included in Appendix D.

A total of six confirmation soil samples were collected at the completion of over-excavation activities. Four side wall samples (E2-NW-W, E2-NE-W, E2-W-W, E2-S-W) and two bottom samples (E2-E-F and E2-W-F). Based on the impacts observed during the initial remedial excavation, confirmation soil samples were analyzed for GRO, benzene, toluene, ethylbenzene, total xylenes, and naphthalene. Confirmation sampling results noted concentrations of GRO, naphthalene, ethylbenzene, toluene and total xylenes above laboratory reporting limits in confirmation soil samples E2-NE-W, E2, NW-W, E2-W-W, E2-W-F, E2-E-F. However; all reported concentrations of analytes above were below their respective DEQ RBCs.

Analytical results from the confirmation sampling completed during this remedial over-excavation event are summarized in Tables 5 and 6 in Appendix B. A Site plan depicting the approximate extent of the excavation and confirmation soil sample locations is included in Exhibit 7 of Appendix A.

At the completion of remedial excavation activities, the excavation was backfilled with imported fill (crushed rock) and native soils suitable for development associated with the new commercial building that was constructed at the site.

4.3 Stormwater Infiltration Gallery

At the request of the City of Portland, a limited Site investigation (LSI) report was completed in February 2019 to evaluate soil conditions within in the area of a proposed stormwater infiltration gallery (Terracon Project Number 82187157A dated March 20, 2019). Terracon advanced two soil borings in the southern portion of the Site within in the area of the proposed infiltration gallery. Arsenic was detected at a concentration of 3.63 mg/kg, exceeding DEQ RBC for ingestion, dermal contact, and inhalation for occupational receptors, in a shallow soil sample collected from soil boring B-10 at 2.5 feet. During the development of the Site and installation of the infiltration gallery, soils to a depth of approximately 10 feet were excavated and transported off-site for disposal in March 2020. Based on results from additional samples collected from this soil boring (B-10) at depth of 5 to 10 feet and 10 to 15 feet bgs during the LSI in March 2019, in which no detection of arsenic was reported, no confirmation samples were collected following excavation of soils. A Site

plan presented location of the stormwater infiltrations gallery is present in Exhibit 8 in Appendix A. A copy of this report is included in Appendix C.

5.0 CONCEPTUAL SITE MODEL

5.1 Regional and Site Geology and Hydrogeology

Regionally, the area is comprised of lacustrine and fluvial sedimentary rocks from the Pleistocene. These rocks are unconsolidated to semi-consolidated lacustrine clay, silt, sand, and gravel, which in places include mudflow and fluvial deposits or discontinuous layers of peat. The area has a gentle topographic gradient to the east.

Soils of the area are well-drained gravelly silts, clays, and sands. Crystal Springs Creek is located approximately 1,000 feet to the east of the Site and the larger Willamette River is located approximately 4,100 feet west of the Site. Groundwater is presumed to flow east toward Crystal Springs Creek and anticipated to be approximately 45 to 50 feet below the ground surface (bgs) based on topographic maps and nearby well logs.

The Site is located approximately 100 feet above sea level. Topographically, the Site is relatively flat sloping slightly to the east. Onsite soils observed during subsurface investigations consisted of fill material (sand and gravel, cobble and boulders) to a depth of approximately 15 feet bgs, which was underlain by dense/compacted brown silty gravel and sand with cobbles to the terminal depth of exploration at approximately 20 feet bgs. Groundwater was not encountered during site investigation activities.

5.2 Beneficial Water and Land Use Survey

Beneficial water and land use surveys are relevant when developing a Conceptual Site Model (CSM). These surveys evaluate the current and reasonably likely future water and land uses at the Site and in the vicinity. The water use survey establishes a listing of potential exposure pathways through beneficial water use, and the land use survey establishes a listing of potential receptors that may be present at the Site. The findings of the beneficial water and land use surveys are described in the following subsections. Surface water, public water supply, and groundwater resources, supply, and usage are described under the beneficial water use survey.

5.2.1 Beneficial Water Use Survey

Beneficial water use (surface water and groundwater) was evaluated within 0.25-mile radius of the Site. A 0.25-mile radius was deemed suitable to evaluate the potential receptors of impacted groundwater from the Site based on groundwater depths ranging from 45 to 50 feet bgs and the availability of municipal water service in the area.

5.2.1.1 Surface Water

The Site is located in the Willamette Basin. The nearest surface water body is the Crystal Springs Creek, a tributary of Johnson Creek, which is located approximately 1,000 feet to the east of the Site (USGS Map – Lake Oswego, OR). According to Table 340A, *Designated Beneficial Uses – Willamette Basin*, of the Oregon Administrative Rules (OAR), Chapter 340, Division 41, the designated beneficial uses of Willamette River Tributaries (which includes Crystal Springs Creek) include: public, private, and industrial water supply, irrigation, livestock watering, fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality, and hydro power. Private and public domestic supply use designation is used with adequate pretreatment and natural quality that meets drinking water standards. Based on the depth to groundwater, compacted soils (silty gravels with sand) and limited areal extent of impacts, it is not anticipated that impacts have migrated to the water table and are unlikely to have a deleterious impact on Crystal Spring Creek.

5.2.1.2 Public Water Supply

A search of water well records maintained by the Oregon Water Resources Department (OWRD) was conducted via the OWRD website. The purpose of the search was to evaluate potential water supply wells drilled within a 0.25-mile radius of the Site. Monitoring wells and geotechnical boreholes were not included in the evaluation since these types of wells or borings are not used for beneficial purposes as defined by DEQ. In addition, abandoned water supply wells, and well records that did not contain adequate information such as address or quarter-quarter information to ascertain the location within a particular quarter or section, were not included in the evaluation.

Multiple geotechnical or groundwater monitoring wells were identified on the Site and within the 0.25-mile radius of the Site (further discussed in Section 5.2); however, no beneficial use (i.e. domestic water supply) wells were identified within a 0.25-mile radius of the Site.

5.2.1.3 Results of Beneficial Water Use Survey

The findings of the survey indicate that Crystal Springs Creek has multiple beneficial uses as described above in Section 4.1.1. Based on the depth to groundwater compacted soils (silty gravels with sand and limited areal extent of impacts, it is not anticipated that impacts have migrated to the water table. Therefore, impacts to soil beneath the Site are unlikely to impact Crystal Springs Creek.

The water well survey identified multiple water wells (or geotechnical boreholes/monitoring wells) on the Site and within the 0.25-mile radius of the Site; however, none of the identified wells are designated for domestic use. Based on the findings of the beneficial water use survey, future beneficial use of the water-bearing zone in the immediate vicinity of the Site is possible; however, due to a readily available public water supply and the commercial nature of the area, it is unlikely

that water supply wells are currently or would be used for future domestic purposes at and near the Site. Therefore, *Groundwater Ingestion and Inhalation from Tapwater* will not be considered as a potentially complete exposure pathway at the Site and in the immediate vicinity of the Site.

5.2.2 Beneficial Land Use Survey

Information regarding the current and reasonably likely future land uses at and in the vicinity of the Site was obtained from the Multnomah County website and the City of Portland. According to the Multnomah County Assessor's website, the Site is currently zoned as Commercial Mixed Use. Currently, the Site is not used for residential purposes; however, it was most recently redeveloped as a commercial retail business and discussed above. Future use is anticipated to remain as a commercial retail business. The two west-adjoining properties are currently occupied by single-family (SE Tenino Street) and multi-family residences (SE Tacoma Street). The north-, east-, and south-adjoining properties are currently occupied by commercial occupants. Current zoning for the Site is illustrated on Exhibit 9 in Appendix A.

Based on the findings of the beneficial land use survey, the Site is anticipated to remain as a commercial retail business. Adjoining properties include residential, urban residential and commercial zoned land uses.

5.3 Utility Evaluation

A subsurface utility evaluation was conducted in the Site vicinity to evaluate:

1. the potential for petroleum hydrocarbon contaminants to preferentially migrate within the utility corridors, and/or
2. the potential for a construction and/or excavation worker to come in contact with impacted soil or groundwater along a utility corridor.

Utilities such as water, sanitary sewer, and storm sewer were evaluated since the location of these utilities are generally known by City agencies and the depth of these utilities can exceed 10 feet bgs, although water utilities are generally not deeper than 5 feet bgs. Other utilities including: cable, telephone, gas, electrical, and irrigation were not evaluated since these utilities are generally buried no deeper than approximately 3 feet bgs.

Storm sewer and sanitary sewer lines are buried along SE Tacoma Street, SE 17th Avenue, and SE Tenino Street. A water service line is buried along SE 17th Avenue. The City of Portland owns these utilities. The sewer utility enters the Site from the north, and the water service utility enters the Site from the east. Electrical lines are located overhead at and in the vicinity of the Site. Online information available from the City of Portland (portlandmaps.com) verified that the sewer lines in on 17th Avenue are approximately 8.5 to 10 feet bgs. Burial depths of the remaining utilities were not available but are expected to be less than 10 feet bgs.

Based on the findings of the subsurface utility survey, there does appear to be a potential for construction/excavation workers to encounter impacted soil on the Site. Therefore, the *Surface* and *Subsurface Ingestion, Dermal Contact, and Inhalation* exposure pathway appears to be potentially complete for soil at the Site. However, the concentrations of contaminants detected did not exceed construction or excavation worker RBCs. Therefore, it is unlikely construction or excavation workers would encounter impacted soil from the historical UST system in the right-of-way at concentrations above the applicable RBCs.

5.4 Exposure Pathways

A CSM is a Site-specific evaluation of potential contaminant sources, exposure pathways, and receptors applicable to the Site based on the distribution of constituents, and current and reasonably likely future land and water uses. Exposure pathways, based on the DEQ Risked-Based Decision Making RBDM guidance document (DEQ, 2003), were assessed for the Site utilizing soil and groundwater analytical data, hydrogeologic data, and current and potential future land and water uses. A CSM for the Site is illustrated in Tables 7A and 7B in Appendix B.

The Site and adjacent properties to the north, east and southeast are zoned as Commercial Mixed Use. The adjacent properties to the west and southwest are zoned as Commercial Mixed Use and Residential. The Site is currently an operating commercial retail business, and occupational receptors were considered. However, the Site and adjoining properties are currently using municipally available water and there are no utilized water supply wells at the Site or in the near vicinity. Therefore, as described in Section 5.2, residential, urban residential, and occupational receptors and the *Ingestion & Inhalation from Tapwater* exposure pathway were excluded from this CSM. Furthermore, as described in Section 5.2, the shallowest depth to groundwater at the Site is estimated at 45 to 50 feet bgs. As a result, groundwater was not sampled and the *Volatilization to Outdoor Air, Vapor Intrusion into Buildings*, and *Groundwater in Excavation* exposure pathways for groundwater are being excluded in this CSM. The exposure pathway for *Soil Vapor Intrusion into Buildings* for residential and urban residential receptor was not considered based on the locations of the source area being greater than 100 feet from any residential or urban residential zoned properties as outlined in Oregon DEQ *Guidance for Assessing and Remediation Vapor Intrusion in Buildings* issued in March 2010.

<u>Soil</u>
Soils at the Site have been impacted and the potentially complete exposure pathways and receptors for impacted soils include the following:

- *Surface Soil Ingestion, Dermal Contact, and Inhalation* for occupational, construction worker, and excavation worker receptors (future);
- *Soil Volatilization to Outdoor Air* for occupational receptors (current and future);
- *Soil Vapor Intrusion into Buildings* for occupational receptors (current and future)

- *Soil Leaching to Groundwater* for occupational receptors (current and future).

Groundwater

Based on the depth of groundwater and available soil data (as discussed above), groundwater exposure pathways for the Site are considered incomplete and were excluded from this CSM.

5.5 Constituents of Potential Concern

The constituents of potential concern (COPCs) for the Site were selected based on the detection of petroleum hydrocarbon-related constituents in soil at the Site as described in Section 3.0 Constituents detected at or below the laboratory reporting limits (RLs) were not included in COPC list and were excluded from further evaluation with respect to this RBC Report. Table 8 in Appendix B lists the COPCs in soil at the Site.

The COPCs in soil include the following:

TPH as GRO
TPH as DRO
TPH as RRO
1,2,3 - Trimethylbenzene
1,2,4 - Trimethylbenzene
1,3,5 - Trimethylbenzene
2-Butanone (MEK)
Acetone
Benzene
Ethylbenzene
Isopropylbenzene
Naphthalene
n-Butylbenzene
n-Propylbenzene
p-Isopropyltoluene
sec-Butylbenzene
Tetrachloroethene
Toluene
Xylenes (total)
Arsenic
Barium
Chromium
Lead
Mercury
1-Methylnaphthalene
2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Chrysene
Dibenz(a,h) anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd) pyrene
Phenanthrene
Pyrene
Total PCBs

5.6 Constituents of Concern

The constituents of concern (COCs) for the Site were developed by comparing the maximum COPC concentrations to the generic DEQ RBCs for the potentially complete exposure pathways

and receptors identified in the CSM for this Site. If the maximum concentration detected for a COPC exceeded the applicable generic RBC cleanup level, then the COPC was included in the COC list.

The maximum soil COPC concentrations were below the generic RBCs for the applicable exposure pathways, with the exception of the following COCs:

- Naphthalene
- Lead
- Arsenic
- Ethylbenzene
- Xylenes (total)
- 1,2,4 Trimethylbenzene
- 1,3,5 Trimethylbenzene

A summary of the soil COPCs and RBC comparisons is provided in Table 8 in Appendix B.

5.7 Summary of COCs Impacts to Soil

Following remedial excavation performed at the Site, substantial removal of soils impacted with COCs has been completed. Soils impacted with the COCs list above at the Site have either been removed through remedial excavations or remain in-placed following remedial excavations as summarized below:

- Naphthalene exceeding the DEQ *Soil Leaching to Groundwater* RBC (RBCsw) for occupational receptors of 0.34 mg/kg is present within the vicinity of the in-place decommissioned USTs located in the northeast corner of the Site at a concentration of 1.44 mg/kg. Naphthalene impacts are located a depth of approximately 8 feet bgs and are currently encapsulated beneath the current Site building.
- Lead impacts exceeding DEQ RBCsw of 30 mg/kg are present within the vicinity of the in-place decommissioned USTs located in the northeast corner of the Site at a range of 74.5 mg/kg to 192 mg/kg. Lead impacts are located a depth of approximately 9 to 10 feet bgs and are currently encapsulated beneath the current Site building.
- Arsenic was detected at a concentration of 3.64 mg/kg B-10 2.5, exceeding the DEQ soil ingestion, dermal contact and inhalation RBC (RBCss) for occupations receptors of 1.9 mg/kg. However; natural background concentrations of arsenic for Portland basin has been established at 8.8 mg/kg. In addition, during the installation of the infiltration gallery, located in on the southern portion of the site, soils to a depth of approximately 10 feet were excavated and transported off-site for disposal in March 2020, removing the arsenic impacts identified in soil sample B-10 2.5.

- Ethylbenzene was detected at a concentration of 17.2 mg/kg in confirmation sample SWC-Bottom (at 10 feet bgs), exceeding the DEQ *vapor intrusion into buildings* RBC (RBCsi) for occupational receptors. In response to the detection, soils in the vicinity of SWC-Bottom were over-excavated and an additional confirmation soil sample was collected at approximately 20 feet bgs. Results of this confirmation sample (E2-E-F) did not contain reported concentrations of Ethylbenzene exceeding respective DEQ RBCs
- 1,2,4-Trimethylbenzene was detected is confirmation soil samples NWC and SWC Bottom at concentrations of 153 mg/kg and 137mg/kg respectively. These reported concentrations exceed the DEQ RBCsw for occupational receptors. In response to the detection, soils in the vicinity of SWC-Bottom and NWC were over-excavated an additional confirmation samples E2-NW-W (collected at 12 feet bgs) and E2-E-F (collected at feet bgs) collected did not contain reported concentrations of TPH or VOCs exceeding respective DEQ RBCs indicating petroleum related impacts have been removed.
- 1,3,5-Trimethylbenzene was detected is confirmation soil samples NWC and SWC-Bottom at concentrations of 80.9 mg/kg and 43.4 mg/kg respectively. These reported concentrations exceed the DEQ RBCsw for occupational receptors. In response to the detection, soils in the vicinity of SWC-Bottom and NWC were over-excavated an additional confirmation samples E2-NW-W (collected at 12 feet bgs) and E2-E-F (collected at feet bgs) collected did not contain reported concentrations of TPH or VOCs exceeding respective DEQ RBCs indicating petroleum related impacts have been removed.

A Site plan depicting soil sample locations and results of impacts that still remain in place at the Site in presented in Exhibit 10 in Appendix A,

6.0 CORRECTIVE ACTION MEASURES

6.1 Previous Corrective Measures

Soil

Remedial excavations were completed at the Site and are discussed in detail in Section 4.2 above. Removal of COCs identified in soil was completed with the exception of naphthalene and lead, which are still present within the subsurface at concentrations exceeding DEQ RBCsw in the northeast portion of the site. A site plan presenting the locations of naphthalene and lead is presented as Exhibit 9 in Appendix A.

6.2 Proposed Corrective Action Measures

Soil
No additional corrective measures are proposed at this time.

7.0 CONCLUSIONS

The former Site buildings (at 1672 SE Tacoma Street & 8123 SE 17th Avenue) have been demolished and Site has been redeveloped with an approximately 12,000-square foot commercial retail building occupied and operated by CVS Health.

During redevelopment efforts, two previously undocumented USTs were identified at the Site in May 2019 decommissioned in-place in June 2019. Two remedial excavations were completed at the Site, the first in June 2019 and the second in July 2019. A total of 918.27 tons of petroleum and lead impacted soil have been excavated and transported off-site to the appropriate disposal facility.

The decommissioned in-place USTs have been assessed to the south and west; however, due to the USTs being partially located within the ROW of SE Tacoma Street and SE 17th Avenue, samples from beneath the northeast ends of the USTs could not be collected. Analytical results from confirmation samples UST-1-B-9 and UST-2-B collected from beneath the southwest ends of the USTs reported concentrations of lead exceeding applicable DEQ RBCs, however, petroleum related COCs were either below all applicable DEQ RBCs or not detected above laboratory RLs. The lack of GRO and DRO and RRO detections present at the bottom of the USTs along the southwest side off the UST indicates that releases from these USTs were likely minimal in nature, considering the size, location and age of the USTs.

Based on the location of observed impacts associated with southwestern dispenser island removed from the Site in May and June of 2019, it appears that the dispenser may have been the primary source of onsite petroleum impacts. Remedial excavations performed in location of the former dispenser island included two separate remedial excavations in June and July of 2019 to remove impacted soils identified in the subsurface. The total extent of the remedial excavations was approximately 50 feet by 45 feet with a depth of 8 feet bgs in the northeast corner (June 2019 Excavation) to 20 feet bgs in the southwestern portion of the excavation directly beneath the southwestern most dispenser island (July 2019 Excavation). The remaining area of the remedial excavation was completed to an approximate depth of 15 feet bgs (July 2019 Excavation).

While concentrations of lead and naphthalene are present in shallow soils (between 8 to 10 feet bgs, samples B3-8, UST-1-B-9, UST-2-B-9, and NEC) exceeding their respective DEQ RBCs for *Leaching to Groundwater*, the building and parking areas prevent infiltration of stormwater to the subsurface and potential downward mobility of known impacts is inhibited as the building serves

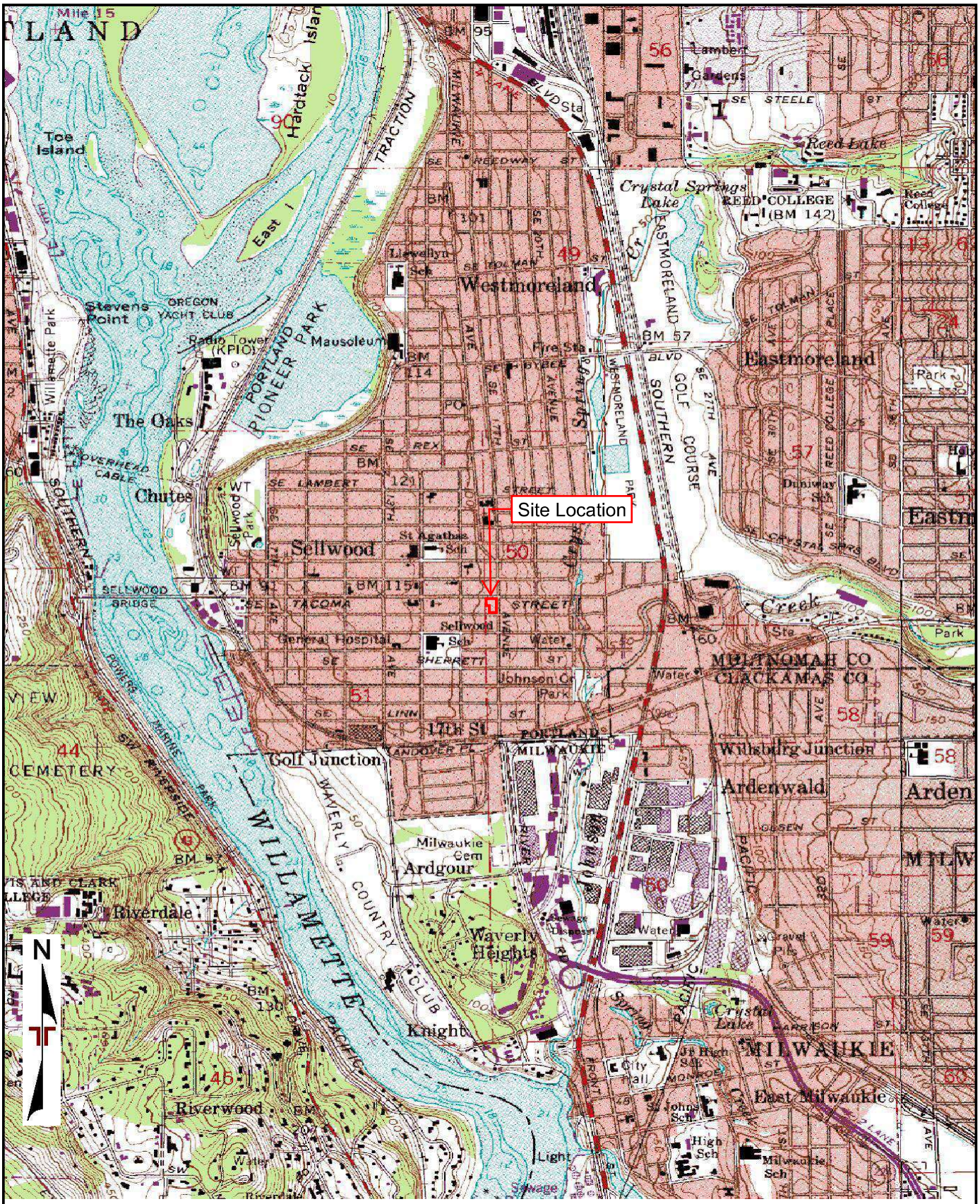
as an impermeable barrier/institutional control. Through remedial excavations and the construction of the commercial retail structure, potential exposure pathways associated with impacted soils remaining at the Site have been mitigated. Remaining analytical data from soil samples collected during Site investigations and remediation excavations are below all remaining applicable DEQ RBCs for potentially complete exposure pathways.

Arsenic impacts identified in the southern portion of the Site exceeding the DEQ RBCs for *Surface Soil Ingestion, Dermal Contact, and Inhalation* for occupational receptors; however, below the Oregon background metals concentrations for the Portland Basin. Furthermore, soils in this area of the site was excavated and removed during the construction and installation of the Site stormwater infiltration gallery and retention system.

8.0 CLOSING

It is Terracon's opinion that the data presented in this Under Storage Tank Decommissioning and Remedial Excavation report and future management of contaminated media would meet the requirements for conditional regulatory closure of LUST number 26-19-1003 based on the DEQ RBDM guidelines (DEQ, 2003). Therefore, this Underground Storage Tank Decommissioning and Remedial Excavation Report is being submitted to the DEQ for review and concurrence that LUST number 26-19-0489 is eligible for regulatory closure and a conditional NFA determination for the Site.

APPENDIX A – EXHIBITS



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: .

Project Manager: RJR	Project No. 82187157	Terracon 700 NE 55th Ave Portland, OR 97213-3150	TOPOGRAPHIC MAP	Exhibit
Drawn by: RJR	Scale: 1"=2,000'		**CVS Store #11185** **1672 SE Tacoma Street** **Portland, Oregon**	1
Checked by: JLH	File Name: Exhibits			
Approved by: RJR	Date: November 2019			

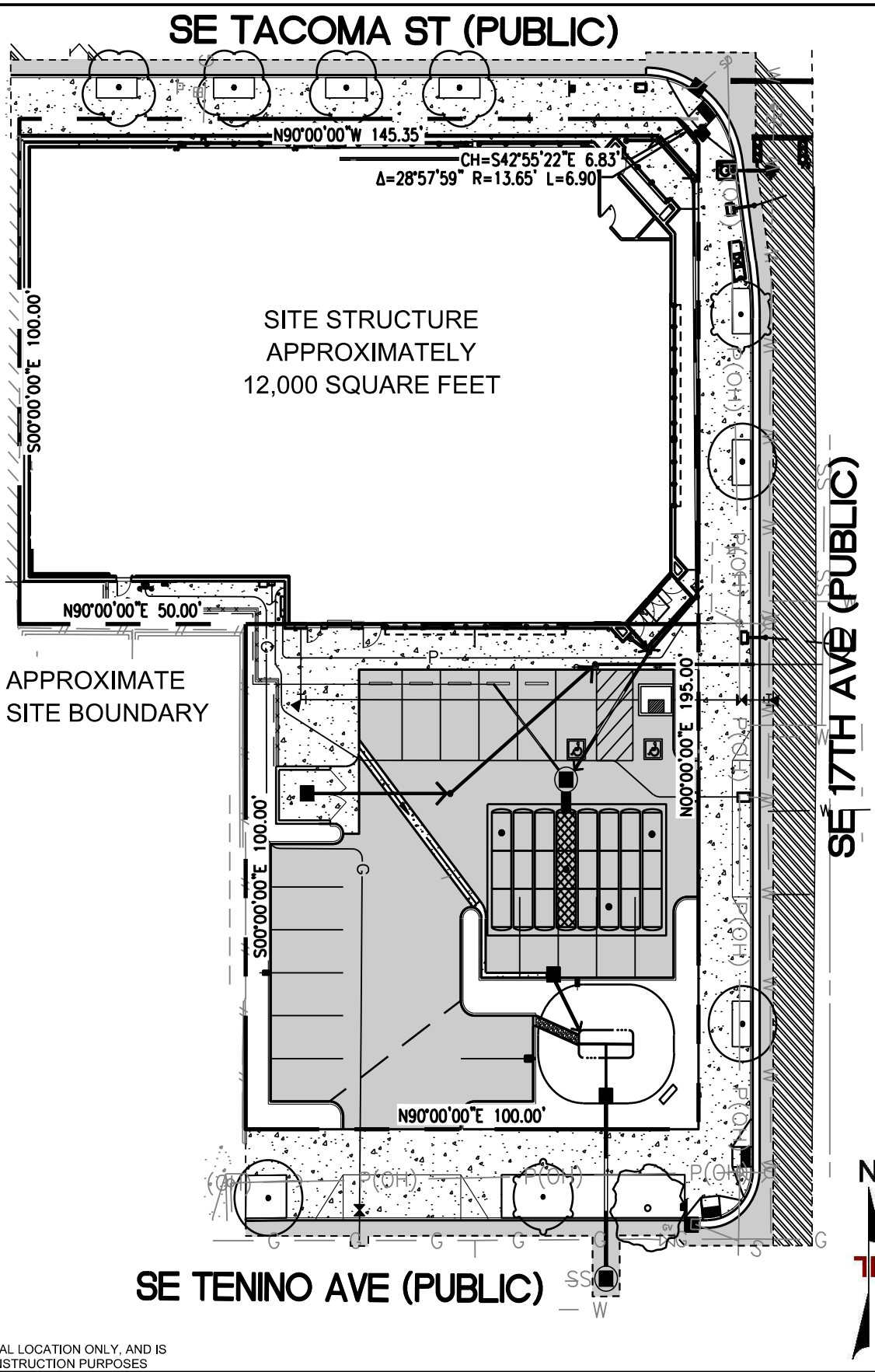


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: RJR	Project No. 82187157
Drawn by: RJR	Scale: NTS
Checked by: JLH	File Name: Exhibits
Approved by: RJR	Date: November 2019

Terracon
700 NE 55th Ave
Portland, OR 97213-3150

CURRENT SITE FEATURES PLAN

CVS Pharmacy Store #11185
8145 SE 17th Avenue
Portland, Oregon

Exhibit
2

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

Project Manager:	RJR
Drawn by:For	RJR
Checked by:	JLH
Approved by:	RJR

Project No.	82187157
Scale:	AS SHOWN
File Name:	Exhibits
Date:	November 2019

Terracon
700 NE 55th Ave
Portland, OR 97213-3150

FORMER SITE LAYOUT AERIAL PHOTOGRAPH

CVS Pharmacy Store #11185
8145 SE 17th Avenue
Portland, Oregon

Exhibit
3

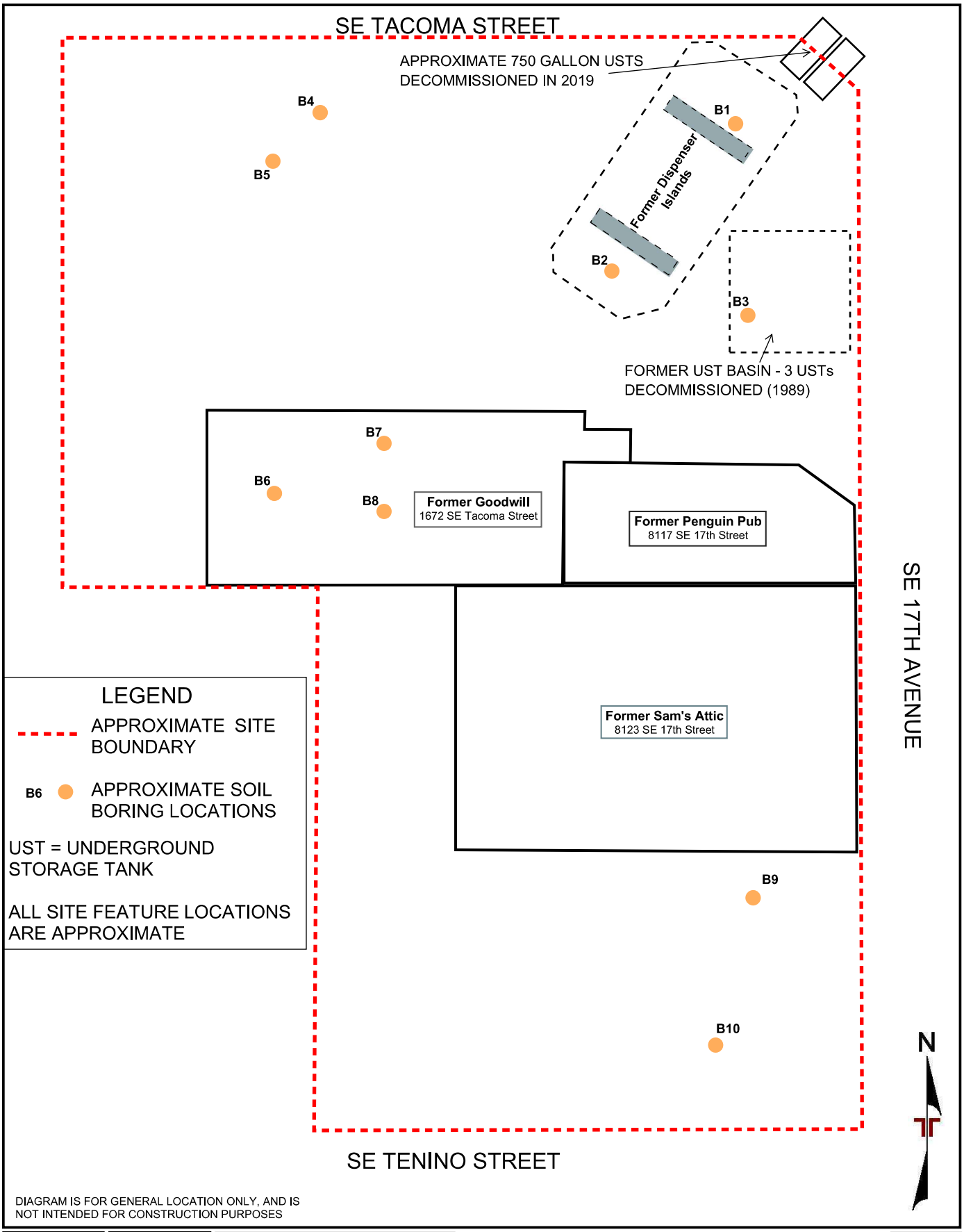
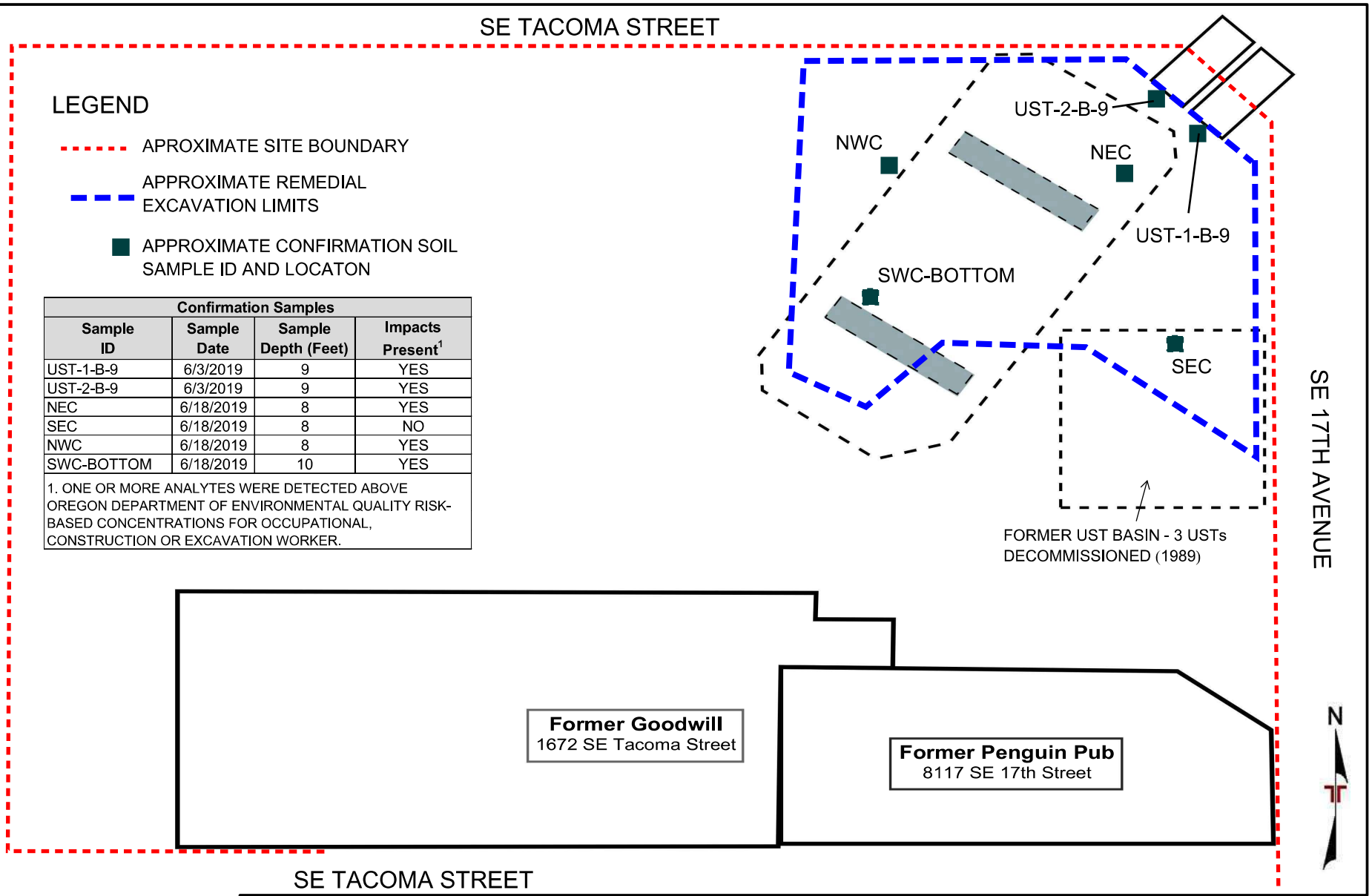


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: RJR	Project No. 82187157	Terracon	SITE FEATURE MAPS
Drawn by: RJR	Scale: NTS	700 NE 55th Ave Portland, OR 97213-3150	CVS Pharmacy Store #11185 8145 SE 17th Avenue Portland, Oregon
Checked by: JLH	File Name: Exhibits		Exhibit 5
Approved by: RJR	Date: November 2019		



Confirmation Samples			
Sample ID	Sample Date	Sample Depth (Feet)	Impacts Present[1]
UST-1-B-9	6/3/2019	9	YES
UST-2-B-9	6/3/2019	9	YES
NEC	6/18/2019	8	YES
SEC	6/18/2019	8	NO
NWC	6/18/2019	8	YES
SWC-BOTTOM	6/18/2019	10	YES

1. ONE OR MORE ANALYTES WERE DETECTED ABOVE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY RISK-BASED CONCENTRATIONS FOR OCCUPATIONAL, CONSTRUCTION OR EXCAVATION WORKER.

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	RJR
Drawn by:	RJR
Checked by:	JLH
Approved by:	RJR

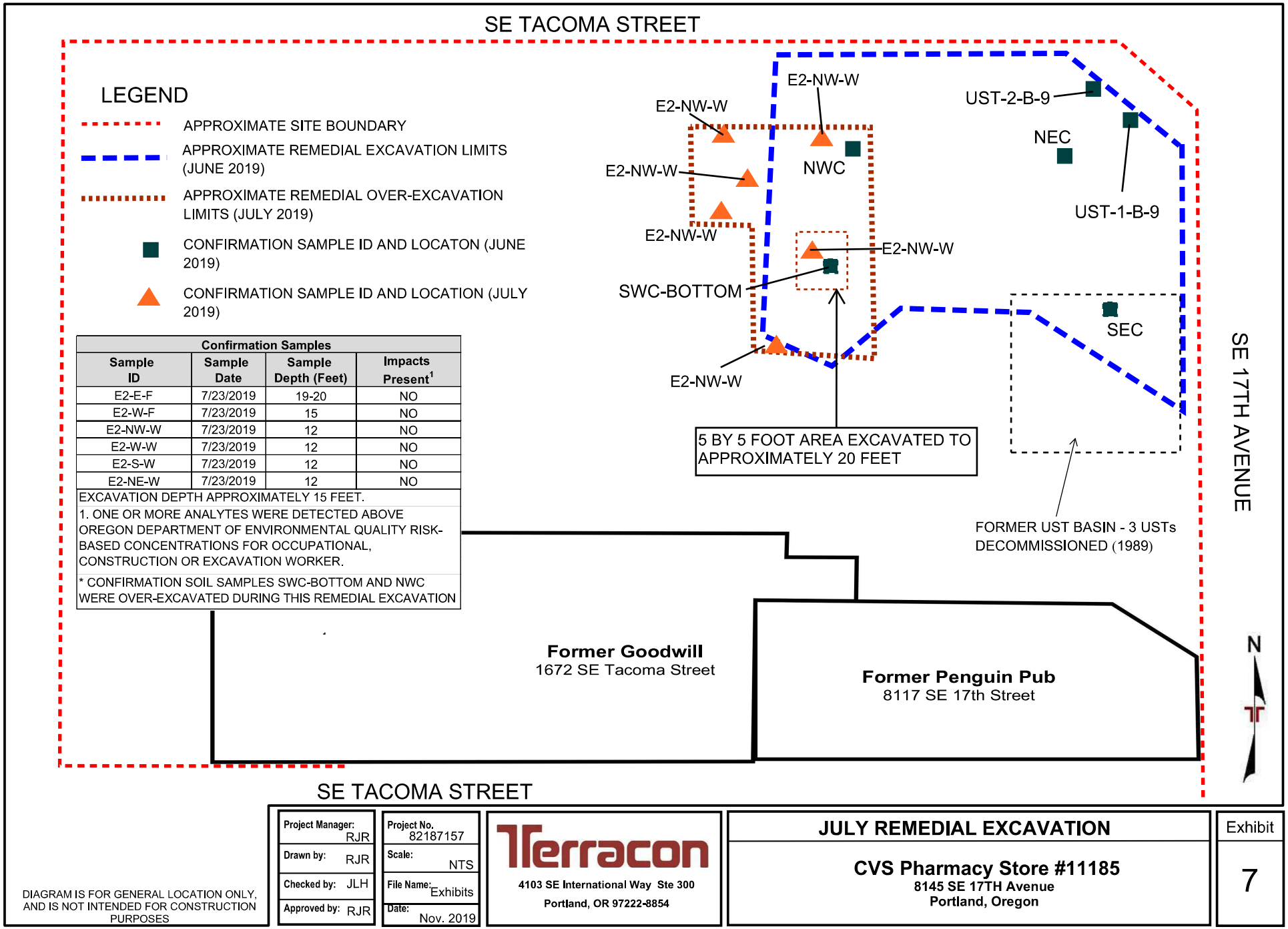
Project No.	82187157
Scale:	NTS
File Name:	Exhibits
Date:	Nov. 2019

Terracon
4103 SE International Way Ste 300
Portland, OR 97222-8854

JUNE 2019 REMEDIAL EXCAVATION

CVS Pharmacy Store #11185
8145 SE 17TH Avenue
Portland, Oregon

Exhibit
6



Confirmation Samples			
Sample ID	Sample Date	Sample Depth (Feet)	Impacts Present[1]
E2-E-F	7/23/2019	19-20	NO
E2-W-F	7/23/2019	15	NO
E2-NW-W	7/23/2019	12	NO
E2-W-W	7/23/2019	12	NO
E2-S-W	7/23/2019	12	NO
E2-NE-W	7/23/2019	12	NO

EXCAVATION DEPTH APPROXIMATELY 15 FEET.

1. ONE OR MORE ANALYTES WERE DETECTED ABOVE OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY RISK-BASED CONCENTRATIONS FOR OCCUPATIONAL, CONSTRUCTION OR EXCAVATION WORKER.

* CONFIRMATION SOIL SAMPLES SWC-BOTTOM AND NWC WERE OVER-EXCAVATED DURING THIS REMEDIAL EXCAVATION

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	RJR
Drawn by:	RJR
Checked by:	JLH
Approved by:	RJR

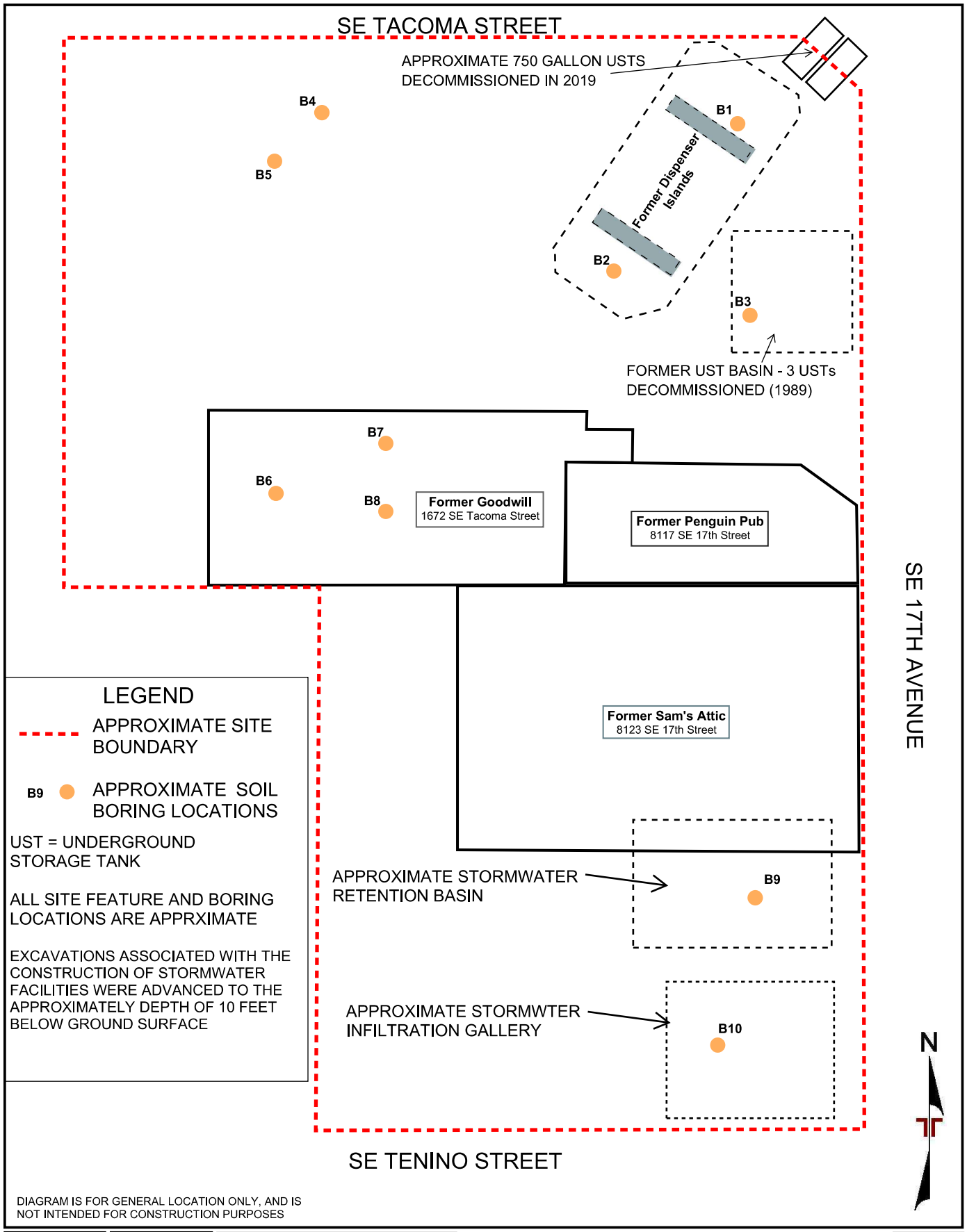
Project No.	82187157
Scale:	NTS
File Name:	Exhibits
Date:	Nov. 2019

Terracon
4103 SE International Way Ste 300
Portland, OR 97222-8854

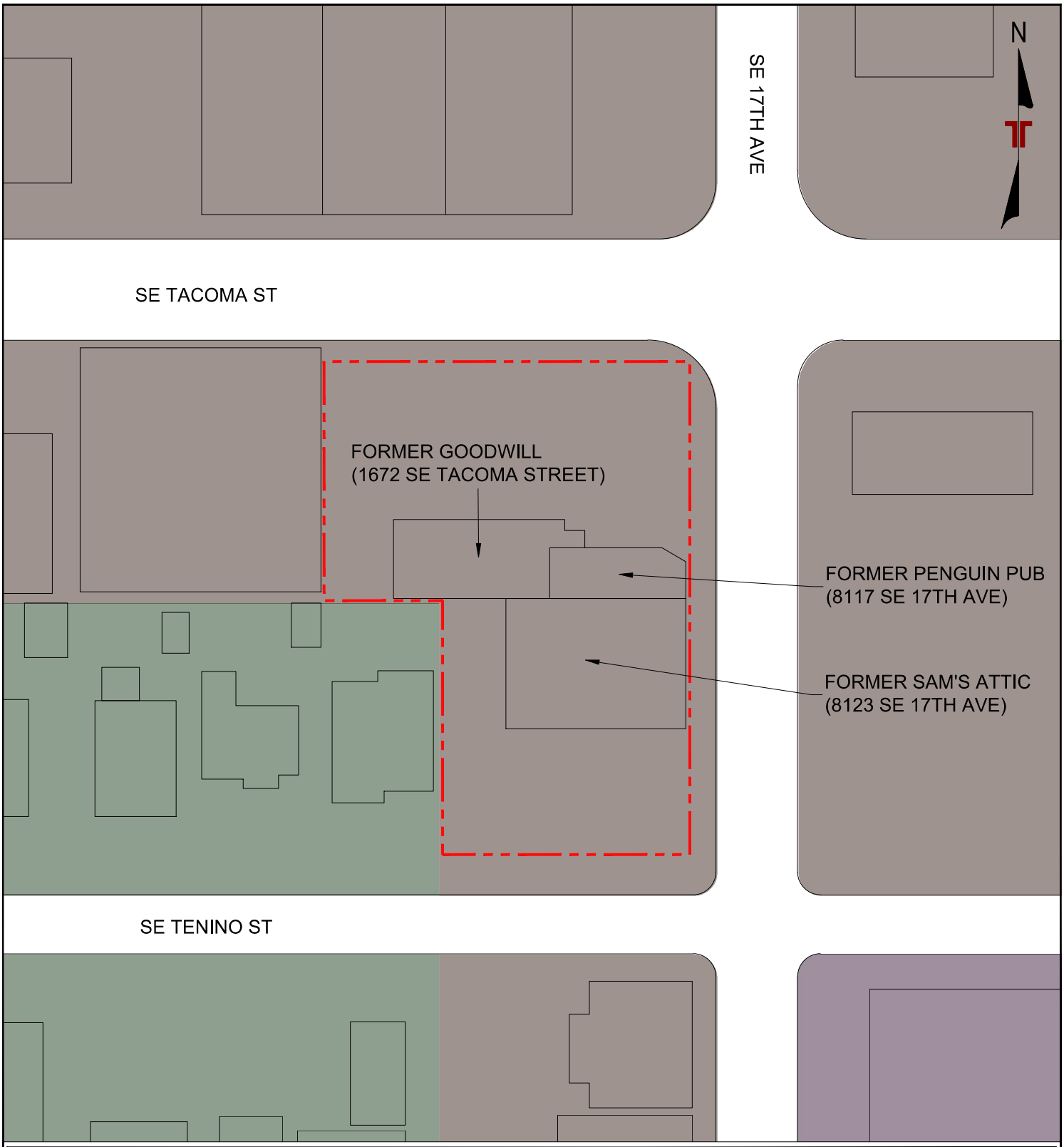
JULY REMEDIAL EXCAVATION

CVS Pharmacy Store #11185
8145 SE 17TH Avenue
Portland, Oregon

Exhibit
7



Project Manager: RJR	Project No. 82187157	Terracon 700 NE 55th Ave Portland, OR 97213-3150	STORMWATER INFILTRATION GALLERY EXCAVATION AREA	Exhibit
Drawn by: RJR	Scale: NTS		**CVS Pharmacy Store #11185** **8145 SE 17th Avenue** **Portland, Oregon**	8
Checked by: JLH	File Name: Exhibits			
Approved by: RJR	Date: November 2019			



LEGEND

- APPROXIMATE SITE BOUNDARY
- CM2 DM (MU-N): COMMERCIAL MIXED USE 2 (CM2) NORTH, NORTH EAST AND EAST
- RM3D: RESIDENTIAL MULTI-DWELLING 3 (RM3) SOUTH EAST
- RM1D: RESIDENTIAL MULTI-DWELLING 1 (RM1) - TO THE SW OF THE SITE

60 0 10 20 30 60

APPROXIMATE SCALE IN FEET

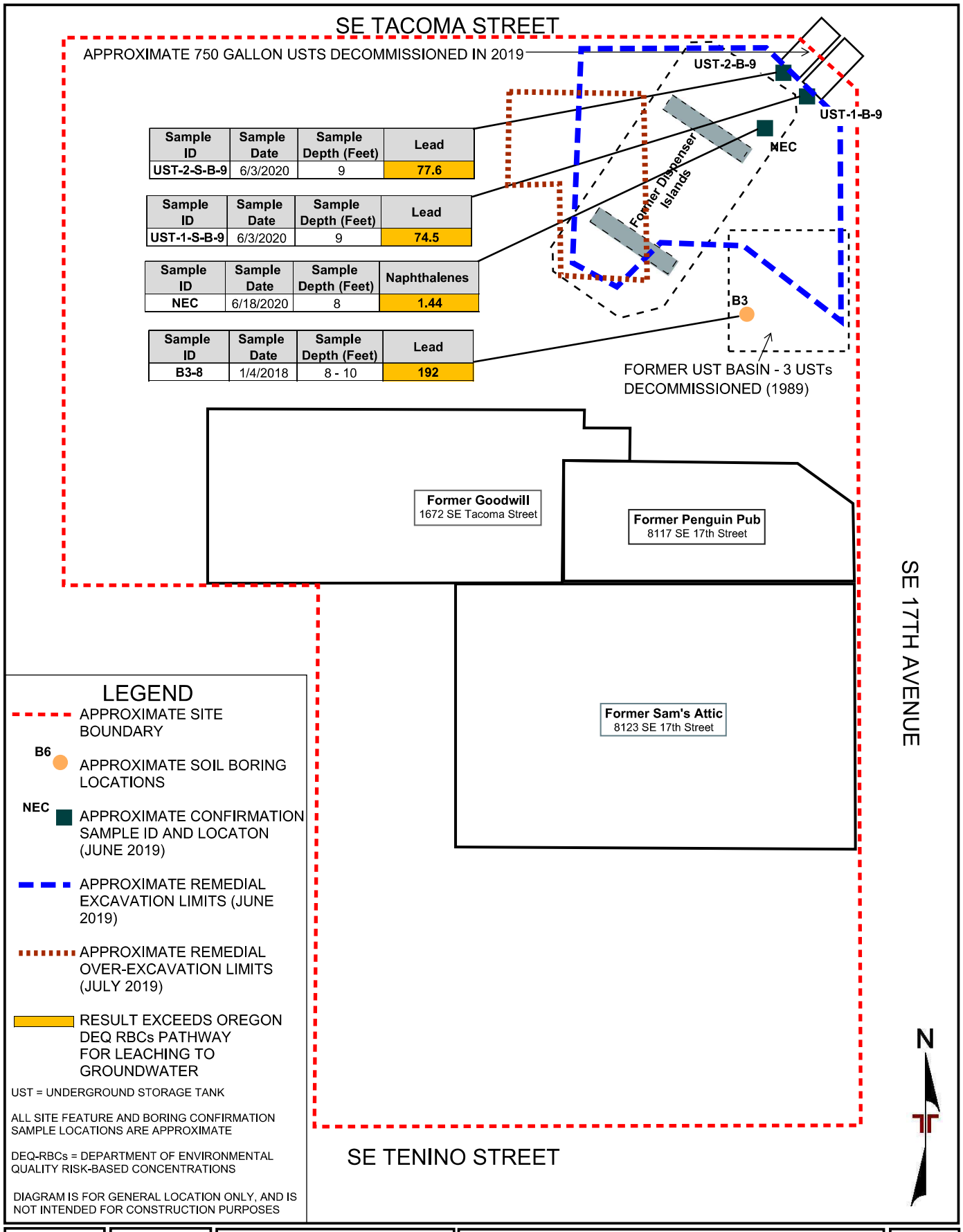
Project Mngr:	RJR
Drawn By:	AMP
Checked By:	RJR
Approved By:	RJR
Project No.	82187157
Scale:	AS SHOWN
File No.	Exhibit 8
Date:	September 2020

Terracon
Consulting Engineers and Scientists
700 NE 55th Avenue Portland, OR 97213
PH. (503) 659-3281 FAX. (503) 659-1287

ZONING MAP

CVS Pharmacy Store #11185
8145 SE 17th Avenue
Portland, Oregon

EXHIBIT 8



Sample ID	Sample Date	Sample Depth (Feet)	Lead
UST-2-S-B-9	6/3/2020	9	77.6

Sample ID	Sample Date	Sample Depth (Feet)	Lead
UST-1-S-B-9	6/3/2020	9	74.5

Sample ID	Sample Date	Sample Depth (Feet)	Naphthalenes
NEC	6/18/2020	8	1.44

Sample ID	Sample Date	Sample Depth (Feet)	Lead
B3-8	1/4/2018	8 - 10	192

Project Manager: RJR	Project No. 82187157	Terracon 700 NE 55th Ave Portland, OR 97213-3150	**SUMMARY OF REMAINING IMPACTS** **CVS Pharmacy Store #11185** **8145 SE 17th Avenue** **Portland, Oregon**	Exhibit 9
Drawn by: RJR	Scale: NTS			
Checked by: JLH	File Name: Exhibits			
Approved by: RJR	Date: November 2019			

APPENDIX B – TABLES

TABLE 1
Summary of Soil Analytical Results
Soil Boring Samples - TPH, VOCs
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

Sample ID	Sample Depth (feet)	Sample Date	TPH			VOCs																
			GRO	DRO	RRO	1,2,3 - Trimethylbenzene	1,2,4 - Trimethylbenzene	1,3,5 - Trimethylbenzene	2-Butanone (MEK)	Acetone	Benzene	Ethylbenzene	Isopropylbenzene	Naphthalene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	Tetrachloroethene	Toluene	Xylenes (total)	Other VOCs
Soil Boring Samples																						
B1-3	3-4	1/4/2018	< 0.111	< 4.45	< 11.1	< 0.00142	< 0.00142	< 0.00142	< 0.0142	< 0.0712	< 0.00142	< 0.00142	< 0.00142	< 0.00712	< 0.00142	< 0.00142	< 0.00142	< 0.00142	< 0.00142	< 0.00712	< 0.00427	ND
B1-11	11-12	1/4/2018	< 0.110	< 4.41	< 11.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2-9	9-10	1/4/2018	**0.532**	< 4.47	< 11.2	**0.0109**	**0.00423**	**0.00367**	< 0.0112	< 0.0559	< 0.00112	< 0.00112	< 0.00112	< 0.00559	< 0.00112	< 0.00112	< 0.00112	< 0.00112	< 0.00112	< 0.00559	< 0.00336	ND
B2-19	19-20	1/4/2018	< 0.111	< 4.34	< 10.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3-8	8-10	1/4/2018	< 0.107	< 4.28	**28.1**	< 0.00107	< 0.00107	< 0.00107	< 0.0107	< 0.0535	< 0.00107	< 0.00107	< 0.00107	< 0.00535	< 0.00107	< 0.00107	< 0.00107	< 0.00107	< 0.00107	< 0.00535	< 0.00321	ND
B3-18	18-20	1/4/2018	< 0.111	< 4.45	< 11.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4-10	10-11	1/4/2018	< 0.109	< 4.35	< 10.9	< 0.00109	< 0.00109	< 0.00109	< 0.0109	< 0.0544	< 0.00109	< 0.00109	< 0.00109	< 0.00544	< 0.00109	< 0.00109	< 0.00109	< 0.00109	< 0.00109	< 0.00544	< 0.00326	ND
B4-14	14-15	1/4/2018	< 0.109	**4.96**	< 10.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B5-9	9-10	1/4/2018	< 0.137	< 4.57	< 11.4	< 0.00114	< 0.00114	< 0.00114	< 0.0114	< 0.0571	< 0.00114	< 0.00114	< 0.00114	< 0.00571	< 0.00114	< 0.00114	< 0.00114	< 0.00114	< 0.00114	< 0.00571	< 0.00342	ND
B5-19	19-20	1/4/2018	< 0.107	< 4.28	< 10.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B6-9	9-10	1/4/2018	**5.56**	**1,060**	**2,600**	< 0.00134	< 0.00134	< 0.00134	**0.0177**	**0.125**	< 0.00134	< 0.00134	< 0.00134	< 0.00670	< 0.00134	< 0.00134	< 0.00134	< 0.00134	**0.0104**	< 0.00670	< 0.00402	ND
B6-14	14-15	1/4/2018	**0.205**	<4.28	< 10.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B7-2	2-3	1/4/2018	< 0.631	< 5.05	< 12.6	< 0.00126	< 0.00126	< 0.00126	< 0.0126	< 0.0631	< 0.00126	< 0.00126	< 0.00126	< 0.00631	< 0.00126	< 0.00126	< 0.00126	< 0.00126	< 0.00126	< 0.00631	< 0.00379	ND
B8-2	2-3	1/4/2018	< 0.127	< 5.10	< 12.7	< 0.00127	< 0.00127	< 0.00127	< 0.0126	< 0.0631	< 0.00127	< 0.00127	< 0.00127	< 0.00637	< 0.00127	< 0.00127	< 0.00127	< 0.00127	< 0.00127	< 0.00637	< 0.00382	ND
B-9 2.5-4	2.5-4	2/21/2019	< 3.04	< 2.44	< 609	< 0.00609	< 0.00609	< 0.00609	< 0.0304	< 0.0304	< 0.00122	< 0.00304	< 0.00304	< 0.0152	< 0.0152	< 0.00609	< 0.0609	< 0.0152	< 0.00304	< 0.00609	< 0.00791	ND
B-95-10 Comp	5-10	2/21/2019	< 2.71	< 43.3	< 108	< 0.00542	< 0.00542	< 0.00542	< 0.0271	< 0.0271	< 0.00108	< 0.00271	< 0.00271	< 0.0135	< 0.0135	< 0.00542	< 0.00542	< 0.0135	< 0.00271	< 0.00542	< 0.00704	ND
B-9 10-15 Comp	10-15	2/21/2019	< 2.66	< 213	**738**	< 0.00532	< 0.00532	< 0.00532	< 0.0266	< 0.0266	< 0.00106	< 0.00266	< 0.00266	< 0.0133	< 0.0133	< 0.00532	< 0.00532	< 0.0133	< 0.00266	< 0.00532	< 0.00692	ND
B-10 2.5	0-2.5	2/21/2019	< 3.10	<495	< 1,240	< 0.00619	< 0.00619	< 0.00619	< 0.0310	< 0.0310	< 0.00124	< 0.00310	< 0.00310	< 0.0155	< 0.0155	< 0.00619	< 0.00619	< 0.0155	< 0.00310	< 0.00619	< 0.00805	ND
B-10 5-10 Comp	5-10	2/21/2019	< 3.01	< 47.2	**178**	< 0.00602	< 0.00602	< 0.00602	< 0.0301	< 0.0301	< 0.00120	< 0.00301	< 0.00301	< 0.0150	< 0.0150	< 0.00602	< 0.00602	< 0.0150	< 0.00301	< 0.00602	< 0.00782	ND
B-10 10-15 Comp	10-15	2/21/2019	< 2.77	< 444	< 1110	< 0.00555	< 0.00555	< 0.00555	< 0.0277	< 0.0277	< 0.00111	< 0.00277	< 0.00277	< 0.0139	< 0.0139	< 0.00555	< 0.00555	< 0.0139	< 0.00277	< 0.00555	< 0.00721	ND
Risked-Based Concentrations																						
Occ. RBCss			20,000	14,000	36,000	....	6,900	6,900	....	....	37	150	57,000	23	....	....	....	....	1,000	88,000	25,000	--
Cons. RBCss			9,700	4,600	11,000	....	2,900	2,900	....	....	380	1,700	27,000	580	....	....	....	....	1,800	28,000	20,000	--
Exc. RBCss			>Max	>Max	>Max	....	81,000	81,000	....	....	11,000	49,000	750,000	16,000	....	....	....	....	50,000	770,000	560,000	--
Occ. RBCso			69,000	>Max	>Max	....	>Csat	>Csat	....	....	50	160	>Csat	83	....	....	....	....	>Csat	>Csat	>Csat	--
Occ. RBCsi			>Max	>Max	>Max	....	>Csat	>Csat	....	....	2.1	17	>Csat	83	....	....	....	....	36	>Csat	>Csat	--
Occ. RBCsw			130	>Max	>Max	....	48	53	....	....	0.10	0.90	>Csat	0.34	....	....	....	....	1.9	490	100	--
CFV/OBM			31	1,100	2,800	4.9	10	11	72	1.2	0.023	0.22	....	0.077	190	72	....	350	2.4	23	1.4	--

TABLE 1
Summary of Soil Analytical Results
Soil Boring Samples - TPH, VOCs
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

Notes and Qualifiers:
All analytical resulted are reporting in milligrams per kilograms (mg/kg)
Analytes with no detection above the laboratory reporting limit are not presented in the table above. A full list of analytes and results is included in the laboratory analytical report.
.... = No Published RBCs or CFV.
>Csat = The soil RBC exceeds the limit of three-phase equilibrium partitioning.
>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.
EPA = Environmental Projection Agency
TPH = Total Petroleum Hydrocarbons
GRO = TPH in the Gasoline Range Organics analyzed by Northwest Method NWTPH-Gx.
DRO = TPH in the Diesel Range Organics analyzed by Northwest Method NWTPH-Dx.
RRO = TPH in the Residual-Oil Range Organics analyzed by Northwest Method NWTPH-Dx.
VOCs = Volatile Organic Compounds analyzed by EPA Method 8260
PAHs = Polynuclear Aromatic Hydrocarbons
NS = Not Sampled
< = Less than laboratory Reporting Limit.
* = Leaching-to-Groundwater RBCs are not provided for inorganic chemicals. If this pathway is of concern, then site-specific leaching tests must be performed.
[1] = Soil and associated samples were removed during the installing of site stormwater infrastructure on the sourthern parcel

Oregon DEQ Soil Exposure Pathways
Occ. = Occupational receptor
Cons. = Construction Worker receptor
Exc. = Excavation Worker receptor
RBCss = Soil Ingestion, Dermal Contact, and Inhalation
RBCso = Volatilization to Outdoor Air
RBCsi = Vapor Intrusion into Buildings
RBCsw = Leaching to Groundwater

TABLE 2
Summary of Soil Analytical Results
Soil Boring Samples - Metals, PAHs, PCBs
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

Sample ID	Sample Depth (feet)	Sample Date	Metals					PAHs																		PCBs
			Arsenic	Barium	Chromium	Lead	Mercury	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Chrysene	Dibenz(a,h) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene	Other PAHs	Total PCBs
Soil Boring Samples																										
B1-3	3-4	1/4/2018	NA	NA	NA	**4.17**	NA	< 0.0223	< 0.0223	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.00668	< 0.0223	< 0.00668	< 0.00668	ND	NA
B1-11	11-12	1/4/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B2-9	9-10	1/4/2018	NA	NA	NA	**4.60**	NA	**0.0652**	**0.128**	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	< 0.00671	**0.0329**	< 0.00671	< 0.00671	ND	NA
B2-19	19-20	1/4/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B3-8	8-10	1/4/2018	NA	NA	NA	**192**	NA	< 0.0214	< 0.0214	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	**0.00885**	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.00642	< 0.0214	< 0.00642	< 0.00642	ND	NA
B3-18	18-20	1/4/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B4-10	10-11	1/4/2018	NA	NA	NA	**2.64**	NA	< 0.0217	< 0.0217	< 0.00652	< 0.00652	< 0.00652	<0.00652	<0.00652	<0.00652	< 0.00652	<0.00652	<0.00652	< 0.00652	<0.00652	<0.00652	<0.00652	< 0.0217	<0.00652	<0.00652	ND	NA
B4-14	14-15	1/4/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B5-9	9-10	1/4/2018	NA	NA	NA	**3.33**	NA	< 0.0228	< 0.0228	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.00685	< 0.0228	< 0.00685	< 0.00685	ND	NA
B5-19	19-20	1/4/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B6-9	9-10	1/4/2018	NA	NA	**11**	**7.82**	NA	< 0.0227	< 0.0227	**0.00941**	**0.0105**	**0.0281**	< 0.0681	< 0.0681	< 0.0681	< 0.0681	< 0.0681	< 0.0681	**0.0408**	< 0.00681	< 0.0681	< 0.0227	< 0.00681	< 0.0681	ND	**0.176**
B6-14	14-15	1/4/2018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
B7-2	2-3	1/4/2018	NA	NA	**24.9**	**6.5**	NA	< 0.0253	< 0.0253	< 0.00758	< 0.00758	< 0.00758	<0.00758	<0.00758	<0.00758	<0.00758	<0.00758	<0.00758	<0.00758	<0.00758	<0.00758	<0.00758	< 0.0253	<0.00758	<0.00758	ND	< 0.0215
B8-2	2-3	1/4/2018	NA	NA	**25.1**	**6.37**	NA	< 0.0255	< 0.0255	< 0.00765	< 0.00765	< 0.00765	<0.00765	<0.00765	<0.00765	< 0.00765	<0.00765	<0.00765	< 0.00765	<0.00765	<0.00765	<0.00765	< 0.0255	<0.00765	<0.00765	ND	< 0.0217
B-9 2.5-4 [1]	2.5-4	2/21/2019	< 2.44	**225**	**15.4**	**3.60**	**0.0268**	< 0.0244	< 0.0244	< 0.00731	< 0.00731	< 0.00731	< 0.00731	**0.00808**	< 0.00731	< 0.00731	**0.00925**	< 0.00731	**0.00756**	< 0.00731	< 0.00731	< 0.0244	**0.00849**	< 0.00731	ND	NA
B-95-10 Comp [1]	5-10	2/21/2019	< 2.17	**115**	**11.9**	**3.45**	**0.0257**	< 0.0217	< 0.0217	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.00650	< 0.0217	< 0.00650	< 0.00650	ND	NA
B-9 10-15 Comp	10-15	2/21/2019	< 2.13	**133**	**12.3**	**4.52**	< 0.0213	< 0.0213	< 0.0213	< 0.00638	< 0.00638	< 0.00638	**0.0118**	**0.0153**	**0.0287**	**0.0225**	**0.0180**	**0.00851**	**0.0387**	< 0.00638	**0.00752**	< 0.0213	**0.0334**	**0.0400**	ND	NA
B-10 2.5 [1]	0-2.5	2/21/2019	**3.64**	**187**	**18.6**	**7.12**	**0.0362**	< 0.124	< 0.124	< 0.0371	< 0.0371	< 0.0371	< 0.0371	< 0.0371	**0.0677**	**0.0495**	< 0.0371	< 0.0371	**0.0520**	< 0.0371	< 0.0371	< 0.124	< 0.0371	**0.0695**	ND	NA
B-10 5-10 Comp [1]	5-10	2/21/2019	< 2.36	**106**	**15.7**	**5.02**	< 0.0236	< 0.0236	< 0.0236	< 0.00708	< 0.00708	< 0.00708	< 0.00708	**0.00943**	< 0.00708	< 0.00708	**0.0116**	< 0.00708	< 0.00708	< 0.00708	< 0.00708	< 0.0236	< 0.00708	< 0.00708	ND	NA
B-10 10-15 Comp	10-15	2/21/2019	< 2.22	**91.4**	**11.8**	**4.32**	< 0.0222	< 0.0222	< 0.0222	< 0.00666	< 0.00666	< 0.00666	**0.00677**	**0.00998**	**0.0193**	**0.0150**	**0.0108**	< 0.00666	**0.0162**	< 0.00666	< 0.00666	< 0.0222	**0.0123**	**0.0216**	ND	NA
Risk-Based Concentrations																										
Occ. RBCss			1.9	220,000	>Max	800	350	….	….	70,000	….	350,000	21	2.1	21	….	2,100	2.1	30,000	47,000	21	23	….	23,000	--	0.59
Cons. RBCss			15	69,000	530,000	800	110	….	….	21,000	….	110,000	170	17	170	….	17,000	17	10,000	14,000	170	580	….	7,500	--	4.9
Exc. RBCss			420	>Max	>Max	800	2,900	….	….	590,000	….	>Max	4,800	490	4,900	….	490,000	490	280,000	390,000	4,900	16,000	….	210,000	--	140
Occ. RBCso			NV	NV	NV	NV	NV	….	….	>Max	….	>Max	>Csat	NV	NV	….	NV	NV	NV	>Max	NV	83	….	>Max	--	….
Occ. RBCsi			NV	NV	NV	NV	NV	….	….	>Max	….	>Max	>Csat	NV	NV	….	NV	NV	NV	>Max	NV	83	….	>Max	--	….
Occ. RBCsw			*	*	*	30	*	….	….	>Csat	….	>Csat	>Csat	>Csat	>Csat	….	>Csat	>Csat	>Csat	>Csat	>Csat	0.34	….	>Csat	--	1.1
CFV/OBM			9	790	76	28	0.23	0.36	11	0.25	120	6.8	0.73	0.11	1.1	25	3.1	0.11	10	3.7	1.1	0.077	5.5	10	--	….

Notes and Qualifiers:
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Analytes with no detection above the laboratory reporting limit are not presented in the table above. A full list of analytes and results is included in the laboratory analytical report.
…. = No Published RBCs or CFV.
>Csat = The soil RBC exceeds the limit of three-phase equilibrium partitioning.
>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.
NV = This chemical is considered "nonvolatile" for purposes of the exposure calculations.
TPH = Total Petroleum Hydrocarbons
EPA = Environmental Protection Agency
RCRA Metals = Resource Conservation and Recovery Act Metals anayzed by EPA Method 6000/7000 series
VOCs = Volatile Organic Compounds
PAHs = Polynuclear Aromatic Hydrocarbons analyzed by EPA Method 8270 SIM
PCBs = Polychlorinated Biphenyls analyzed by EPA Method 8281. Result summarized above are a combined total of report results. The RL is listed if no detection were reported.
NA = Not Analyzed
ND = Not detected above laboratoy reporting levels.
< = Less than laboratory Reporting Limit.
* = Leaching-to-Groundwater RBCs are not provided for inorganic chemicals. If this pathway is of concern, then site-specific leaching tests must be performed.
[1] = Soil and associated samples were removed during the installing of site stormwater infrastructure on the sourthern parcel

Oregon DEQ Soil Exposure Pathways
Occ. = Occupational receptor
Cons. = Construction Worker receptor
Exc. = Excavation Worker receptor
RBCss = Soil Ingestion, Dermal Contact, and Inhalation
RBCso = Volatilization to Outdoor Air
RBCsi = Vapor Intrusion into Buildings
RBCsw = Leaching to Groundwater
CFV/OBM = DEQ Clean Fill Values and Oregon Background Metals (Portland Basin)

TABLE 3
Summary of Soil Analytical Results
Stockpile Soil Samples - TPH, VOCs
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

Sample ID	Sample Depth (feet)	Sample Date	TPH			VOCs																
			GRO	DRO	RRO	1,2,3 - Trimethylbenzene	1,2,4 - Trimethylbenzene	1,3,5 - Trimethylbenzene	2-Butanone (MEK)	Acetone	Benzene	Ethylbenzene	Isopropylbenzene	Naphthalene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	Tetrachloroethene	Toluene	Xylenes (total)	Other VOCs
Stockpile Samples																						
SS-1A	--	6/3/2019	**3.89**	< 222	< 556	**0.00644**	**0.00875**	< 0.00556	< 0.0376 B	< 0.0278	< 0.00111	< 0.00278	< 0.00278	< 0.0139	< 0.0139	< 0.00556	< 0.00556	< 0.0139	< 0.00278	< 0.00556	< 0.00723	ND
SS-2A	--	6/3/2019	< 2.98	< 238	< 596	< 0.00596	< 0.00596	< 0.00596	< 0.0368 B	< 0.0298	< 0.00119	< 0.00298	< 0.00298	< 0.0149	< 0.0149	< 0.00596	< 0.00596	< 0.0149	< 0.00298	< 0.00596	< 0.00774	ND
SS-2B	--	6/3/2019	< 2.89	< 4.63	**17.6**	< 0.00578	< 0.00578	< 0.00578	< 0.0375 B	< 0.0289	< 0.00116	< 0.00289	< 0.00289	< 0.0145	< 0.0145	< 0.00578	< 0.00578	< 0.0145	< 0.00289	< 0.00578	< 0.00752	ND
Risked-Based Concentrations																						
Occ. RBCss			20,000	14,000	36,000	….	6,900	6,900	….	….	37	150	57,000	23	….	….	….	….	1,000	88,000	25,000	--
Cons. RBCss			9,700	4,600	11,000	….	2,900	2,900	….	….	380	1,700	27,000	580	….	….	….	….	1,800	28,000	20,000	--
Exc. RBCss			>Max	>Max	>Max	….	81,000	81,000	….	….	11,000	49,000	750,000	16,000	….	….	….	….	50,000	770,000	560,000	--
Occ. RBCso			69,000	>Max	>Max	….	>Csat	>Csat	….	….	50	160	>Csat	83	….	….	….	….	>Csat	>Csat	>Csat	--
Occ. RBCsi			>Max	>Max	>Max	….	>Csat	>Csat	….	….	2.1	17	>Csat	83	….	….	….	….	36	>Csat	>Csat	--
Occ. RBCsw			130	>Max	>Max	….	48	53	….	….	0.10	0.90	>Csat	0.34	….	….	….	….	1.9	490	100	--
CFV/OBM			31	1,100	2,800	4.9	10	11	72	1.2	0.023	0.22	….	0.077	190	72	….	350	2.4	23	1.4	--

Notes and Qualifiers:
All analytical resulted are reporting in milligrams per kilograms (mg/kg)
Soil associated with stockpile samples have been excavated and removed from the site.
Analytes with no detection above the laboratory reporting limit are not presented in the table above. A full list of analytes and results is included in the laboratory analytical report.
…. = No Published RBCs or CFV.
>Csat = The soil RBC exceeds the limit of three-phase equilibrium partitioning.
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EPA = Environmental Projection Agency
TPH = Total Petroleum Hydrocarbons
GRO = TPH in the Gasoline Range Organics analyzed by Northwest Method NWTPH-Gx.
DRO = TPH in the Diesel Range Organics analyzed by Northwest Method NWTPH-Dx.
RRO = TPH in the Residual-Oil Range Organics analyzed by Northwest Method NWTPH-Dx.
VOCs = Volatile Organic Compounds analyzed by EPA Method 8260
NA = Not Analyzed
ND = Not detected above laboratoy reporting levels.
< = Less than laboratory Reporting Limit.
B = The same analyte is found in the associated blank.

Oregon DEQ Soil Exposure Pathways
Occ. = Occupational receptor
Cons. = Construction Worker receptor
Exc. = Excavation Worker receptor
RBCss = Soil Ingestion, Dermal Contact, and Inhalation
RBCso = Volatilization to Outdoor Air
RBCsw = Leaching to Groundwater
CFV/OBM = DEQ Clean Fill Values and Oregon Background Metals (Portland Basin)

TABLE 4
Summary of Soil Analytical Results
Stockpile Samples - Metals, PAHs, PCBs
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

Sample ID	Sample Depth (feet)	Sample Date	Metals	PAHs																		PCBs
			Lead	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h) anthracene	Fluoranthene	Fluorene	indeno(1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene	Other PAHs	Total PCBs
Stockpile Samples																						
SS-1A	--	6/3/2019	**40.8**	< 0.0222	< 0.0222	< 0.00667	< 0.00666	**0.0141**	**0.133**	**0.180**	**0.223**	**0.200**	**0.0583**	**0.137**	**0.0273**	**0.197**	**0.00680**	**0.133**	< 0.0222	**0.0448**	**0.259**	ND	NA
SS-2A	--	6/3/2019	**200**	< 0.0238 J3	**0.0270**	**0.0923**	**0.0922 J6**	**0.0562**	**0.158**	**0.206 J5**	**0.230 J5**	**0.178**	**0.0754**	**0.204 J5**	**0.0407**	**0.645 J3, V**	**0.0331 J3**	**0.129**	**0.0427 J3,J5**	**0.343 J3,J5**	**0.406**	ND	NA
SS-2B	--	6/3/2019	NA	< 0.0231	< 0.0231	< 0.00694	< 0.00693	< 0.00694	< 0.00694	**0.00785**	**0.00915**	**0.0119**	< 0.00694	< 0.00694	< 0.00694	< 0.00694	< 0.00694	< 0.00694	< 0.0231	< 0.00694	**0.00780**	ND	NA
Risk-Based Concentrations																						
Occ. RBCss			800	….	….	70,000	….	350,000	21	2.1	21	….	210	2,100	2.1	30,000	47,000	21	23	….	23,000	--	0.59
Cons. RBCss			800	….	….	21,000	….	110,000	170	17	170	….	1,700	17,000	17	10,000	14,000	170	580	….	7,500	–	4.9
Exc. RBCss			800	….	….	590,000	….	>Max	4,800	490	4,900	….	49,000	490,000	490	280,000	390,000	4,900	16,000	….	210,000	–	140
Occ. RBCso			NV	….	….	>Max	….	>Max	>Csat	NV	NV	….	NV	NV	NV	NV	>Max	NV	83	….	>Max	–	….
Occ. RBCsi			NV	….	….	>Max	….	>Max	>Csat	NV	NV	….	NV	NV	NV	NV	>Max	NV	83	….	>Max	–	….
Occ. RBCsw			30	….	….	>Csat	….	>Csat	>Csat	>Csat	>Csat	….	>Csat	>Csat	>Csat	>Csat	>Csat	>Csat	0.34	….	>Csat	–	1.1
CFV/OBM			28	0.36	11	0.25	120	6.8	0.73	0.11	1.1	25	11	3.1	0.11	10	3.7	1.1	0.077	5.5	10	–	….

Notes and Qualifiers:
All analytical resulted are reporting in milligrams per kilograms (mg/kg)
Soil associated with stockpile samples have been excavated and removed from the site.
Analytes with no detection above the laboratory reporting limit are not presented in the table above. A full list of analytes and results is included in the laboratory analytical report.
…. = No Published RBCs or CFV.
>Csat = The soil RBC exceeds the limit of three-phase equilibrium partitioning.
>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.
NV = This chemical is considered "nonvolatile" for purposes of the exposure calculations.
SVOCs = Semi-Volatile Organic Compounds - Analyzed by Environmental Protection Agency (EPA) Method 8270D-SIM
EPA = Environmental Protection Agency
Metals = Anayzed by EPA Method 6000 series
VOCs = Volatile Organic Compounds
PAHs = Polynuclear Aromatic Hydrocarbons analyzed by EPA Method 8270 SIM
PCBs = Polychlorinated Biphenyls analyzed by EPA Method 8281. Result summarized above are a combined total of report results. The RL is listed if no detection were reported.
NA = Not Analyzed
ND = Not detected above laboratoy reporting levels.
< = Less than laboratory Reporting Limit.
* = Leaching-to-Groundwater RBCs are not provided for inorganic chemicals. If this pathway is of concern, then site-specific leaching tests must be performed.
B = The same analyte is found in the associated blank.
J0 = The identification of the analyte is acceptable, but the reported concentration is an estimate. The calibration met method criteria.
J7 = Surrogate recovery cannot be used for control limit evaluation due to dilution
V = The sample concentration is too high to evaluate accurate spike recoveries

Oregon DEQ Soil Exposure Pathways
Occ. = Occupational receptor
Cons. = Construction Worker receptor
Exc. = Excavation Worker receptor
RBCss = Soil Ingestion, Dermal Contact, and Inhalation
RBCso = Volatilization to Outdoor Air
RBCsi = Vapor Intrusion into Buildings
RBCsw = Leaching to Groundwater
CFV/OBM = DEQ Clean Fill Values and Oregon Background Metals (Portland Basin)

TABLE 5
Summary of Soil Analytical Results
Confirmation Soil Samples - TPH, VOCs
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

Sample ID	Sample Depth (feet)	Sample Date	Soil Removed or Remains in-Place	TPH			VOCs																	
				GRO	DRO	RRO	1,2,3 - Trimethylbenzene	1,2,4 - Trimethylbenzene	1,3,5 - Trimethylbenzene	2-Butanone (MEK)	Acetone	Benzene	Ethylbenzene	Isopropylbenzene	Naphthalene	n-Butylbenzene	n-Propylbenzene	p-Isopropyltoluene	sec-Butylbenzene	Tetrachloroethene	Toluene	Xylenes (total)	Other VOCs
Confirmation Grab Samples																								
UST-1-S-B-9	9	6/3/2019	In-Place	**83.7**	< 5.96	**18.9**	**0.0206**	**0.0681**	**0.0338**	**0.126**	< 0.0373	< 0.00149	< 0.00373	< 0.00373	< 0.0186	**0.0362**	< 0.00746	**0.0171**	**0.0313**	< 0.00373	< 0.00746	< 0.00969	ND
UST-2-S-B-9	9	6/3/2019	In-Place	< 4.09	< 5.12	< 12.8	**0.00646**	**0.0152**	< 0.00639	< 0.0320	< 0.0320	< 0.00128	< 0.00320	< 0.00320	< 0.0160	< 0.0160	< 0.00639	< 0.00639	< 0.0160	< 0.00320	< 0.00639	**0.0173**	ND
SWC-Bottom	10	6/18/2019	Removed	**727**	ND	ND	**74.8**	**153**	**80.9**	< 0.587	< 0.587	< 0.0235	**17.2**	**3.05**	**38.9**	**10.5**	**16.6**	**2.09**	**3.10**	< 0.0587	**0.591**	**190**	ND
NWC	8	6/18/2019	Removed	**453**	ND	ND	**34.9**	**137**	**43.4**	< 0.245	< 0.245	< 0.00981	**11.7**	**2.23**	**26.7**	**4.87**	**11.6**	**0.97**	**1.83**	< 0.0245	**2.18**	**166**	ND
NEC	8	6/18/2019	In-Place	**26.8**	ND	ND	**1.71**	**5.53**	**1.91**	**0.0431**	< 0.0309	< 0.00124	**0.314**	**0.0742**	**1.44**	**0.273**	**0.401**	**0.0526**	**0.0872**	< 0.00309	**0.0288**	**4.03**	ND
SEC	8	6/18/2019	In-Place	< 2.79	ND	ND	< 0.00605	**0.0185**	**0.00743**	< 0.0303	< 0.0303	< 0.00121	< 0.00303	< 0.00303	< 0.0151	< 0.0151	< 0.00605	< 0.00605	< 0.0151	< 0.00303	< 0.00605	**0.0270**	ND
E2-E-F	20	7/23/2019	In-Place	< 3.29	NA	NA	NA	NA	NA	NA	NA	< 0.00132	< 0.00329	NA	**0.0186**	NA	NA	NA	NA	NA	< 0.00658	**0.0115**	ND
E2-W-F	15	7/23/2019	In-Place	< 2.97	NA	NA	NA	NA	NA	NA	NA	< 0.00119	< 0.00297	NA	< 0.0149	NA	NA	NA	NA	NA	< 0.00594	**0.0133**	ND
E2-NW-W	12	7/23/2019	In-Place	< 2.65	NA	NA	NA	NA	NA	NA	NA	< 0.00106	< 0.00265	NA	< 0.0133	NA	NA	NA	NA	NA	< 0.00531	**0.0119**	ND
E2-W-W	12	7/23/2019	In-Place	< 2.72	NA	NA	NA	NA	NA	NA	NA	< 0.00109	< 0.00272	NA	< 0.0136	NA	NA	NA	NA	NA	< 0.00543	**0.00876**	ND
E2-S-W	12	7/23/2019	In-Place	< 3.19	NA	NA	NA	NA	NA	NA	NA	< 0.00127	< 0.00319	NA	< 0.0159	NA	NA	NA	NA	NA	< 0.00637	< 0.00828	ND
E2-NE-W	12	7/23/2019	In-Place	**27.5**	NA	NA	NA	NA	NA	NA	NA	< 0.00129	**0.0226**	NA	**0.163**	NA	NA	NA	NA	NA	**0.00790**	**0.457**	ND
Risked-Based Concentrations																								
Occ. RBCss				20,000	14,000	36,000	....	6,900	6,900	....	....	37	150	57,000	23	....	....	....	....	1,000	88,000	25,000	--
Cons. RBCss				9,700	4,600	11,000	....	2,900	2,900	....	....	380	1,700	27,000	580	....	....	....	....	1,800	28,000	20,000	--
Exc. RBCss				>Max	>Max	>Max	....	81,000	81,000	....	....	11,000	49,000	750,000	16,000	....	....	....	....	50,000	770,000	560,000	--
Occ. RBCso				69,000	>Max	>Max	....	>Csat	>Csat	....	....	50	160	>Csat	83	....	....	....	....	>Csat	>Csat	>Csat	--
Occ. RBCsi				>Max	>Max	>Max	....	>Csat	>Csat	....	....	2.1	17	>Csat	83	....	....	....	....	36	>Csat	>Csat	--
Occ. RBCsw				130	>Max	>Max	....	48	53	....	....	0.10	0.90	>Csat	0.34	....	....	....	....	1.9	490	100	--
CFV/OBM				31	1,100	2,800	4.9	10	11	72	1.2	0.023	0.22	....	0.077	190	72	....	350	2.4	23	1.4	--

Notes and Qualifiers:
All analytical resulted are reporting in milligrams per kilograms (mg/kg)
Analytes with no detection above the laboratory reporting limit are not presented in the table above. A full list of analytes and results is included in the laboratory analytical report.
.... = No Published RBCs or CFV.
>Csat = The soil RBC exceeds the limit of three-phase equilibrium partitioning.
>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.
EPA = Environmental Projection Agency
TPH = Total Petroleum Hydrocarbons
GRO = TPH in the Gasoline Range Organics analyzed by Northwest Method NWTPH-Gx.
DRO = TPH in the Diesel Range Organics analyzed by Northwest Method NWTPH-Dx.
RRO = TPH in the Residual-Oil Range Organics analyzed by Northwest Method NWTPH-Dx.
VOCs = Volatile Organic Compounds analyzed by EPA Method 8260
NA = Not Analyzed
ND = Not detected above laboratoy reporting levels.
< = Less than laboratory Reporting Limit.

Oregon DEQ Soil Exposure Pathways
Occ. = Occupational receptor
Cons. = Construction Worker receptor
Exc. = Excavation Worker receptor
RBCss = Soil Ingestion, Dermal Contact, and Inhalation
RBCsi = Vapor Intrusion into Buildings
RBCsw = Leaching to Groundwater
RBCtw = Ingestion and Inhalation from Tapwater

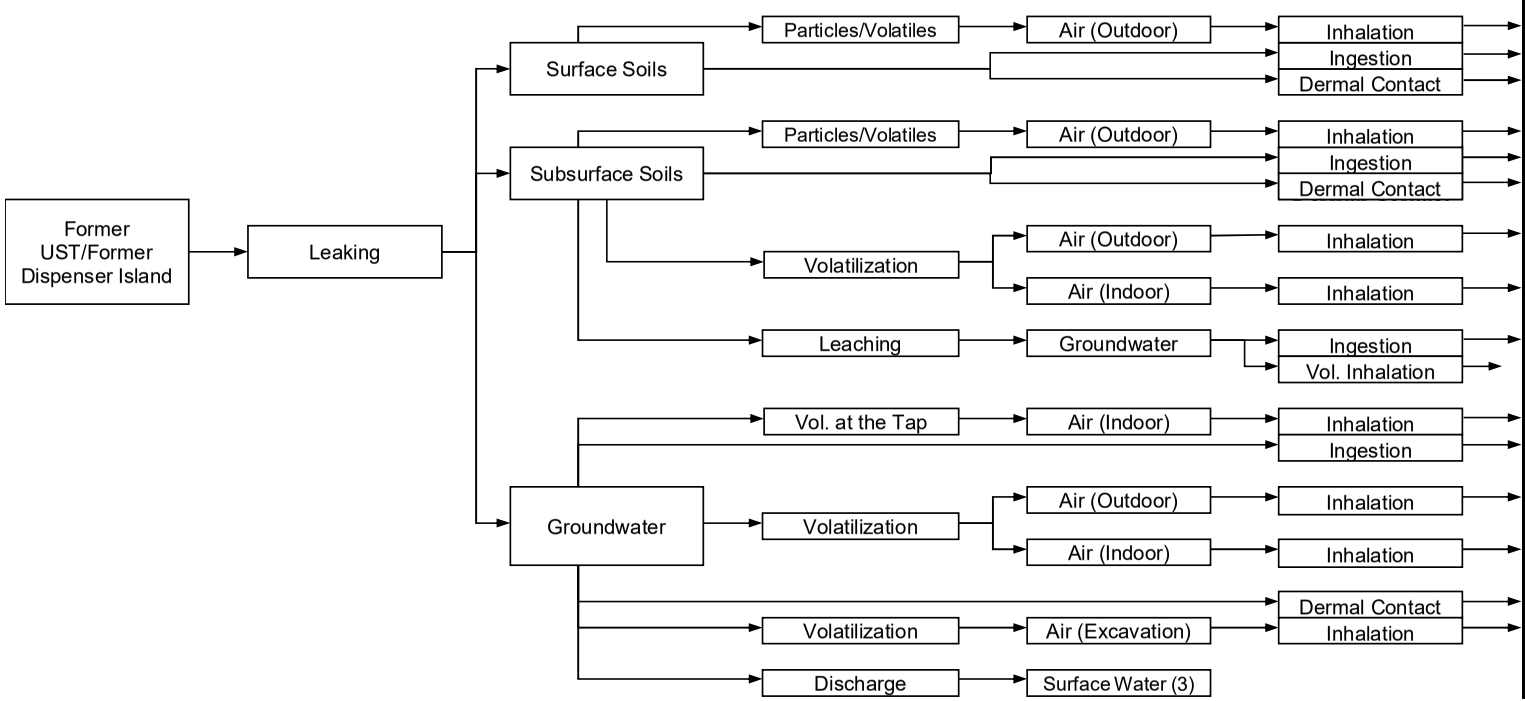
TABLE 6
Summary of Soil Analytical Results
Confirmation Soil Samples - Metals, PAHs, PCBs
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

Sample ID	Sample Depth (feet)	Sample Date	Soil Removed or Remains In-Place	Metals	PAHs																		PCBs
				Lead	1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Chrysene	Dibenz(a,h) anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd) pyrene	Naphthalene	Phenanthrene	Pyrene	Other PAHs	Total PCBs
Confirmation Grab Samples																							
UST-1-S-B-9	9	6/3/2019	In-Place	**74.5**	< 0.0298	< 0.0298	< 0.00895	< 0.00895	**0.0141**	**0.0364**	**0.0547**	**0.0641**	**0.0449**	**0.0561**	< 0.00895	**0.124**	**0.0105**	**0.0352**	< 0.0298	**0.126**	**0.126**	ND	NA
UST-2-S-B-9	9	6/3/2019	In-Place	**77.6**	< 0.0256	< 0.0256	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.00767	< 0.0256	< 0.00767	< 0.00767	ND	NA
SWC-Bottom	10	6/18/2019	Removed	**72.1**	**8.79**	**19.5**	**0.0558**	< 0.00705	**0.0181**	< 0.00705	< 0.00705	< 0.00705	< 0.00705	< 0.00705	< 0.00705	**0.0204**	**0.0706**	< 0.00705	**25.6**	**0.0968**	**0.0291**	ND	NA
NWC	8	6/18/2019	Removed	**28.3**	**21.3**	**46.2**	**0.0878**	< 0.00736	**0.0510**	**0.0182**	**0.00846**	< 0.00736	**0.0102**	**0.00927**	< 0.00736	**0.0378**	**0.102**	< 0.00736	**36.4**	**0.125**	**0.0395**	ND	NA
NEC	8	6/18/2019	In-Place	**14.4**	**0.229**	**0.483**	< 0.00741	< 0.00741	< 0.00741	< 0.00741	< 0.00741	**0.00885**	< 0.00741	< 0.00741	< 0.00741	**0.0191**	< 0.00741	< 0.00741	**0.222**	**0.0147**	**0.0157**	ND	NA
SEC	8	6/18/2019	In-Place	**13.5**	< 0.0214	< 0.0214	< 0.00643	< 0.00643	< 0.00643	< 0.00643	< 0.00643	< 0.00643	**0.00823**	< 0.00643	< 0.00643	< 0.00643	< 0.00643	< 0.00643	< 0.0214	< 0.00643	< 0.00643	ND	NA
Risk-Based Concentrations																							
Occ. RBCss				800	….	….	70,000	….	350,000	21	2.1	21	….	2,100	2.1	30,000	47,000	21	23	….	23,000	--	0.59
Cons. RBCss				800	….	….	21,000	….	110,000	170	17	170	….	17,000	17	10,000	14,000	170	580	….	7,500	--	4.9
Exc. RBCss				800	….	….	590,000	….	>Max	4,800	490	4,900	….	490,000	490	280,000	390,000	4,900	16,000	….	210,000	--	140
Occ. RBCso				NV	….	….	>Max	….	>Max	>Csat	NV	NV	….	NV	NV	NV	>Max	NV	83	….	>Max	--	….
Occ. RBCsi				NV	….	….	>Max	….	>Max	>Csat	NV	NV	….	NV	NV	NV	>Max	NV	83	….	>Max	--	….
Occ. RBCsw				30	….	….	>Csat	….	>Csat	>Csat	>Csat	>Csat	….	>Csat	>Csat	>Csat	>Csat	>Csat	0.34	….	>Csat	--	1.1
CFV/OBM				28	0.36	11	0.25	120	6.8	0.73	0.11	1.1	25	3.1	0.11	10	3.7	1.1	0.077	5.5	10	--	….

Notes and Qualifiers:
All analytical resulted are reporting in milligrams per kilograms (mg/kg)
Analytes with no detection above the laboratory reporting limit are not presented in the table above. A full list of analytes and results is included in the laboratory analytical report.
…. = No Published RBCs or CFV.
>Csat = The soil RBC exceeds the limit of three-phase equilibrium partitioning.
>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.
NV = This chemical is considered "nonvolatile" for purposes of the exposure calculations.
EPA = Environmental Protection Agency
Metals = Anayzed by EPA Method 6000 series
VOCs = Volatile Organic Compounds
PAHs = Polynuclear Aromatic Hydrocarbons analyzed by EPA Method 8270 SIM
PCBs = Polychlorinated Biphenyls analyzed by EPA Method 8281. Result summarized above are a combined total of report results. The RL is listed if no detection were reported.
NA = Not Analyzed
NS = Not Sampled
< = Less than laboratory Reporting Limit.
* = Leaching-to-Groundwater RBCs are not provided for inorganic chemicals. If this pathway is of concern, then site-specific leaching tests must be performed.
** = Compound was also identified in associated blank.

Oregon DEQ Soil Exposure Pathways
Occ. = Occupational receptor
Cons. = Construction Worker receptor
Exc. = Excavation Worker receptor
RBCss = Soil Ingestion, Dermal Contact, and Inhalation
RBCso = Volatilization to Outdoor Air
RBCsi = Vapor Intrusion into Buildings
RBCsw = Leaching to Groundwater
CFV/OBM = DEQ Clean Fill Values and Oregon Background Metals (Portland Basin)

Table 7A
Oregon Department of Environmental Quality
RBDM Conceptual Site Model
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157



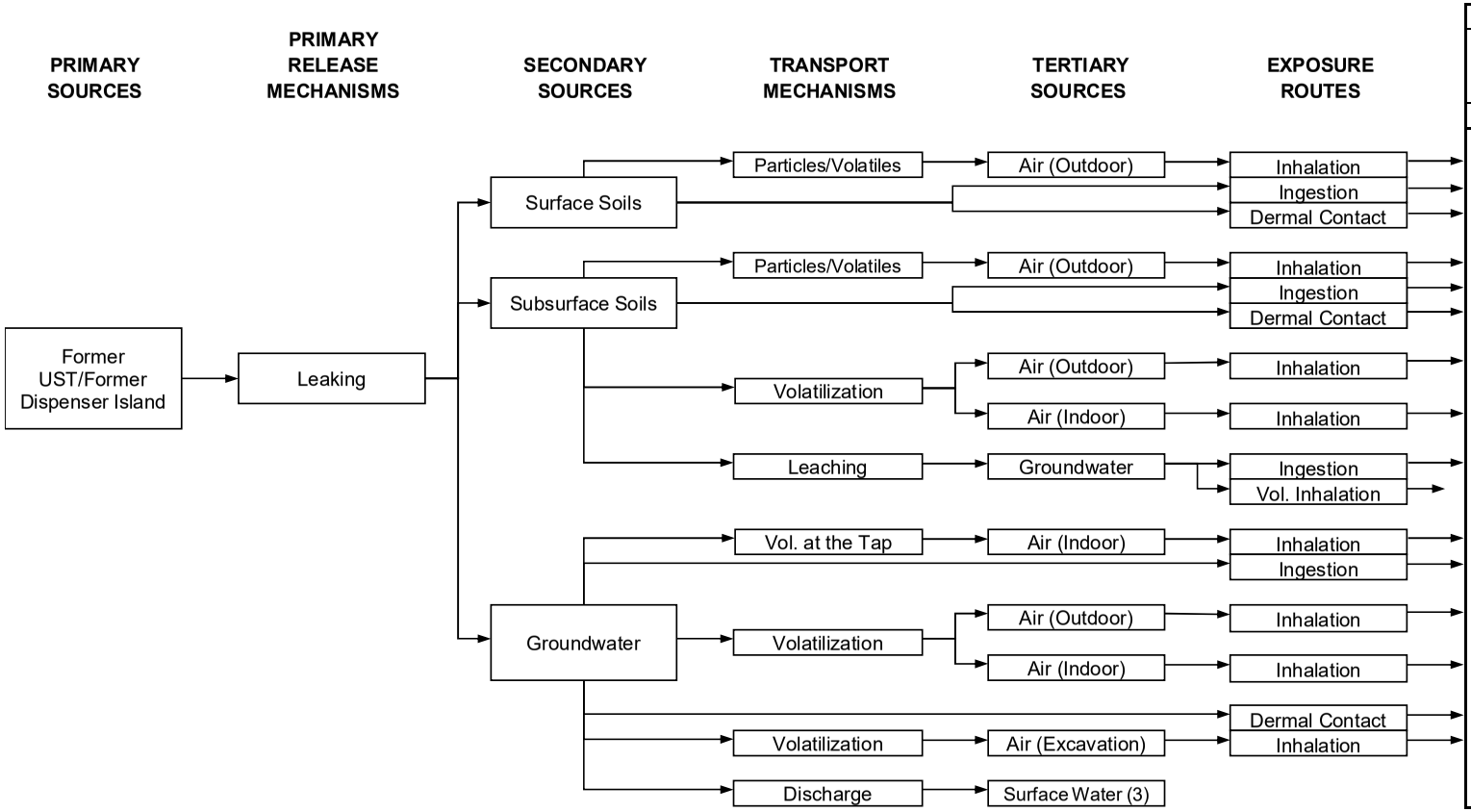
POTENTIAL RECEPTORS			
Occupational		Construction & Excavation (2)	
Current	Future	Current	Future
-	+	-	+
-	+	-	+
-	+	-	+
-	-	-	+
-	-	-	+
-	-	-	+
-	-	-	-
+	+	+	+
-	+	-	+
-	+	-	+
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

Notes:

+ This route is a primary source of exposure.
- There is no exposure by this route.
(1) Specify if urban residential or single-family residential. Include separate columns for these exposure scenarios if necessary.
(2) Include separate columns for these two exposure scenarios if necessary.
(3) Surface water contamination is not covered in the Table of RBCs and should be discussed with the Department.

Table 7B
Oregon Department of Environmental Quality
RBDM Conceptual Site Model
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

This figure illustrates how the RBCs from Appendix A relate to the pathways in the CSM.



POTENTIAL RECEPTORS			
Occupational		Construction & Excavation (2)	
Current	Future	Current	Future
-	RBCss	-	RBCss
-	RBCss	-	RBCss
-	RBCss	-	RBCss
-	-	-	RBCss
-	-	-	RBCss
-	-	-	RBCss
-	-	-	-
RBCsi	RBCsi	RBCsi	RBCsi
-	RBCsw	-	RBCsw
-	RBCsw	-	RBCsw
-	-	-	-
-	-	-	-
-	-		
-	-	-	-
-	-	-	-
-	-	-	-

Notes:

RBCsw, etc. The RBC for this pathway/receptor combination
- There is no exposure by this route.
(1) Specify if urban residential or single-family residential. Include separate columns for these exposure scenarios if necessary.
(2) Include separate columns for these two exposure scenarios if necessary.
(3) Surface water contamination is not covered in the Table of RBCs and should be discussed with the Department.

TABLE 8
Constituents of Potential Concern and Contituents of Concern in Soil
8145 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157

Constituents of Potential Concern (COPCs)	Maximum Constituent Concentration (mg/kg)	Sample ID	Sample Date	Generic RBCs (DEQ, 2019)						Constituent of Concern (COC)? (Yes/No)
				Soil Ingestion, Dermal Contact, and Inhalation			Volatilization to Outdoor Air	Vapor Intrusion into Buildings	Leaching to Groundwater	
				Occ.	Const.	Exc.	Occ.	Occ.	Occ.	
GRO	**727**	**SWC-Bottom**	**6/3/2019**	**20,000**	**9,700**	**>Max**	**69,000**	**>Max**	**130**	**Yes**
DRO	1,060	B6-9	1/4/2018	14,000	4,600	>Max	>Max	>Max	>Max	No
RRO	2,600	B6-9	1/4/2018	36,000	11,000	>Max	>Max	>Max	>Max	No
1,2,3 - Trimethylbenzene	74.8	SWC-Bottom	6/18/2019	….	….	….	….	….	….	No
1,2,4 - Trimethylbenzene	153	SWC-Bottom	6/18/2019	6,900	2,900	81,000	>Csat	>Csat	48	**Yes**
1,3,5 - Trimethylbenzene	80.9	SWC-Bottom	6/18/2019	6,900	2,900	81,000	>Csat	>Csat	53	**Yes**
2-Butanone (MEK)	0.0431	NEC	6/18/2019	….	….	….	….	….	….	No
Acetone	0.125	B6-9	1/4/2018	….	….	….	….	….	….	No
Ethylbenzene	17.2	SWC-Bottom	6/18/2019	150	1,700	49,000	160	17	0.90	**Yes**
Isopropylbenzene	3.05	SWC-Bottom	6/18/2019	57,000	27,000	750,000	>Csat	>Csat	>Csat	No
Naphthalene	**38.9**	**SWC-Bottom**	**6/18/2019**	**23**	**580**	**16,000**	**83**	**83**	**0.34**	**Yes**
n-Butylbenzene	10.5	SWC-Bottom	6/18/2019	….	….	….	….	….	….	No
n-Propylbenzene	16.6	SWC-Bottom	6/18/2019	….	….	….	….	….	….	No
p-Isopropyltoluene	2.09	SWC-Bottom	6/18/2019	….	….	….	….	….	….	No
sec-Butylbenzene	3.10	SWC-Bottom	6/18/2019	….	….	….	….	….	….	No
Tetrachloroethene	0.0104	B6-9	1/4/2018	1,000	1,800	50,000	>Csat	36	1.9	No
Toluene	2.18	NWC	6/18/2019	88,000	28,000	770,000	>Csat	>Csat	490	No
Xylenes (total)	**190**	**SWC-Bottom**	**6/18/2019**	**25,000**	**20,000**	**560,000**	**>Csat**	**>Csat**	**100**	**Yes**
Arsenic	**3.64**	**B-10 2.5**	**2/21/2019**	**1.9**	**15**	**420**	**NV**	**NV**	*	**Yes**
Barium	225	B-9 2.5-4	2/21/2019	220,000	69,000	>Max	NV	NV	*	No
Chromium	18.6	B-10 2.5	2/21/2019	>Max	530,000	>Max	NV	NV	*	No
Lead	**200**	**SS-2A**	**6/3/2019**	**800**	**800**	**800**	**NV**	**NV**	**30**	**Yes**
Mercury	0.0362	B-10 2.5	2/21/2019	350	110	2,900	NV	NV	*	No
1-Methylnaphthalene	21.3	NWC	6/18/2019	….	….	….	….	….	….	No
2-Methylnaphthalene	46.2	NWC	6/18/2019	….	….	….	….	….	….	No
Acenaphthene	0.0923	SS-2A	6/3/2019	70,000	21,000	590,000	>Max	>Max	>Csat	No
Acenaphthylene	0.0922	SS-2A	6/3/2019	….	….	….	….	….	….	No
Anthracene	0.0562	SS-2A	6/3/2019	350,000	110,000	>Max	>Max	>Max	>Csat	No
Benzo(a)anthracene	0.158	SS-2A	6/3/2019	21	170	4,800	>Csat	>Csat	>Csat	No
Benzo(a)pyrene	0.206	SS-2A	6/3/2019	2.1	17	490	NV	NV	>Csat	No
Benzo(b)fluoranthene	0.23	SS-2A	2/21/2019	21	170	4,900	NV	NV	>Csat	No
Benzo(g,h,i)perylene	0.200	SS-1A	2/21/2019	….	….	….	….	….	….	No
Chrysene	0.204	SS-2A	6/3/2019	2,100	17,000	490,000	NV	NV	>Csat	No
Dibenz(a,h)anthracene	0.0407	SS-2A	2/21/2019	2.1	17	490	NV	NV	>Csat	No
Fluoranthene	0.654	SS-2A	6/3/2019	30,000	10,000	280,000	NV	NV	>Csat	No
Fluorene	0.102	NWC	6/3/2019	47,000	14,000	390,000	>Max	>Max	>Csat	No
indeno(1,2,3-cd) pyrene	0.133	SS-1A	6/3/2019	21	170	4,900	NV	NV	>Csat	No
Phenanthrene	0.343	UST-1-S-B-9	6/3/2019	….	….	….	….	….	….	No
Pyrene	0.406	UST-1-S-B-9	6/3/2019	23,000	7,500	210,000	>Max	>Max	>Csat	No
Total PCBs	0.176	B6-9	1/4/2018	0.59	4.9	140	….	….	1.1	No

Notes
Analytes with no detection above the laboratory reporting limit are not presented in the table above.
mg/kg = milligrams per kilogram
…. = No Published RBCs, or the exposure pathway for this compound is indirect and has been addressed through a direct exposure pathway scenario.
>Csat = The soil RBC exceeds the limit of three-phase equilibrium partitioning.
>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.
NV = This chemical is considered "nonvolatile" for purposes of the exposure calculations.
DEQ = Oregon Department of Environmental Quality
RBC = Risk-Based Concentration
TPH = Total Petroleum Hydrocarbons
GRO = TPH as Gasoline Range Organics - Analyzed by Northwest Method NWTPH-Gx
DRO = TPH as Diesel Range Organics - Analyzed by Northwest Method NWTPH-Dx
RRO = TPH as Residual/Oil Range Organics - Analyzed by Northwest Method NWTPH-Dx
VOCs = Volatile Organic Compounds analyzed by EPA Method 8260
RCRA Metals = Resource Conservation and Recovery Act Metals anayzed by EPA Method 6000/7000 series
PAHs = Polynuclear Aromatic Hydrocarbons analyzed by EPA Method 8270 SIM
PCBs = Polychlorinated Biphenyls analyzed by EPA Method 8281. Result summarized above are a combined total of report results. The RL is listed if no detection were reported.
Occ. = Occupational receptor
Cons. = Construction Worker receptor
Exc. = Excavation Worker receptor

APPENDIX C – PREVIOUS SITE INVESTIGATION REPORTS

EarthTouch, Inc.
3135 North Fairfield Road, Suite D
Layton, Utah 84041

16-Aug-2016

via e-mail

Ms. Regina Korby
Geneva Equities, LLC
540 2nd Avenue North, Suite 101
Ketchum, Idaho 83333

RE: Sub-slab soil vapor/indoor air sampling at a single-tenant commercial/retail building located at 8123 SE 17th Avenue in Portland, (Multnomah County), Oregon (*subject property* or *site*).

Dear Ms. Korby;

On 15-Aug-2016, EarthTouch, Inc. completed a Phase I Environmental Site Assessment (ESA) of single-tenant commercial/retail building at 8123 SE 17th Avenue in the city of Portland in the city of Portland, (Multnomah County), Oregon (*subject property* or *site*). A Phase I ESA was performed on behalf of Geneva Equities, LLC and identified a *recognized environmental condition* associated with the historical use of the site in the 1920s as a paint store, in the 1930s as a print shop, and in the 2000s as a vinyl print shop. Additional environmental concerns associated with the subject property included the location of the site adjacent to and sharing a common wall with a former gasoline service station and automotive service and repair facility on the adjoining property to the north. The building abutting the site was the former location of a grease/service rack and this property also included seven underground storage tanks (USTs), which were removed from the ground in the late 1980s.

At the completion of a cursory review of historical uses and coincident with the site inspection associated with the Phase I ESA, Geneva Equities, LLC engaged EarthTouch, Inc. to arrange and oversee collecting and analyzing sub-slab vapor and indoor air samples from within the building at the site. The scope of work included collecting/analyzing vapor samples from two locations beneath the foundation of the building in areas proximate to the adjoining building to the north and retail space; and collecting and analyzing an indoor air sample within the retail space and an ambient outdoor air (control) sample.

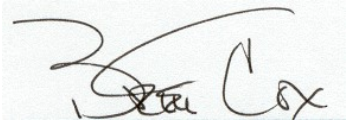
The indoor air sample collected in building identified 1,2-dichloroethane (DCE) and benzene at concentrations above the US Environmental Protection Agency (EPA) Generic Screening Levels (GSLs) for commercial/industrial use. However, DCE and benzene were also identified in the ambient air sample at much higher concentrations than the indoor air sample with essentially no concentrations of DCE and benzene in sub-slab vapor when considering attenuation across the slab in accordance with the guidelines of the US Environmental Protection Agency (EPA). This suggests that the concentrations of DCE and benzene in the indoor air sample are likely due to the influx of these contaminants into the air of the retail space from outside/ambient air through repeated opening/closing of pedestrian doors and/or make-up air in the ventilation system. In summary, there does not appear to be a vapor migration and encroachment condition associated with the reported concentrations of DCE and benzene in indoor air based on the data gathered through sub-slab vapor and indoor air sampling.

Given the past history of the site, the physical and chemical nature of the contaminants identified associated with past uses, and application of very conservative risk-based levels protective of occupant health in the evaluation of sub-slab vapor and indoor air; there does not appear to be a vapor migration or encroachment hazard at the subject property.

Based on the results of the sub-slab vapor/indoor air sampling, no further investigation of the site appears warranted at this time. In addition, the sub-slab vapor/indoor air sampling investigation appear to adequately address the *recognized environmental condition* that was identified in the Phase I ESA and associated areas of concern (AOC) with respect to the subject property.

We appreciate the opportunity to assist Geneva Equities, LLC with this project. Should you have any questions regarding this memorandum, please contact me at your convenience at: 801.771.2800.

Sincerely;
EarthTouch, Inc.



Brett Cox
President / Senior Scientist

cc: Steve Giacobbi Geneva Equities, LLC
Tanna Maestas EarthTouch, Inc.

ATTACHMENT

FINDINGS FROM INDOOR AIR AND SUB-SLAB VAPOR INTRUSION SAMPLING

(RMEC Environmental, Inc.)

RMEC PJ16E-3191

August 16, 2016

Brett Cox
Earth Touch, Inc.
3135 North Fairfield Road, Suite D
Layton, Utah 84041

Transmitted via email to: bcox@earthtouchinc.com

SUBJECT: FINDINGS FROM INDOOR AIR AND SUB-SLAB VAPOR INTRUSION SAMPLING

Re: Commercial Property
8123 SE 17th Avenue
Portland, OR

Dear Mr. Cox:

RMEC Environmental, Inc. (RMEC) is hereby providing Earth Touch, Inc. (Earth Touch) with the findings from the air sampling and sub-slab soil vapor sampling conducted at the above-referenced property ("subject property") in Portland, Oregon. The purpose of the sampling was to address potential soil vapor migration concerns related to a potential underground sources of petroleum vapors and other volatile organic compounds (VOCs) identified in the Earth Touch Phase I Environmental Site Assessment (ESA).

FIELD ACTIVITIES

The indoor air and sub-slab samples were collected on August 4, 2016 by Senior Project Manager, Daryl Hancock, CHMM, CEM. Sample locations are described below.

Indoor and Outdoor Air Samples

One indoor and one outdoor air sample were collected at the site using 1-liter Tedlar bags over a 3 to 4 hour time period. The air samples were collected concurrent to the collection of the sub-slab samples (described below). The indoor air sample, designated "Air-In", was collected from an open area at the southwestern corner of the Sam's Attic store. The outdoor air sample, designated "Air-Out", was taken outside along the south side of the building in the parking lot area. Sample locations are noted on the Sample Location Map in Attachment A.

Sub-slab Soil Vapor Samples

RMEC collected two (2) sub-slab soil vapor samples in the building. The sub-slab samples were collected from probes installed through the concrete slab. The sample locations are noted on the Sample Location Map with the designation "SS". At each SS sample location, a one-inch diameter hole was drilled in the concrete floor of the building and a soil vapor probe beneath the building slab. The sample line was capped and sealed in place with a hydrated bentonite slurry.

The probes remained in place for over 2 hours in order to allow sub-slab vapors to accumulate before sampling. After the waiting period, the sampling train was purged and the sub-slab samples were collected in 1-liter Tedlar bags using vacuum box and a personal air sampling pump at a flow rate of 200-cc/minute.

Upon completion of the sampling, all of the indoor air samples and soil vapor samples were submitted under chain of custody to ALS Laboratories of Salt Lake City, Utah, and analyzed for VOCs in accordance with EPA Method TO15. The TO15 analytical method used for the indoor air and soil vapor samples is a standard method used for the evaluation of volatile organic compounds (VOCs) in air samples.

RESULTS AND DISCUSSIONS

Attachment B contains data tables summarizing the results of the air and sub-slab soil vapor sampling. Table 1 summarizes the levels of VOCs that were measured in the indoor and outdoor air samples and Table 2 summarizes the levels of VOCs that were measured in the sub-slab soil vapor samples. The full laboratory reports containing all of the analytical data are in Attachment C.

Table 1 compares the target VOCs detected at the indoor and outdoor sample locations to the May 2016 EPA Region 9 Generic Screening Levels (GSLs) for industrial air. These GSLs are recommendations only and are not considered mandatory. The GSLs cited in the tables are based on a cancer target risk (TR) of 1E-06 or a non-cancer hazard index (HI) of 0.1, whichever is lower. These GSLs are the most conservative risk-based screening levels published by the EPA and less conservative GSLs may be appropriate for some sites.

Table 2 compares the target VOCs measured in the sub-slab soil vapor samples to the May 2016 EPA Region 9 Generic Screening Levels (GSLs) for industrial air. However, in order to determine whether target VOC levels measured in the soil vapor samples could present a risk to the building occupants, the VOCs measured in the sub-slab and near-slab soil vapors are compared to the same EPA Region 9 GSLs after an attenuation factor is applied to the screening levels. For the sub-slab samples presented in Table 2, the latest EPA-recommended default attenuation factor of 33 has been applied to the screening levels to account for the attenuation of these soil vapors between the sub-surface environment and the breathing zones of the building occupants. Other states, including Oregon, may have different default attenuation factors in their individual state guidelines on vapor intrusion investigations.

Please note that not all of the target VOCs included in the tables have a listed risk-based screening level. If no risk-based screening level was listed, it was because the EPA did not publish a generic screening level for that chemical. There may be a variety of reasons why the EPA did not develop a risk-based screening level for a particular chemical. The EPA may have decided that a particular chemical had a low level of toxicity or otherwise did not present a significant risk to the general population. In any case, to be consistent, RMEC only used the risk-based screening levels published in the EPA GSL tables for comparison to the measured VOCs in this study.

DATA INTERPRETATION

Sub-Slab Soil Vapor Samples

No VOCs were detected in any of the sub-slab soil vapor samples above the GSL for industrial air (with an assumed attenuation of 33 across the slab).

Indoor Air Samples

The following VOCs in the indoor air of subject building exceeded the cited GSL for commercial air:

1,2-Dichloroethane (1,2-DCA)
The indoor air sample collected from within the building contained 0.98 µg/m^3 of 1,2-DCA, which exceed the GSL of 0.47 µg/m^3 for industrial air. No 1,2-DCA was detected in the outdoor sample and the concentrations of 1,2-DCA in the sub-slab environment ranged 20-50% higher than the indoor air.

Benzene
The indoor air sample collected from within the building contained 3.1 µg/m^3 and the outdoor air sample contained 10 µg/m^3 of benzene. Both values exceed the GSL of 1.6 µg/m^3 for industrial air and, overall, were substantially higher than the concentration in the sub-slab environment.

It is worth noting that the levels of benzene, 1,2,4-trimethylbenzene, and ethyl benzene in the outdoor air also exceed industrial GSLs.

CONCLUSIONS

The solvents benzene, 1,2,4-trimethylbenzene, and ethyl benzene are indigenous to gasoline products and were all found to be above the industrial GSLs in the outdoor air sample. The outdoor levels are most likely due to the heavy automobile traffic on 17th Avenue during the sample period. In fact, all of these compounds were about 3-4 times higher in the outdoor air in comparison to the indoor air. As discussed above, the indoor air concentration of benzene exceeded the industrial air GSL; however, there was a considerable amount of customer traffic in and out of the store during the sample period, which likely resulted in a high amount of outdoor air exchange. This observation, along with the fact that the benzene was found at a higher concentration in the indoor air than in the sub-slab environment, leads RMEC to conclude that the indoor levels of benzene measured are not related to a sub-slab source, but are mostly attributable to outdoor air.

Trace levels of tetrachloroethene, or perchloroethylene (PCE), were detected in the sub-slab samples and the sub-slab concentrations of 1,2-DCA may be associated with the transformation of PCE in groundwater and soil. While the indoor 1,2-DCA levels exceeded the GSL value, it is important to note that the sub-slab concentrations of 1,2-DCA were well below the projected GSL values with an attenuation factor of 33 applied. Overall, the sub-slab concentrations were only 20-50% higher than the measured indoor air concentration and it is very unlikely that these sub-slab concentrations would lead to indoor air levels above the industrial GSLs. According to the Agency for Toxic Substances and Disease Registry (ATSDR), older consumer goods are potential sources of 1,2-DCA emissions. Given the fact that the store is full second-hand clothing, toys,

furniture, decorations, and other home furnishings, it is likely that indoor sources are contributing to the indoor levels of 1,2-DCA measured during this study.

Please feel free to contact me if you have any questions or need any additional information.

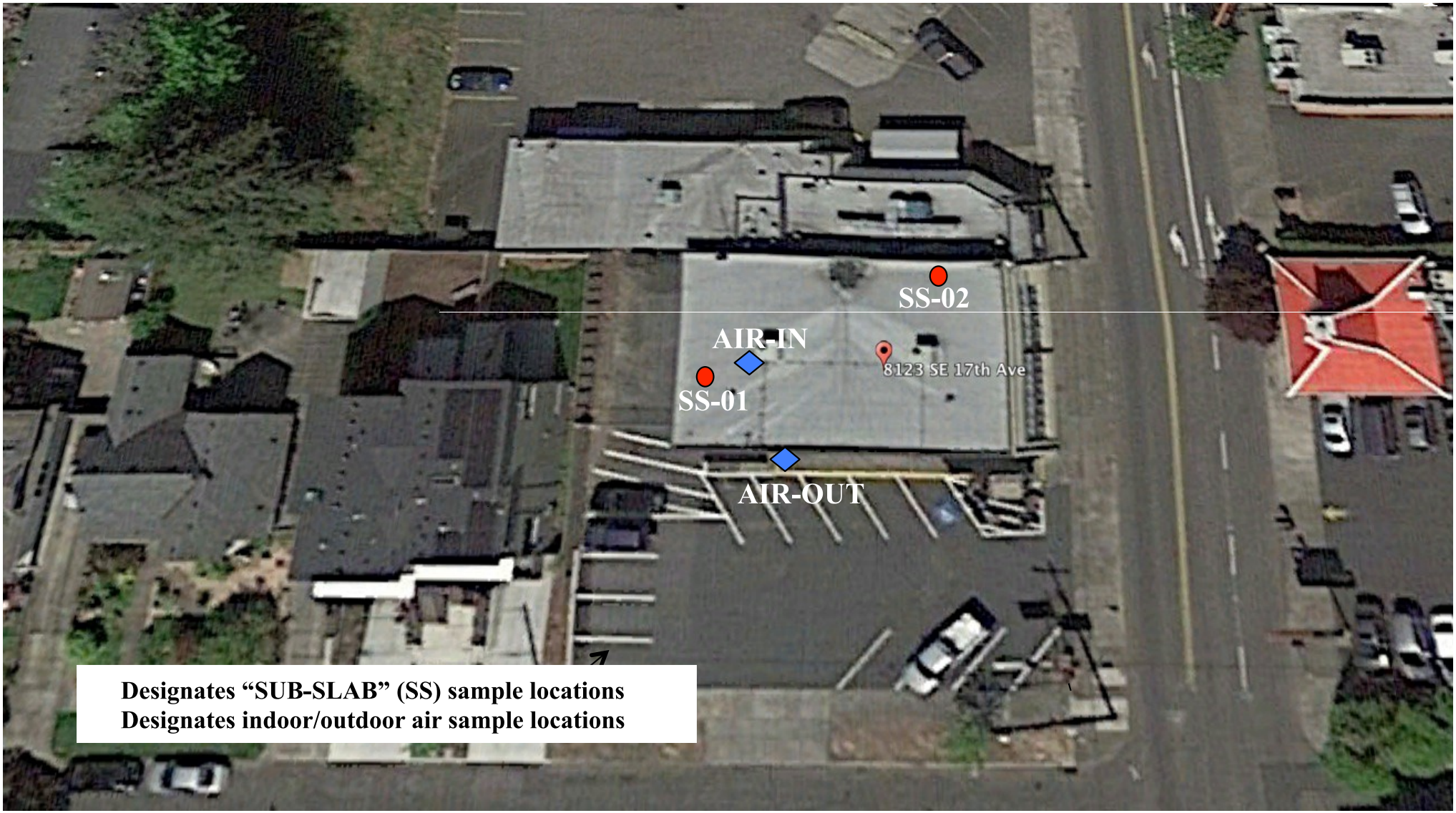
Sincerely,

Daryl Hancock, CEM, CHMM
Senior Project Manager, Vice President
RMEC ENVIRONMENTAL, INC.

Attachments:

Attachment A: Sample Location Map
Attachment B: Data Tables (1 & 2)
Attachment C: Laboratory Reports

Attachment A: Sample Location Map



PREPARED FOR:
EARTH TOUCH, INC.
RMEC Project #PJ16E-3191

Not to Scale

SAMPLE LOCATION MAP

8123 SE 17TH AVENUE
PORTLAND, OR

Attachment B: Data Tables (1 & 2)

Table 1: Comparison of Indoor Data to EPA Regional Screening Level Values for Industrial Air

SAMPLE ID	Air-Out	Air-In	EPA Regional Screening Level for Industrial Air - Carcinogenic Target Risk = 1E-06. Noncancer Hazard Index =0.1 (May 2016)
COLLECTION DATE	8/4/16	8/4/16	
SAMPLE TYPE	1-Liter Tedlar	1-Liter Tedlar	
SAMPLE LOCATION	Sam's Attic Parking Lot	Sam's Attic- Southwest Employee Area	
SAMPLE DESCRIPTION	Outdoor Air Sample	Indoor Air Sample	
Volatile Organic Compounds	*(ug/m3)*	*(ug/m3)*	*(ug/m3)*
Dichlorodifluoromethane	2.7	2.7	***44***
Chloromethane	3.4	1.8	***39***
Freon 11	1.5	1.5	***310***
Acetone	130	74	***14,000***
Carbon disulfide	18	23	***310***
Methylene chloride	5.9	7.7	***260***
2-Butanone	14	13	***2,200***
Ethyl acetate	5.3	6.2	***31***
Hexane	3.4	3.9	***310***
Tetrahydrofuran	64	27	***N/A***
1,2-Dichloroethane	<0.61	**0.98**	***0.47***
Benzene	**10**	**3.1**	***1.6***
Cyclohexane	0.95	1.0	***2,600***
Heptane	5.9	6.2	***N/A***
4-Methyl-2-pentanone	2.2	2.1	***1,300***
Toluene	16	14	***2,200***
Ethyl benzene	**5.7**	1.6	***4.9***
m,p-Xylene	19	5.3	***44***
o-Xylene	8.4	2.1	***44***
Styrene	2.2	1.7	***440***
4-Ethyl toluene	0.88	<0.74	***N/A***
1,3,5-Trimethylbenzene	1.2	<0.74	***N/A***
1,2,4-Trimethylbenzene	**4.0**	0.97	***3.1***
1,3-Dichlorobenzene	1.6	<0.90	***N/A***

N.A. = Not Applicable. No Screening Level has been published by the EPA for this chemical.
Values in **Bold** indicate an exceedance of the applicable risk-based screening level
Values below the laboratory limit of detection are not reported.

Attachment C: Laboratory Reports

Table 2: Comparison of Sub-Slab Soil Vapor Sample Data to EPA Regional Screening Level Values for Industrial Air

SAMPLE ID	SS-01	SS-02	*EPA Regional Screening Level for Industrial Air - Carcinogenic Target Risk = 1E-06. Noncancer Hazard Index =0.1 Attenuation Factor of 33 Applied (May 2016)
COLLECTION DATE	8/4/16	8/4/16	
SAMPLE TYPE	1-Liter Tedlar Bag	1-Liter Tedlar Bag	
SAMPLE LOCATION	Sam's Attic - Southwest Cleaning Closet	Sam's Attic - Along North Wall on East End	
SAMPLE DESCRIPTION	Sub-Slab Soil Vapor Sample	Sub-Slab Soil Vapor Sample	
Volatile Organic Compounds	*(ug/m3)*	*(ug/m3)*	*(ug/m3)*
Dichlorodifluoromethane	2.7	<0.74	***1,452***
Chloromethane	0.68	<0.31	***1,287***
Freon 11	1.7	1.5	***10,230***
Acetone	70	130	***462,000***
Carbon disulfide	21	16	***10,230***
Methylene chloride	7.9	7.1	***8,580***
2-Butanone	14	13	***72,600***
Ethyl acetate	6.2	4.7	***1,023***
Hexane	3.4	2.4	***10,230***
Tetrahydrofuran	20	30	***N/A***
1,2-Dichloroethane	1.5	1.2	***16***
Benzene	2.0	1.6	***53***
Cyclohexane	1.0	<0.52	***85,800***
Heptane	12	7.9	***N/A***
4-Methyl-2-pentanone	1.7	2.8	***42,900***
Toluene	13	12	***72,600***
Tetrachloroethene	1.2	3.3	***594***
Ethyl benzene	1.1	0.92	***162***
m,p-Xylene	3.5	3.1	***1,452***
o-Xylene	1.4	1.3	***1,452***
Styrene	2.0	1.3	***14,520***
1,2,4-Trimethylbenzene	0.92	0.78	***102***

*Reported values are based on May 2016 EPA Regional Screening Levels and are adjusted to account for a subslab-to-indoor air attenuation factor of 33 as per EPA 2015 OSWER Guidance.
N.A. = Not Applicable. No Screening Level has been published by the EPA for this chemical.
Values in **Bold** indicate an exceedance of the applicable risk-based screening level
Values below the laboratory limit of detection are not reported.

Limited Site Investigation

Proposed CVS Pharmacy/Store No. 11185
1672 SE Tacoma Street
Portland, Multnomah County, Oregon

January 17, 2018
Terracon Project No. 82177209

Prepared for:
CVS Pharmacy, Inc.
Woonsocket, Rhode Island

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

January 17, 2018

CVS Pharmacy, Inc.
One CVS Drive
Woonsocket, Rhode Island 02895-6146
and
T.M. Crowley & Associates

Attn: Shannon Parker
P: (317) 819-0110
E: sparker@tmcrowley.com

Re: Limited Site Investigation
Proposed CVS Pharmacy/Store No. 11185
1672 SE Tacoma Street
Portland, Multnomah County, Oregon
Terracon Project No. 82177209

Dear Ms. Parker:

Terracon Consultants, Inc. (Terracon) is pleased to submit a Limited Site Investigation (LSI) report completed at the above referenced Site in general accordance with our Proposal dated December 19, 2017 (P82177209) and Terracon's Corporate Services Agreement with CVS Pharmacy, Inc., dated April 1, 2015. The report presents data from recent field activities that included a geophysical survey, the completion of soil borings and the collection of soil samples for chemical analysis. The activities were completed to assess the potential presence of compounds of concern from historical auto repair operations and former underground storage tank (UST) systems at the Site.

Terracon appreciates this opportunity to provide environmental engineering services to CVS Pharmacy, Inc. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

Jeremy Hatfield

Jeremy D. Hatfield
Staff Geologist

Gary R. Henningsen
Senior Geologist

TABLE OF CONTENTS

LIMITED SITE INVESTIGATION

Proposed CVS Pharmacy/Store No. 11185
1672 SE Tacoma Street
Portland, Multnomah County, Oregon

January 17, 2018
Terracon Project No. 82177209

1.0 SITE DESCRIPTION AND BACKGROUND INFORMATION

The Site is located at 1672 SE Tacoma Street in Portland, Oregon (Parcel No. R267565). The Site is improved with an approximately 3,406 square foot retail space and associated parking currently being used as a Goodwill Donation Center and Penguin Pub. The Site location is illustrated on a Topographic Map as Exhibit 1 in Appendix A. Terracon Consultants, Inc. (Terracon) prepared a Phase I Environmental Site Assessment (ESA) report (Terracon Project No. 82177205) on January 5, 2017 for the Proposed CVS Pharmacy/Store No. 11185. Based on the information obtained during the ESA, Terracon identified the following RECs in connection with the Site:

- There are two in-ground hydraulic lifts located in the west bay of the Goodwill Donation Center. Additionally, building records indicate two lifts in the east bay of the Goodwill Donation Center. The lifts are likely associated with past auto repair operations and, based on their configuration, can be a source of subsurface releases. No prior testing was reported for these lifts.
- Building records indicate the presence or past presence of a potential waste pit in the east bay of the Goodwill Donation Center. This area of the building is covered with carpet and a pit was not observed during the Phase I ESA Site reconnaissance. There is the potential that a pit can be a source of subsurface releases and no prior testing was reported for the pit.
- Building records indicate the presence or past presence of a sump in the west bay of the Goodwill Donation Center. The sump was not observed during the Site reconnaissance. There is the potential that a sump can be a source of subsurface releases and no prior testing was reported for the sump.
- Seven USTs were decommissioned by removal in 1989; however, it does not appear that adequate confirmation soil sampling was performed and there may be remaining subsurface impacts in connection with the former USTs. In addition, remnant fuel dispenser island features remain on the Site, which may overlay remaining subsurface impacts.
- Auto repair operations previously took place in the Goodwill Donation Center portion of the Site building for an undetermined amount of time. Auto repair and servicing can be a source of subsurface releases.

Based on the findings of the ESA, Terracon recommended additional investigation in connection with the above-identified RECs on the Site.

2.0 SCOPE OF SERVICES

The LSI scope of services for this Site were outlined in Terracon's Proposal No. P82177209 prepared for T.M. Crowley & Associates (T.M. Crowley) and dated December 19, 2017. The objectives of the scope of services included completion of a geophysical survey to evaluate for subsurface anomalies which may represent suspect USTs or former UST pits, and for a reported waste pit and lifts within the structure located on the Site. Based on the findings of the geophysical survey, a subsurface soil sampling program was completed to assess the potential presence of compounds of concern associated with historical auto repair operations and former USTs at the Site. The detected concentrations were compared to Oregon Department of Environmental Quality (DEQ) Risk-Based Concentrations (RBCs) and Clean Fill Values to evaluate if concentrations of compounds in soil exceed the applicable standards.

2.1 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These Limited Site Investigation services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

2.2 Additional Scope Limitations

Findings, and conclusions, resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this Limited Site Investigation. Subsurface conditions may vary from those encountered at specific test pits, borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, and our findings, are based solely upon data obtained at the time and within the scope of these services.

2.3 Reliance

This LSI report is prepared for the exclusive use and reliance of T.M. Crowley and CVS Pharmacy, Inc., its parent affilates and subsidiaries and their successors, assigns, and grantees and in accordance with the Corporate Services Agreement, Use or reliance by any other party is prohibited without the written authorization of T.M. Crowley and CVS Pharmacy, Inc., and Terracon Consultants, Inc. (Terracon).

Reliance on the LSI by the client and all authorized parties will be subject to the terms, conditions and limitations stated in the LSI report, the Terracon proposal, and the Corporate Services Agreement. The limitation of liability defined in the Corporate Services Agreement is the aggregate limit of Terracon's liability to the client and all relying parties.

3.0 FIELD INVESTIGATION

Terracon conducted the fieldwork under a safety plan developed for this project. Work was performed using Occupational Safety and Health Administration (OSHA) Level D work attire consisting of hard hats, safety glasses, protective gloves, and protective boots. Prior to field activities, Underground Service Alert (Dig Alert Ticket No: 17327200) was requested by Terracon personnel for clearance of public underground utilities and the boring locations were cleared during the geophysical survey by a private utility locator.

3.1 Geophysical Survey

Terracon subcontracted Pacific Geophysics to perform a geophysical survey across the parking lot at the Site and inside the former automotive service bays of the existing Goodwill Donation Center. The survey was performed on January 3, 2018 and the survey methods and findings are detailed in their report. A copy of Pacific Geophysics' report is attached in Appendix E.

The geophysical survey included electromagnetic (EM) and ground-penetrating radar (GPR) surveys across the asphalt-covered ground-surface parking lot, and a GPR survey inside the former service bays of the building. Boring locations were also cleared of buried obstructions or piping. Surface features that were present in the parking lot during the geophysical survey included a concrete pad with rebar surrounding former fuel dispenser islands, stormwater catch basins, and a sign post and poles.

Several magnetic anomalies (A through G) were detected during the EM survey. Three magnetic anomalies marked with an A are interpreted to be caused by the apartment building wall and its footing. Anomaly B is interpreted to be caused by the sign, its footing, water and gas lines and a metal post cut off at ground level. No three-dimensional (3D) object was detected with the Tracer at the anomaly B location.

No subsurface anomalies were identified in association with magnetic anomalies C, D, E and F with the Tracer and GPR. A suspicious asphalt patch was observed near anomaly E near the end of a former fuel dispenser island. Anomaly E may be caused by metal piping associated with a pump island from a previous UST system.

No 3D object was detected with the Tracer and GPR in relation to magnetic anomaly G. It was interpreted that anomaly G was possibly caused by the overhead canopy structure. The locations of the suspect anomalies and subsurface features identified during the survey are depicted in Appendix E.

GPR profiles were collected at intervals of 5 to 7 feet across the area north of the two buildings for the purpose of locating possible disturbed soil zones that could indicate the location from which USTs had been removed (tank-pits). One possible tank pit was detected southeast of the existing pump-island pad. A second suspicious disturbed-soil zone that may be a tank pit was detected near the Goodwill sign. No suspicious anomalies indicating the existence of large metallic objects (or USTs) were detected in the surveyed area.

The Schonstedt gradiometer was used to locate the hoists and waste pit inside the building but surface objects, including a short divider wall, interfered. Several pipes were seen in the radar profiles.

Eight proposed boreholes were cleared. Two boring (B1 and B2) were located and cleared near the former fuel dispenser islands on the Site. The GPR survey detected two suspicious disturbed-soil zones, one located in the southeast corner of the parking lot and one in the northwest-center part of the parking lot. One boring (B3) was located and cleared in the disturbed-soil zone in the southeast corner of the parking lot, and two borings (B4 and B5) were located and cleared in the disturbed-soil zone in the northwest-center part of the parking lot.

Two borings (B6 and B7) were located and cleared inside the existing building near former hydraulic lifts, and one boring (B8) was located and cleared near the suspect former waste pit inside the building at the Site. During our field investigation, Terracon cut out a section of carpet near the suspect former waste pit and exposed a metal plate covering a concrete box that contained piping and valves typically associated with water utility lines (or valve box).

3.2 Soil Sampling

Terracon completed subsurface soil sampling at the Site on January 4, 2018 by advancing a total of eight soil borings (B1 through B8) using direct-push drilling equipment by an Oregon licensed driller. Five borings were advanced in the parking lot to assess the former UST systems and three borings were advanced inside the building to assess former auto repair operations. The approximate boring locations are illustrated on Exhibit 2 in Appendix A.

Boring B1 and B2 were advanced to approximately 12 and 20 feet below the ground surface (bgs); respectively, near the former fuel dispenser islands at the southeast corner of the Site parking lot. Boring B3 was advanced to approximately 20 feet bgs near the former USTs at the southeast corner of the Site parking lot. Borings B4 and B5 were advanced to approximately 15 and 20 feet bgs; respectively, in the disturbed-soil zone in the northwest-center of the parking lot interpreted as a former UST pit.

Boring B6 was advanced to approximately 15 feet bgs near the former hydraulic lift inside the western portion of the building. Due to the limited access through doorways and the ceiling clearance within the existing building, a limited access rig was required in order to complete borings B7 and B8 in the vicinity of the in-ground lifts and reported waste pit areas. During our field investigation, Terracon cut out a section of carpet near the suspect former waste pit and exposed a utility valve box. Borings B7 and B8 met refusal at approximately 3 feet bgs near former hydraulic lifts and the suspect waste pit/valve box inside the central portion of the Site building.

Groundwater was not encountered in any of the borings during drilling activities.

To the extent practicable, soil samples were screened “continuously” from each of the borings. Soil was observed to document subsurface conditions and visual and/or olfactory indications of petroleum hydrocarbons or other impacts. The samples were field-screened with a photoionization detector (PID) to semi-quantitatively estimate the presence of volatile organic compounds (VOCs) using the “headspace method.” The PID field screening results from the borings are summarized on the boring logs in Appendix C. Two soil samples from borings B1 through B6 were selected for laboratory analysis. In summary, the soil samples collected from these six borings with the highest relative PID response and/or the soil sample near the bottom of the boring were selected for laboratory analysis. Due to drilling refusal in borings B7 and B8, the soil samples collected near the bottom of these borings were selected for laboratory analysis.

After packaging each sample in laboratory-provided containers, Terracon recorded the sample time on each container label in permanent ink and placed the filled containers in an ice-filled cooler with the chain-of-custody for transport to the nearest FedEx location. FedEx then delivered the samples to ESC Lab Sciences, an Oregon-certified laboratory, for analysis. The samples were analyzed under standard chain-of-custody procedures using rush three-day turnaround time.

After sampling, the borings were decommissioned by backfilling the borings with bentonite chips immediately upon the conclusion of field work for this investigation. The boreholes were then capped with asphalt or concrete as appropriate to approximately match the existing ground surface.

Investigation-derived waste (IDW) consisting of soil cuttings and equipment decontamination water generated during the field activities were placed into a Department of Transportation (DOT)

approved 55-gallon steel drum and staged near the building on the western portion of the Site. The analytical results from the collected soil samples are being used for characterization of the IDW. Terracon is in the process of arranging the removal of the drum for proper disposal with Waste Express of Portland, Oregon.

3.3 Laboratory Analysis

The fourteen soil samples collected from borings B1 through B8 were submitted to an Oregon-certified laboratory and analyzed for total petroleum hydrocarbons (TPH) as gasoline-range organics (GRO) by Method NWTPH-Gx and TPH as diesel-range organics (DRO) and residual-(oil) range organics (RRO) by Method NWTPH-Dx; respectively, volatile organic compounds (VOCs) by EPA Method 8260B, polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270C, polychlorinated biphenyls (PCBs) by EPA Method 8082, and/or metals (cadmium, chromium, and/or lead) by EPA Method 6010/7471.

Based on the detected concentration of total lead detected in soil samples B3-8, the laboratory was instructed to analyze this sample using the toxicity characteristic leaching procedure (TCLP).

The samples were analyzed under standard chain-of-custody procedures using a rush three-business day turnaround time.

4.0 RESULTS OF THE FIELD INVESTIGATION

4.1 Geology/Hydrogeology

In summary, approximately 5 feet of fill material consisting of brown sand with gravel overlies brown silty gravel and sand with cobbles and fractured rock to the maximum depths explored of 20 feet bgs in borings B1 through B3. Approximately 3 feet of fill material consisting of brown sandy silt with trace gravel overlies brown silty gravel and sand with cobbles and fractured rock to the maximum depths explored of 20 feet bgs in borings B4 through B6. Approximately 3 feet of fill material consisting of brown sandy silt with trace gravel was encountered in borings B7 and B8. Probe refusal was encountered in five of the eight borings due to dense sand, gravel, cobbles, and fractured rock in the subsurface soils. It should be noted that additional step-out borings were attempted in the vicinity of borings B1, B4, B5, B7 and B8 that resulted in probe refusal at similar depths.

Groundwater was not encountered in the eight borings during drilling activities at the Site. Groundwater is expected to be at least 40 feet bgs and Terracon infers flow to be east-northeast towards the Willamette River.

4.2 Field Screening

A total of 23 soil samples were collected from the eight soil borings. The samples were field screened using the headspace method. Elevated PID responses (i.e. greater than 2 ppm) or unusual odors were not detected in the soil samples collected from six of the eight borings. A moderate PID response (3.5 ppm) was produced from the soil sample collected 9 to 10 feet bgs from boring B6 and an elevated PID response (141 ppm) was produced from the soil sample collected from 9 to 10 feet bgs from boring B2. The PID responses from the collected soil samples are summarized on the boring logs in Appendix C.

5.0 ANALYTICAL RESULTS

The laboratory analytical reports and chain-of-custody records are attached in Appendix D. The following sections describe the results of the testing.

5.1 Preliminary Conceptual Site Model

A detailed Conceptual Site Model (CSM) has not been prepared for the Site; however, it is our understanding the Site is currently in Commercial/Occupational use and is going to be redeveloped as a pharmacy store. However, there are residential dwellings adjoining the Site to the southwest and therefore, Residential exposure pathways maybe more appropriate for comparison purposes for the Site. Based on a preliminary CSM, the following exposure pathways appear to be potentially complete for Residential, and Construction and Excavation Worker receptors. Therefore, the analytical results were compared to the DEQ Risk-Based Concentrations (RBCs) for these receptors for the following media and potentially complete exposure pathways:

Soil:

- *Soil Ingestion, Dermal Contact, and Inhalation (RBCss);*
- *Volatilization to Outdoor Air (RBCso); and*
- *Vapor Intrusion into Buildings (RBCsi).*

The Site and surrounding properties are connected to the municipal water supply and shallow groundwater beneath the Site is not being used for consumptive purposes. Therefore, contaminated *Soil Leaching to Groundwater*, and *Ingestion & Inhalation from Tapwater* were not considered potentially complete exposure pathways at the Site.

In addition, the DEQ has established Clean Fill Values for soils throughout the state of Oregon. The Clean Fill Values establish the threshold below which the soil, if it does not appear chemically stained or have a chemical odor, can be managed as clean fill, with some limitations and restrictions, and not as a potential hazardous substance. Therefore, the analytical results were also compared to the DEQ Clean Fill Values.

Tables 1 and 2 in Appendix B depict the detected laboratory analytical results as compared to the applicable DEQ RBCs and Clean Fill Values (or Oregon Background Metals in the Portland Basin).

5.2 Soil Sample Results

The soil analytical results from the exterior and interior borings are discussed below and summarized on Tables 1 and 2 in Appendix B.

Exterior Borings/Former UST Systems

TPH as gasoline-range organics (GRO) was not detected above laboratory Reporting Detection Limits (RDLs) in 9 of the 10 soil samples collected from the five exterior borings (B1 to B5). Total petroleum hydrocarbons (TPH) as GRO (0.532 milligrams per kilogram [mg/kg]) was detected in a soil sample collected from boring B2; however, the detected concentration is below DEQ Residential, and Construction and Excavation Worker receptor RBCs.

TPH as diesel-range organics (DRO) was not detected above laboratory RDLs in 9 of the 10 soil samples collected from the five exterior borings. TPH as DRO (4.96 mg/kg) was detected in a soil sample collected from boring B3; however, the detected concentration is below DEQ Residential, and Construction and Excavation Worker receptor RBCs.

TPH as residual-range organics (RRO) was not detected above laboratory RDLs in 9 of the 10 soil samples collected from the five exterior borings. TPH as RRO (28.1 mg/kg) was detected in a soil sample collected from boring B4; however, the detected concentration is below DEQ Residential, and Construction and Excavation Worker receptor RBCs. The DEQ does not have published Clean Fill Values for TPH.

Volatile organic compounds (VOCs) were not detected above laboratory RDLs in 4 of the 5 soil samples collected from the five exterior borings. VOCs (0.0109 mg/kg of 1,2,4 trimethylbenzene, 0.00423 mg/kg of 1,2,3 trimethylbenzene and 0.00367 mg/kg of 1,3,5 trimethylbenzene) were detected in a soil sample collected from boring B2; however, the detected concentrations are below DEQ Residential, and Construction and Excavation Worker receptor RBCs, and their Clean Fill Values.

Polynuclear aromatic hydrocarbons (PAHs) were not detected above laboratory RDLs in 3 of the 5 soil samples collected from the five exterior borings. PAHs (0.0329 mg/kg of naphthalene, 0.0652 mg/kg of 1-methylnaphthalene, 0.128 mg/kg 2-methylnaphthalene and 0.00885 mg/kg of benzo(g,h,i)perylene) were detected in soil samples collected from borings B2 and/or B3; however, the detected concentrations are below DEQ Residential, and Construction and Excavation Worker receptor RBCs, and their Clean Fill Values.

Lead (2.64 to 192 mg/kg) was detected in the 5 soil samples collected from the five exterior borings; however, the detected concentrations are below DEQ Residential, and Construction and Excavation Worker receptor RBCs. The lead detected in the soil sample collected from 8 to 10 feet bgs from boring B3 is above the DEQ Clean Fill Value of 28 mg/kg. Therefore, this sample was also analyzed for TCLP lead. Lead was not detected in the extraction fluid above the laboratory RDL.

Interior Borings/Former Auto Repair

TPH as GRO, DRO and RRO, VOCs, PCBs, PAHs and cadmium were not above laboratory RDLs in the soil samples collected from 2 to 3 feet bgs from borings B7 and B8. Chromium (24.1 to 25.1 mg/kg) and lead (6.37 and 6.5 mg/kg) were detected in the two soil samples collected from borings B7 and B8; however, the detected concentrations are below DEQ Residential, and Construction and Excavation Worker receptor RBCs, and their Clean Fill Values.

TPH as GRO (0.205 and 5.56 mg/kg), DRO (1,060 mg/kg) and RRO (2,600 mg/kg), select VOCs (0.125 mg/kg of acetone, 0.0177 mg/kg of 2-butanone and 0.0104 mg/kg of tetrachloroethene), PCBs (0.102 mg/kg), PAHs (0.0281 mg/kg of anthracene, 0.0094 mg/kg of acenaphthalene, 0.0106 mg/kg of acenaphthalene and 0.0408 mg/kg of fluoranthene), chromium (11 mg/kg) and lead (7.82 mg/kg) were detected is soil samples collected in boring B6 near a former lift; however, the detected concentrations are below DEQ Residential, and Construction and Excavation Worker receptor RBCs, and their Clean Fill Values.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the scope of services described in this report and subject to the limitations described herein, Terracon concludes and recommends the following:

The geophysical survey did not identify large magnetic objects interpreted as possible USTs within the survey area. The survey identified two disturbed soil zones that were interpreted as former pits related to former USTs previously removed from beneath the parking lot. Soil borings were drilled and sampled in the two disturbed soil zones and near the former fuel dispenser islands. Compounds of concern (TPH, VOC, PAHs and lead) were not detected in the collected soil samples in the vicinity of the former UST systems above DEQ Residential, and Construction and Excavation Worker receptor RBCs. In addition, releases from the former UST systems associated with the former gas station at the Site received a No Further Action (NFA) determination from the DEQ in 1989. Based on the findings of this investigation, adverse soil impacts associated with the former UST systems were not identified. Therefore, no further investigation is recommended to assess the former service station UST systems at the Site at this time.

Compounds of concern (TPH, VOCs, PCBs, PAHs and metals) were detected in a soil sample collected from boring B6 near a trench associated with former hydraulic lifts in the building at the

Site. Although the detected concentrations are below applicable DEQ RBCs, we suspect that there are likely more-impacted soils located closer to the trench or source area, and impacted soils near remnant buried features (sumps, waste pits, etc.) may also be discovered after the existing building is demolished and the concrete floor slab is removed.

Based on the findings of this LSI, and given Terracon's understanding that the Site is proposed to be redeveloped, a Remedial Action and Soil Management Plan is recommended for actions to be taken when subsurface remnant features are discovered and removed, and impacted soils are excavated during redevelopment of the Site. Soils that appear stained and produce a chemical-like odor from remnant buried features should be excavated and transported to licensed landfill for disposal. In addition, soils that are excavated and disturbed that that need to be transported off-site for ground improvements that do not meet the definition of clean fill, should also be properly managed and landfilled.

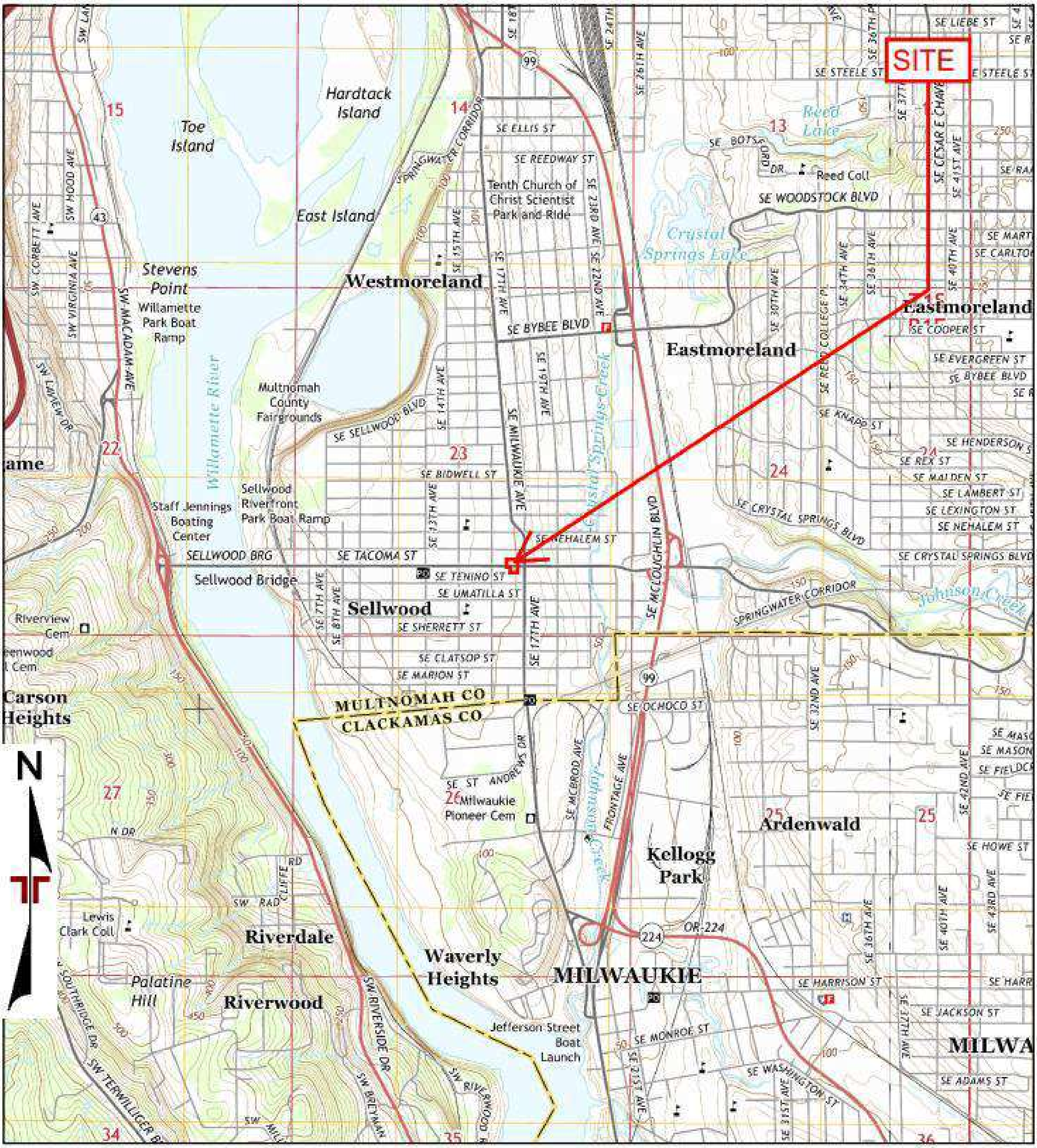
Based on the findings of our LSI, subsurface impacts beneath a building from long-term use as an auto repair facility do not constitute a reportable release. However, due to Site access limitations related to drilling within the site structure, there is the potential for additional impacted soils to be present beneath the building. As a result, it can be expected that additional impacted soils will be discovered during earthwork phases of Site redevelopment. When impacted soils are encountered beneath the Site structure, impacted soils will require clean up during Site redevelopment. Impacted soils that appear stained or produce a chemical odor and/or with confirmed impacts above Clean Fill Values, will need to be properly managed and disposed in a licensed landfill. In order to achieve a NFA determination from the DEQ associated with the removal of remnant subsurface components and disposal of impacted soils that are expected to be encountered, the Site will need to be enrolled in the Voluntary Cleanup Program (VCP).

After acceptance into the VCP, the client would need to sign and enter into a Cost Recovery Agreement with DEQ and submit a deposit to cover DEQ oversight costs. In addition, copies of the Phase I ESA and LSI reports would need to be provided to the DEQ. Terracon would then prepare a Remedial Action and Soil Management Plan and submit it to the DEQ for review. Ideally, a DEQ Project Manager will be assigned to review and approve a proposed Remedial Action and Soil Management Plan before starting the proposed Site redevelopment work.

APPENDIX A – EXHIBITS

Exhibit 1 – Topographic Map

Exhibit 2 – Site Diagram



TP, Lake Oswego, 2014, 7.5-minute
SE, Gladstone, 2014, 7.5-minute

0 Miles 0.25 0.5 1 1.5

Project Manager: JDH	Project No. 82177209
Drawn by: JDH	Scale: 1:24,000
Checked by: GRH	File Name:
Approved by: GRH	Date: JAN 2018

Terracon
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TOPOGRAPHIC MAP

Proposed CVS Pharmacy/Store No. 11185
1672 SE Tacoma Street
Portland, Multnomah County, Oregon 97202

EXHIBIT

1

= Approximate Site Boundary

= Approximate Soil Boring Location

= Disturbed Soil Zone / Former UST Pit.

0 50ft 100ft

N

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager: JDH	Project No. 82177209
Drawn by: JDH	Scale: AS SHOWN
Checked by: GRH	File Name: Exhibits
Approved by: GRH	Date: JAN 2018

Terracon
4103 SE International Way Ste 300
Portland, OR 97222-8854

SITE DIAGRAM

Proposed CVS Pharmacy/Store No. 11185
1672 SE Tacoma Street
Portland, Multnomah County, Oregon 97202

Exhibit

2

APPENDIX B – TABLES

Table 1 – Summary of Soil Analytical Results (Outdoor Borings / B1 through B5)

Table 2 – Summary of Soil Analytical Results (Indoor Borings / B6 through B8)

Table 1
Summary of Soil Analytical Results (Outdoor Borings / B1 through B5)
Proposed CVS Pharmacy/Sytore No. 11185
1672 SE Tacoma Street, Portland, OR
Terracon Project No. 82177209

Boring ID									B1				B2				B3				B4				B5			
Sample ID									B1-3		B1-11		B2-9		B2-19		B3-8		B3-18		B4-10		B4-14		B5-9		B5-19	
Sample Interval (feet bgs)									3 to 4		11 to 12		9 to 10		19 to 20		8 to 10		18 to 20		10 to 11		14 to 15		9 to 10		19 to 20	
Lab Sample ID									L961508-01		L961508-02		L961508-03		L961508-04		L961508-05		L961508-06		L961508-07		L961508-08		L961508-09		L961508-10	
Collection Date			DEQ RBCs						1/4/2018		1/4/2018		1/4/2018		1/4/2018		1/4/2018		1/4/2018		1/4/2018		1/4/2018		1/4/2018		1/4/2018	
Parameter	Method	Unit	Res. RBCss	Cons. RBCss	Exc. RBCss	Res. RBCso	Res. RBCsi	OBM CFV	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q
Total Petroleum Hydrocarbons (TPH)																												
Gasoline-Range Organics (GRO)	NWTPH-Dx	mg/kg	1,200	9,700	>Max	5,900	94	....	<0.111		<0.110		**0.532**		<0.111		<0.107		<0.111		<0.109		<0.109		<0.137		<0.107	
Diesel-Range Organics (DRO)	NWTPH-Dx	mg/kg	1,100	4,600	>Max	>Max	>Max	....	<4.45		<4.41		<4.47		<4.34		<4.28		<4.45		<4.35		**4.96**		<4.57		<4.28	
Residual (Oil)-Range Organics (RRO)	NWTPH-Dx	mg/kg	2,800	11,000	>Max	>Max	>Max	....	<11.1		<11.0		<11.2		<10.8		**28.1**		<11.1		<10.9		<10.9		<11.4		<10.7	
Volatile Organic Compounds (VOCs)																												
Acetone	8260	mg/kg	....	....	....	....	....	59.52	<0.0712	J4			<0.0559	J4			<0.0535	J4			<0.0544	J4			<0.0571	J4		
2-Butanone (MEK)	8260	mg/kg	....	....	....	....	....	....	<0.0142				<0.0112				<0.0107				<0.0109				<0.0114			
Tetrachloroethene	8260	mg/kg	220	1,800	50,000	>Csat	2.8	2.40	<0.00142				<0.00112				<0.00107				<0.00109				<0.00114			
1,2,4 Trimethylbenzene	8260	mg/kg	110	2,000	54,000	230	16	16	<0.00142		NA		**0.0109**		NA		<0.00107		NA		<0.00109		NA		<0.00114		NA	
1,2,3 Trimethylbenzene	8260	mg/kg	....	....	....	....	....	1.938	<0.00142				**0.00423**				<0.00107				<0.00109				<0.00114			
1,3,5 Trimethylbenzene	8260	mg/kg	780	3,500	98,000	>Max	>Max	92	<0.00142				**0.00367**				<0.00107				<0.00109				<0.00114			
Other VOCs	8260	mg/kg							ND				ND				ND				ND				ND			
Polynuclear Aromatic Hydrocarbons (PAH)																												
Anthracene	8270D-SIM	mg/kg	23,000	110,000	>Max	>Max	>Max	29	<0.00668				<0.00671				<0.00642				<0.00652				<0.00685			
Acenaphthene	8270D-SIM	mg/kg	4,700	21,000	590,000	>Max	>Max	29	<0.00668				<0.00671				<0.00642				<0.00652				<0.00685			
Acenaphthylene	8270D-SIM	mg/kg	....	....	....	....	....	....	<0.00668				<0.00671				<0.00642				<0.00652				<0.00685			
Benzo(g,h,i)perylene	8270D-SIM	mg/kg	....	....	....	....	....	....	<0.00668				<0.00671				**0.00885**				<0.00652				<0.00685			
Fluoranthene	8270D-SIM	mg/kg	2,400	10,000	280,000	NV	NV	29	<0.00668		NA		<0.00671		NA		<0.00642		NA		<0.00652		NA		<0.00685		NA	
Naphthalene	8270D-SIM	mg/kg	5	580	16,000	6	6	0.087	<0.0223				**0.0329**				<0.0214				<0.0217				<0.0228			
1-Methylnaphthalene	8270D-SIM	mg/kg	....	....	....	....	....	0.738	<0.0223				**0.0652**				<0.0214				<0.0217				<0.0228			
2-Methylnaphthalene	8270D-SIM	mg/kg	....	....	....	....	....	310	<0.0223				**0.128**				<0.0214				<0.0217				<0.0228			
Other PAHs	8270D-SIM	mg/kg							ND				ND				ND				ND				ND			
Metals (Pb)																												
Lead	6010/7471	mg/kg	400	800	800	NV	NV	28	**4.17**				**4.60**				**192***				**2.64**				**3.33**			

Notes and Qualifiers: (Q: only shown in Table if reported by laboratory)

.... = No Published RBCs or Clean Fill Value

ND = Compound not detected above the laboratory Reporting Detection Limit (RDL).

NA = Not Analyzed

J4 = The associated batch QC was outside the established quality control range for accuracy

mg/kg = milligrams per kilogram

Color highlighted cells indicate reported concentration meets or exceeds DEQ RBC or Clean Fill Value.

>Max = The constituant RBC for this pathway is calculated as greater than 1,000,000mg/kg. Therefore, this substance is deemed not to pose risks in this scenario

>Csat = This soil RBC exceeds the limit of three-phase partitioning. Soil concentrations greater than Csat indicate that free project may be present

NV= Not Volatile

* = Toxicity characteristic leaching procedure (TCLP) for lead was not detected above laboratory reporting detection limits. (<0.100 micrograms per liter [µg/L])

Oregon DEQ Soil Exposure Pathways

RBCss - Soil Ingestion, Dermal Contact, and Inhalation

RBCso - Volatilization to Outdoor Air

RBCsi - Vapor Intrusion into Buildings

Res. = Residential Receptor

Cons. = Construction Worker Receptor

Exc. = Excavation Worker Receptor

OBM CFV = Oregon Background Levels for Metals and Clean Fill Values for the Portland Basin

Table 2
Summary of Soil Analytical Results (Indoor Borings / B6 through B8)
Proposed CVS Pharmacy/Sytore No. 11185
1672 SE Tacoma Street, Portland, OR
Terracon Project No. 82177209

Boring ID									B6				B7		B8	
Sample ID									B6-9		B6-14		B7-2		B8-2	
Sample Interval (feet bgs)									9 to 10		14 to 15		2 to 3		2 to 3	
Lab Sample ID									L961508-11		L961508-12		L961508-13		L961508-14	
Collection Date			DEQ RBCs						1/4/2018		1/4/2018		1/4/2018		1/4/2018	
Parameter	Method	Unit	Res. RBCss	Cons. RBCss	Exc. RBCss	Res. RBCso	Res. RBCsi	OBM CFV	Value	Q	Value	Q	Value	Q	Value	Q
Total Petroleum Hydrocarbons (TPH)																
Gasoline-Range Organics (GRO)	NWTPH-Dx	mg/kg	1,200	9,700	>Max	5,900	94	....	**5.56**		**0.205**		<0.631		<0.127	
Diesel-Range Organics (DRO)	NWTPH-Dx	mg/kg	1,100	4,600	>Max	>Max	>Max	....	**1,060**		<4.28		<5.05		<5.10	
Residual (Oil)-Range Organics (RRO)	NWTPH-Dx	mg/kg	2,800	11,000	>Max	>Max	>Max	....	**2,600**		<10.7		<12.6		<12.7	
Volatile Organic Compounds (VOCs)																
Acetone	8260	mg/kg	....	....	....	....	....	59.52	**0.125**	J4			<0.0631	J4	<0.0637	J4
2-Butanone (MEK)	8260	mg/kg	....	....	....	....	....	....	**0.0177**				<0.0126		<0.0127	
Tetrachloroethene	8260	mg/kg	220	1,800	50,000	>Csat	2.8	2.40	**0.0104**				<0.0012		<0.0012	
1,2,4 Trimethylbenzene	8260	mg/kg	110	2,000	54,000	230	16	16	<0.0013		NA		<0.0012		<0.0012	
1,2,3 Trimethylbenzene	8260	mg/kg	....	....	....	....	....	1.938	<0.0013				<0.0012		<0.0012	
1,3,5 Trimethylbenzene	8260	mg/kg	780	3,500	98,000	>Max	>Max	92	<0.0013				<0.0012		<0.0012	
Other VOCs	8260	mg/kg							ND				ND		ND	
Polychlorinated Biphenyls (PCBs)																
PCB1254	8082	mg/kg	0.23	4.9	140	>Csat	>Csat	0.2	**0.102**		NA		<0.0215		<0.0217	
Other PCBs	9882	mg/kg							ND				ND		ND	
Polynuclear Aromatic Hydrocarbons (PAH)																
Anthracene	8270D-SIM	mg/kg	23,000	110,000	>Max	>Max	>Max	29	**0.0281**				<0.0075		<0.0076	
Acenaphthene	8270D-SIM	mg/kg	4,700	21,000	590,000	>Max	>Max	29	**0.0094**				<0.0075		<0.0076	
Acenaphthylene	8270D-SIM	mg/kg	....	....	....	....	....	....	**0.0105**				<0.0075		<0.0076	
Benzo(g,h,i)perylene	8270D-SIM	mg/kg	....	....	....	....	....	....	<0.0681				<0.0075		<0.0076	
Fluoranthene	8270D-SIM	mg/kg	2,400	10,000	280,000	NV	NV	29	**0.0408**		NA		<0.0075		<0.0076	
Naphthalene	8270D-SIM	mg/kg	5.3	580	16,000	6.4	6.4	0.087	<0.0227				<0.0253		<0.0255	
1-Methylnaphthalene	8270D-SIM	mg/kg	....	....	....	....	....	0.738	<0.0227				<0.0253		<0.0255	
2-Methylnaphthalene	8270D-SIM	mg/kg	....	....	....	....	....	310	<0.0227				<0.0253		<0.0255	
Other PAHs	8270D-SIM	mg/kg							ND				ND		ND	
Metals (Cd, Cr, Pb)																
Cadmium	6010/7471	mg/kg	78	350	9,700	NV	NV	0.63	<0.567				<0.631		<0.637	
Chromium	6010/7471	mg/kg	120,000	530,000	>Max	NV	NV	76	**11**		NA		**24.9**		**25.1**	
Lead	6010/7471	mg/kg	400	800	800	NV	NV	28	**7.82**				**6.5**		**6.37**	

Notes and Qualifiers: (Q; only shown in Table if reported by laboratory)
.... = No Published RBCs or Clean Fill Value
ND = Compound not detected above the laboratory Reporting Detection Limit (RDL).
NA = Not Analyzed
J4 = The associated batch QC was outside the established quality control range for accuracy
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Oregon DEQ Soil Exposure Pathways
RBCss - Soil Ingestion, Dermal Contact, and Inhalation
RBCso - Volatilization to Outdoor Air
RBCsi - Vapor Intrusion into Buildings
Res. = Residential Receptor
Cons. = Construction Worker Receptor
Exc. = Excavation Worker Receptor
OBM CFV = Oregon Background Levels for Metals and Clean Fill Values for the Portland Basin

APPENDIX C – UNIFIED SOIL CLASSIFICATON SYSTEM AND BORING LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

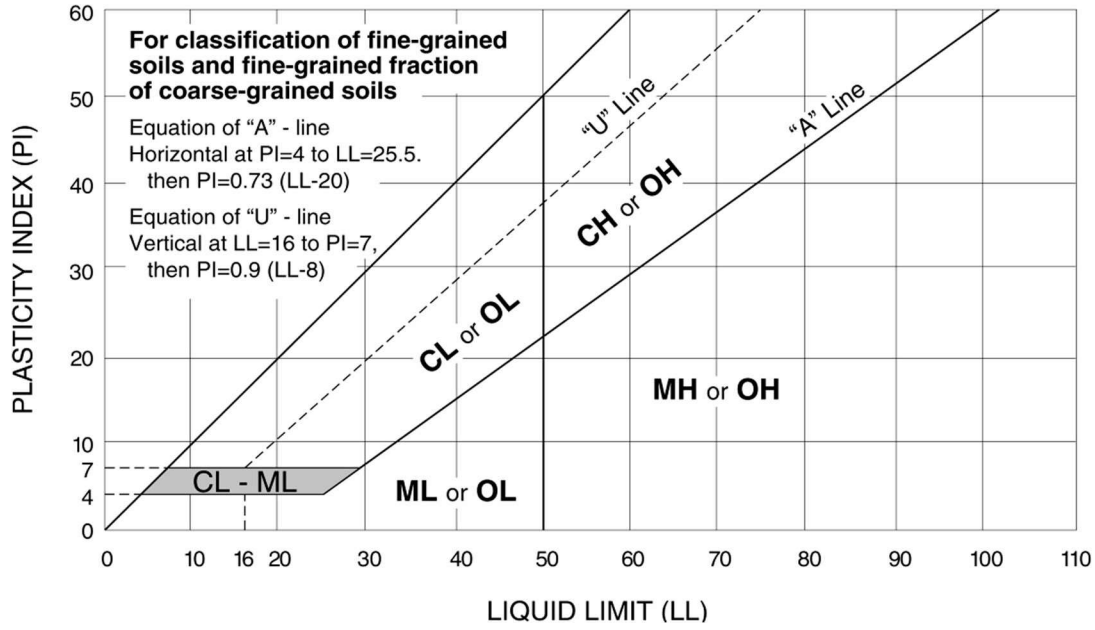
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Terracon

Exhibit C

BORING LOG NO. B1

PROJECT: Proposed CVS Pharmacy/Store No. 11185

CLIENT: CVS Pharmacy, Inc.
Woonsocket, RI

SITE: 1672 SE Tacoma Street
Portland, Oregon

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.3	**FILL - CONCRETE**, light gray					
	FILL - POORLY GRADED SAND WITH GRAVEL (SP), brown, moist, loose to medium dense				0.0	B1-3
5.0	**SILTY GRAVEL WITH SAND (GM)**, trace cobbles, brown to gray, moist, medium dense to dense, some fractured rock	5			0.0	
		10			0.0	B1-11
12.0	***Boring Refusal at 12 Feet***					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with bentonite upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater was not encountered during drilling

Boring Started: 01-04-2018 | Boring Completed: 01-04-2018

Drill Rig: Geoprobe | Logger:

Project No.: 82177209 | Exhibit: C-1

BORING LOG NO. B2

PROJECT: Proposed CVS Pharmacy/Store No. 11185

CLIENT: CVS Pharmacy, Inc.
Woonsocket, RI

SITE: 1672 SE Tacoma Street
Portland, Oregon

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.3	**FILL - CONCRETE**, light gray					
	FILL - POORLY GRADED SAND WITH GRAVEL (SP), brown, moist, loose to medium dense				0.6	
5.0	**SILTY GRAVEL WITH SAND (GM)**, trace cobbles, brown to gray, moist, medium dense to dense, some fractured rock	5				
		10			141	B2-9
		15			1.7	
20.0		20			0.1	B2-19
	Boring Terminated at 20 Feet					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with bentonite upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater was not encountered during drilling

Boring Started: 01-04-2018 | Boring Completed: 01-04-2018

Drill Rig: Geoprobe | Logger:

Project No.: 82177209 | Exhibit: C-2

BORING LOG NO. B3

PROJECT: Proposed CVS Pharmacy/Store No. 11185

CLIENT: CVS Pharmacy, Inc.
Woonsocket, RI

SITE: 1672 SE Tacoma Street
Portland, Oregon

LOCATION See Exhbit A-2

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.3	**FILL - ASPHALT**, black					
	FILL - POORLY GRADED SAND WITH GRAVEL (SP), brown, moist, loose to medium dense				0.0	
5.0	**SILTY GRAVEL WITH SAND (GM)**, trace cobbles, brown to gray, moist, medium dense to dense, some fractured rock	5				
					1.6	B3-8
		10				
					0.5	
		15				
					0.8	B3-18
20.0	***Boring Terminated at 20 Feet***	20				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with bentonite upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater was not encountered during drilling

Boring Started: 01-04-2018 | Boring Completed: 01-04-2018

Drill Rig: Geoprobe | Logger:

Project No.: 82177209 | Exhibit: C-3

BORING LOG NO. B4

PROJECT: Proposed CVS Pharmacy/Store No. 11185

CLIENT: CVS Pharmacy, Inc.
Woonsocket, RI

SITE: 1672 SE Tacoma Street
Portland, Oregon

LOCATION See Exhbit A-2

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.3	**FILL - ASPHALT**, black					
	FILL - SANDY SILT (ML), trace gravel, brown, moist, medium stiff					
3.0						
	SILTY GRAVEL WITH SAND (GM), trace cobbles, brown to gray, moist, medium dense to dense, some fractured rock	5			0.0	
		10			0.6	B4-10
					0.8	B4-14
15.0		15				
	Boring Refusal at 15 Feet					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with bentonite upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater was not encountered during drilling

Boring Started: 01-04-2018 | Boring Completed: 01-04-2018

Drill Rig: Geoprobe | Logger:

Project No.: 82177209 | Exhibit: C-4

BORING LOG NO. B5

PROJECT: Proposed CVS Pharmacy/Store No. 11185

CLIENT: CVS Pharmacy, Inc.
Woonsocket, RI

SITE: 1672 SE Tacoma Street
Portland, Oregon

LOCATION See Exhibit A-2

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.3	**FILL - ASPHALT**, black					
	FILL - SANDY SILT (ML), trace gravel, brown, moist, medium stiff to stiff					
3.0	**SILTY GRAVEL WITH SAND (GM)**, trace cobbles, brown to gray, moist, medium dense to dense, some fractured rock	5			0.0	
		10			0.5	B5-9
		15			0.5	
20.0		20			0.7	B5-19
	Boring Terminated at 20 Feet					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with bentonite upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater was not encountered during drilling

Boring Started: 01-04-2018 | Boring Completed: 01-04-2018

Drill Rig: Geoprobe | Logger:

Project No.: 82177209 | Exhibit: C-5

BORING LOG NO. B6

PROJECT: Proposed CVS Pharmacy/Store No. 11185

CLIENT: CVS Pharmacy, Inc.
Woonsocket, RI

SITE: 1672 SE Tacoma Street
Portland, Oregon

LOCATION See Exhbit A-2

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.3	**FILL - CONCRETE**, light gray					
	FILL - SANDY SILT (ML), trace gravel, brown, moist, medium stiff to stiff					
3.0	**SILTY GRAVEL WITH SAND (GM)**, trace cobbles, brown to gray, moist, medium dense to dense, some fractured rock				0.0	
		5				
					3.5	B6-9
		10				
15.0					0.2	B6-14
	Boring Refusal at 15 Feet	15				

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with bentonite upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater was not encountered during drilling

Boring Started: 01-04-2018 | Boring Completed: 01-04-2018

Drill Rig: Geoprobe | Logger:

Project No.: 82177209 | Exhibit: C-6

BORING LOG NO. B7

PROJECT: Proposed CVS Pharmacy/Store No. 11185

CLIENT: CVS Pharmacy, Inc.
Woonsocket, RI

SITE: 1672 SE Tacoma Street
Portland, Oregon

LOCATION See Exhbit A-2

DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
0.3	**FILL - CONCRETE**, light gray					
	FILL - SANDY SILT (ML), trace gravel, brown, moist, medium stiff to stiff				0.0	B7-2
3.0	***Boring Refusal at 3 Feet***					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with bentonite upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater was not encountered during drilling

Boring Started: 01-04-2018 | Boring Completed: 01-04-2018

Drill Rig: Geoprobe | Logger:

Project No.: 82177209 | Exhibit: C-7

BORING LOG NO. B8

PROJECT: Proposed CVS Pharmacy/Store No. 11185

CLIENT: CVS Pharmacy, Inc.
Woonsocket, RI

SITE: 1672 SE Tacoma Street
Portland, Oregon

LOCATION See Exhbit A-2

GRAPHIC LOG	DEPTH	MATERIAL DESCRIPTION	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	OVA/PID (ppm)	SAMPLE SENT TO LAB (ID NUMBER)
	0.3	**FILL - CONCRETE**, light gray					
		FILL - SANDY SILT (ML), trace gravel, brown, moist, medium stiff to stiff				0.0	B8-2
	3.0	***Boring Refusal at 3 Feet***					

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct Push

Abandonment Method:
Boring backfilled with bentonite upon completion.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater was not encountered during drilling

Boring Started: 01-04-2018 | Boring Completed: 01-04-2018

Drill Rig: Geoprobe | Logger:

Project No.: 82177209 | Exhibit: C-8

APPENDIX D – ANALYTICAL REPORT AND CHAIN OF CUSTODY

APPENDIX E – GEOPHYSICAL SURVEY REPORT

PACIFIC GEOPHYSICS
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GEOPHYSICAL SURVEY LETTER REPORT

Jeremy Hatfield
Terracon

Project: 171212
Survey Date: January 3, 2018

Goodwill Parking Lot
1672 SE Tacoma Street
Portland, Oregon

A Geometrics G858 cesium-vapor magnetometer was used to collect magnetic data across the asphalt parking lot and adjacent concrete sidewalks of the buildings located at the address shown above. The purpose of the survey was to detect possible underground storage tanks (USTs). Several generations of gas stations occupied the property in the past. A GSSI SIR2000 ground penetrating radar (GPR) system with a 400 MHz radar antenna was used to scan the subsurface for disturbed soil zones that could indicate the locations from which USTs had been removed. An additional goal was to clear several borehole locations of buried obstructions and piping.

Two pump island footprints within a rectangular concrete pad were surface evidence of the former gas station. No other evidence of tanks, including fill ports and vent pipes, was seen at the site. Surface features included a neighboring apartment complex to the west, the two buildings on site, signs, catch basins, poles, bollards, dumpsters, and a metal canopy.

Figure 1 is a colored magnetic contour map that shows the earth's local magnetic field at the time of the survey. The data were collected along survey lines measured to be 5 feet apart, then contoured using a contour interval of 250 nT (nanoTesla). Magnetic anomalies higher in amplitude than the normal local magnetic background are shown in red, and are usually found over areas where ferrous objects are located below the sensor, carried at a height of about 3 feet. USTs produce red-colored contours. Magnetic anomalies at or below the amplitude of the local magnetic field are shown in blue, and are generally caused by ferrous objects located above the sensor. Buildings, fences, sign poles, metal lamp posts, and cars, usually produce magnetic lows. Depending on their size and orientation, large buried objects may produce both positive (red) and negative (blue) anomalies.

The buildings and the objects mentioned above created significant magnetic interference. Buried metallic objects of interest located near these objects could be missed because of the magnetic noise produced by the nearby metallic surface objects.

Several magnetic anomalies were detected with the magnetic survey. The following were investigated with hand-held metal detectors (Aqua-Tronics Tracer metal detector, Schonstedt gradiometer) and GPR.

Magnetic anomalies marked with A are interpreted to be caused by the apartment-building wall and its footing.

Anomaly B is interpreted to be caused by the sign, its footing, water and gas lines and a metal post cut off at ground level. No three-dimensional object was detected with the Tracer at this location.

No suspicious 3D objects were detected to be causing anomalies C, D, E, and F with the Tracer and GPR. A suspicious asphalt patch was seen near anomaly E; it resembled the end of a pump island footprint. The anomaly may be caused by metal in a pump island from a previous gas station.

No 3D object was detected with the Tracer and GPR to be causing magnetic anomaly G. It is possibly caused by the canopy.

GPR profiles were collected at intervals of 5-7 feet across the area north of the two buildings for the purpose of locating possible disturbed soil zones that could indicate the location from which USTs had been removed (tank-pits). One possible tank pit was detected southeast of the existing pump-island pad in an area shown in a site diagram to be the tank nest of the most recent gas station. A second suspicious disturbed-soil zone that may be a tank pit was detected near the Goodwill sign. Both zones are shown in figure 3, an interpretation map of this survey's results.

Nine proposed boreholes were cleared. Six locations were in the parking lot near the pump islands and inside the tank pits. Three locations were inside the Goodwill building near hoists and a small feature labeled "waste pit" in the site diagram mentioned above. One location was near an abandoned hoist in the shop area. A second borehole was cleared in the accessible area between two hoists, reportedly located under the carpet. The Schonstedt gradiometer was used to locate the hoists but surface objects, including a short divider wall, interfered. A third hole was cleared next to the waste pit whose metal lid was evident under the carpet. Several pipes were seen in the radar profiles. Our results with features of interest are shown in figure 4.

Nikos Tzetos of Pacific Geophysics conducted the survey for Mr. Jeremy Hatfield on January 3, 2018. Mr. Hatfield was on site during the survey. This letter report was written by Nikos Tzetos and emailed to Messrs. Gary Henningsen and Hatfield of Terracon on January 9, 2018.

Limitations

The conclusions presented in this report were based upon widely accepted geophysical principles, methods and equipment. This survey was conducted with limited knowledge of the site, the site history and the subsurface conditions.
The goal of near-surface geophysics is to provide a rapid means of characterizing the subsurface using non-intrusive methods. Conclusions based upon these methods are generally reliable; however, due to the inherent ambiguity of the methods, no single interpretation of the data can be made. As an example, rocks and roots produce radar reflections that may appear the same as pipes and tanks.

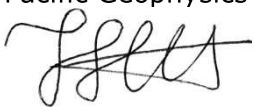
Under reasonable conditions, geophysical surveys are good at detecting changes in the subsurface caused by man-made objects or changes in subsurface conditions, but they are poor at actually identifying those objects or subsurface conditions.

Objects of interest are not always detectable due to surface and subsurface conditions. The deeper an object is buried, the more difficult it is to detect, and the less accurately it can be located.

The only way to see an object is to physically expose it.

Nikos Tzetos
Pacific Geophysics

January 9, 2017



Appendix A. Geophysical Survey Methods

Magnetometer Surveys

Small disturbances in the Earth's local magnetic field are called "magnetic anomalies". These may be caused by naturally occurring features such as metallic mineral ore bodies, or from manmade features such as metal buildings, vehicles, fences, and underground storage tanks. The magnetometer only detects changes produced by ***ferrous*** objects. Aluminum and brass are non-ferrous metals and cannot be detected using a magnetometer.

A magnetometer is an electronic instrument designed to detect small changes in the Earth's local magnetic field. Over the years different technologies have been used in magnetometers. The Geometrics G-858 Portable Cesium Magnetometer used to collect magnetic data for Pacific Geophysics uses one of the most recent methods to detect magnetic anomalies. A detailed discussion describing the method this unit uses is available at Geometrics.com.

This magnetometer enables the operator to collect data rapidly and continuously rather than the older instruments that collected data at discreet points only. The G-858 is carried by hand across the site. The sensor is carried at waist level. Typically individual data points collected at normal walking speed are about 6" apart along survey lines usually 5 feet apart, depending on the dimensions of the target objects.

It is critical to know the exact location of each data point so that if an anomaly is detected it can be accurately plotted on a magnetic contour map. At most small sites, data are collected along straight, parallel survey lines set up on the site before the data collection stage begins. For very large, complex sites, the G-858 can be connected to a Global Positioning System (GPS) antenna which allows the operator to collect accurately-located data without establishing a survey grid. With GPS, data are collected and positioned wherever the operator walks. A limitation using GPS is that the GPS antenna must have line of sight with the GPS satellites. Data can be mislocated if the GPS antenna is under trees or near tall buildings.

Data are stored in the unit's memory for later downloading and processing. A magnetic contour map of the data is plotted in the field. Geographical features are plotted on the map. Magnetic anomalies appearing to be caused by objects of interest are then investigated on the site using several small hand-held metal detectors. If an object appears to be a possible object of interest, it may be investigated with GPR.

Magnetic contour maps may be printed in color in order to highlight anomalies caused by ferrous objects located under the magnetic sensor. Usually, ferrous objects situated below the sensor produce magnetic "highs" and anomalies located above the sensor produce magnetic "lows". Magnetic highs are of interest to the operator since most objects of interest are located underground.

Depending on the orientation, shape and mass of a metallic object, a high/low pair of magnetic anomalies may be present. In the northern hemisphere the magnetic low is located north of the object and the magnetic high toward the south. The object producing the anomaly is located part way between the high and the low anomalies.

Magnetometer surveys have limitations. Magnetometers only detect objects made of ferrous (iron-containing) metal. Large ferrous objects (buildings, cars, fences, etc.)

within several feet of the magnetometer create interference that may hide the anomaly produced by a nearby object of interest.

Ground Penetrating Radar

A Geophysical Survey Systems, Inc. (GSSI) SIR-2000 GPR system coupled to GSSI antennas of various central frequencies is used to obtain the radar data for our surveys.

GPR antennas both transmit and receive electromagnetic energy. EM energy is transmitted into the material the antenna passes over. A portion of that energy is reflected back to the antenna and amplified. Reflections are displayed in real-time in a continuous cross section. Reflections are produced where there is a sufficient electrical contrast between two materials. Changes in the electrical properties (namely the dielectric constant) that produce radar reflections are caused by changes in the moisture content, porosity, mineralogy, and texture of the material. Metallic objects of interest exhibit a strong electrical contrast with the surrounding material and thus produce relatively strong reflections. Non-metallic objects of interest (septic tanks, cesspools, dry wells, and PVC and clay tile pipes) are not always good reflectors.

Radar data are ambiguous. It can be difficult to distinguish the reflection produced by an object of interest from the reflection caused by some natural feature. Rocks or tree roots have reflections that appear similar to reflections from pipes. In concrete investigations reflections produced by metal rebar look exactly like those from electrical conduit or post-tension cables. Objects with too small an electrical contrast may produce no reflections at all and may be missed. Target objects buried below objects with contrasting properties that also produce reflections may be missed (e.g. USTs below roots, concrete pieces, pipes or rocks). If an object of interest like a UST is buried below the depth of penetration of the radar signal, it will be missed.

In addition to interpreting ambiguous data, radar has several limitations that cannot be controlled by the operator. The radar signal is severely attenuated by electrically conductive material, including wet, clay-rich soil and reinforced concrete. The quality of the data is affected by the surface conditions over which the antenna is pulled. Ideally the antenna should rest firmly on a smooth surface. Rough terrain and tall grass reduce the quality of radar data.

It is the job of an experienced interpreter to examine the GPR profiles and deduce if reflections are from objects of interest. A GPR interpreter cannot see underground, but can only interpret reflections based on experience.

The only way to truly identify an object is to excavate.

Hand-held Metal detectors

Two small, non-recording metal detectors are used to locate suspect magnetic anomalies detected using the G-858 Magnetometer in order to determine the likely cause of the anomaly. First, the magnetic contour map and a Schonstedt Magnetic Gradiometer are used to locate the center of the magnetic anomalies.

Once the anomaly is located an Aqua-Tronics Tracer is used to determine if the object producing the anomaly is a possible object of interest. Most anomalies are at least in part produced by features observed on the ground surface.

Schonstedt Magnetic Gradiometer: This magnetometer has two magnetic sensors separated vertically by 10". The magnetic field surrounding a ferrous object is strongest near the object and decreases rapidly as the distance increases. If the magnitude measured by the sensor located in the tip of the Schonstedt is very high, and the magnetic field measured by the sensor located farther up the shaft of the Schonstedt is low, there is a large vertical magnetic gradient and the instrument responds with a loud whistle indicating the object is near the surface. If there is a small difference in the magnitudes measured by the two sensors, the object is deeper. The instrument responds with a softer tone. A discussion of this instrument is available at Schonstedt.com.

Aqua-Tronics A-6 Tracer: The Aqua-Tronics A-6 Tracer uses a different method of detecting metallic objects. This instrument measures the electrical conductivity of a metal object. It is capable of detecting any electrically conductive metal, including non-ferrous aluminum and brass. The Tracer is capable of detecting three-dimensional objects as well as pipes.

The Tracer consists of a transmitter coil and a receiver coil. In the absence of any electrically conductive material in the vicinity of the Tracer, the electromagnetic field around each coil is balanced.

Basically the electromagnetic field produced by the transmitter induces an electric current into the area surrounding the instrument. Nearby conductive objects distort the EM field. The balance between the two coils is disturbed and the instrument produces an audible tone and meter indication.

Radio Detection RD8000 PDL pipe and cable detector: This instrument may be used to detect buried, conductive pipes and utilities. It consists of a transmitter and a receiver and can be used in two configurations.

The transmitter may be used to directly apply a small electrical current to exposed, electrically conductive pipes and utilities. The RD receiver is then able to "trace" the underground portion of the pipe or utility, under some conditions for several hundred feet. The transmitter can also induce an electrical current into buried pipes and utilities where direct contact is not available.

The receiver can also be used alone. It has the capability to locate pipes and utilities by detecting the very small electrical currents induced into the features by nearby AM/FM radio stations.

The receiver also has an AC power function that may be used to detect underground power lines.

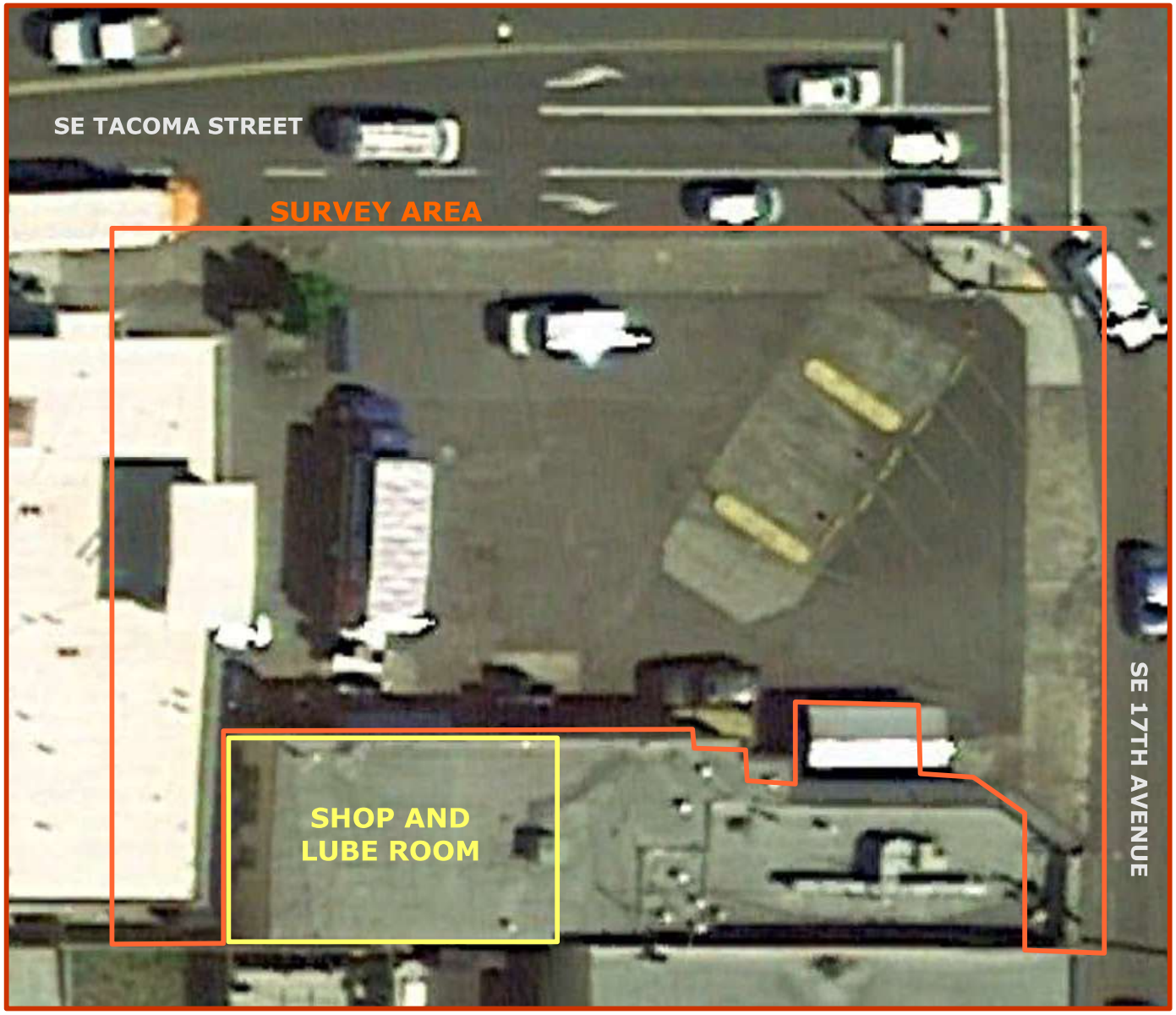


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FIGURE	Survey Area	
1	Project: 171212	Goodwill Parking Lot 1672 SE Tacoma Street Portland, Oregon
	Drawn by : NT	Prepared for: Terracon
		Base Photo from Google Earth

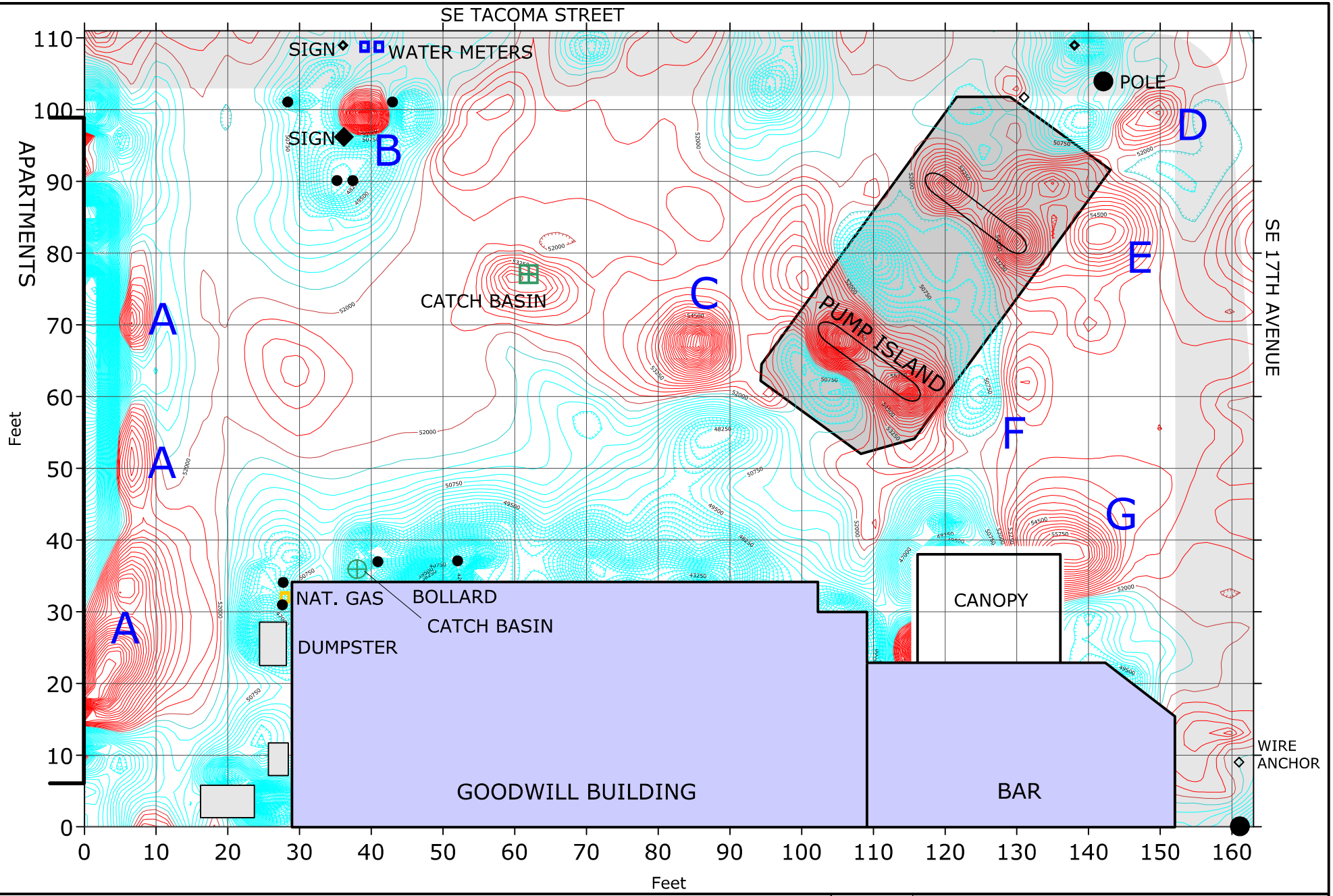

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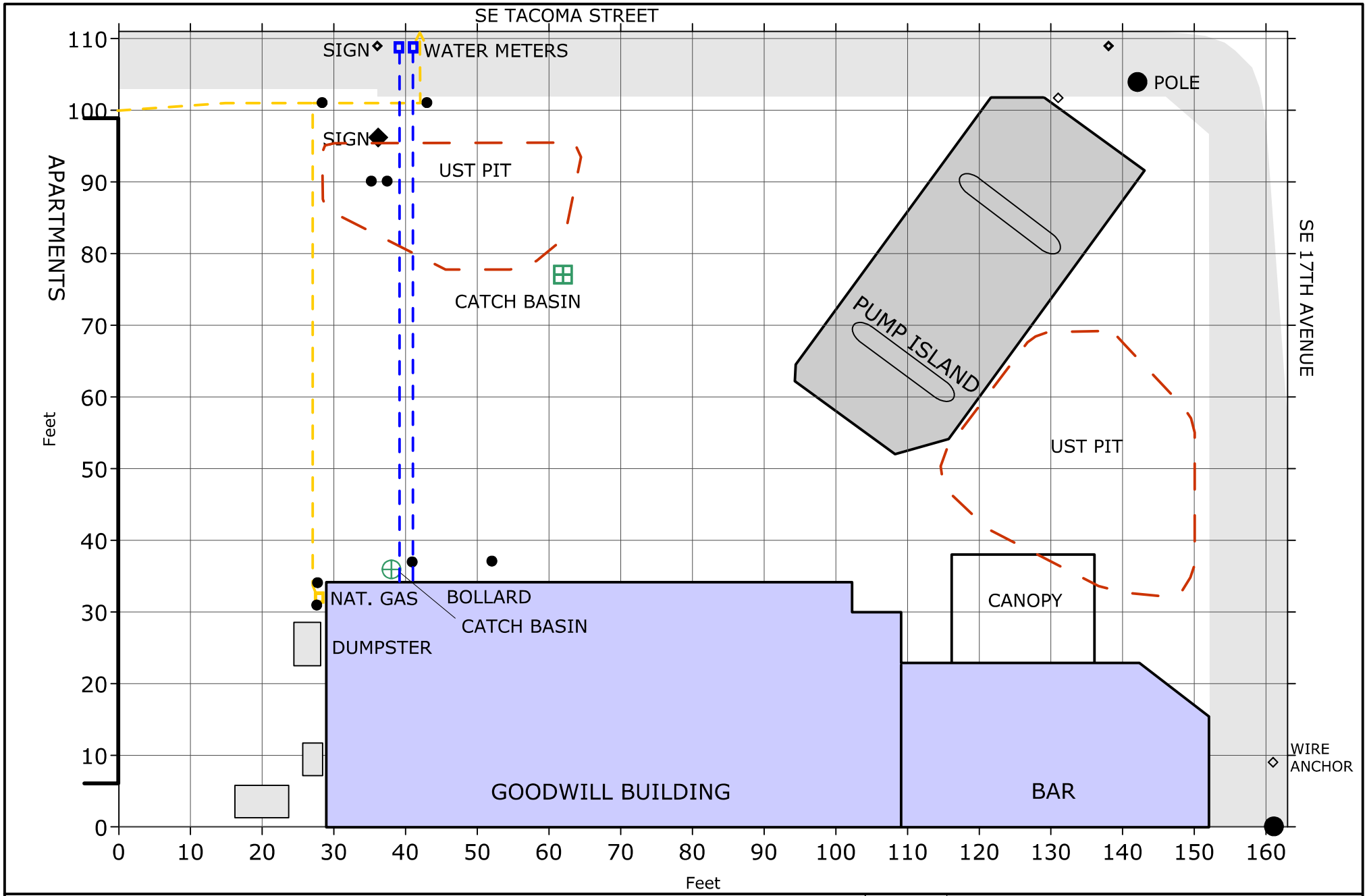
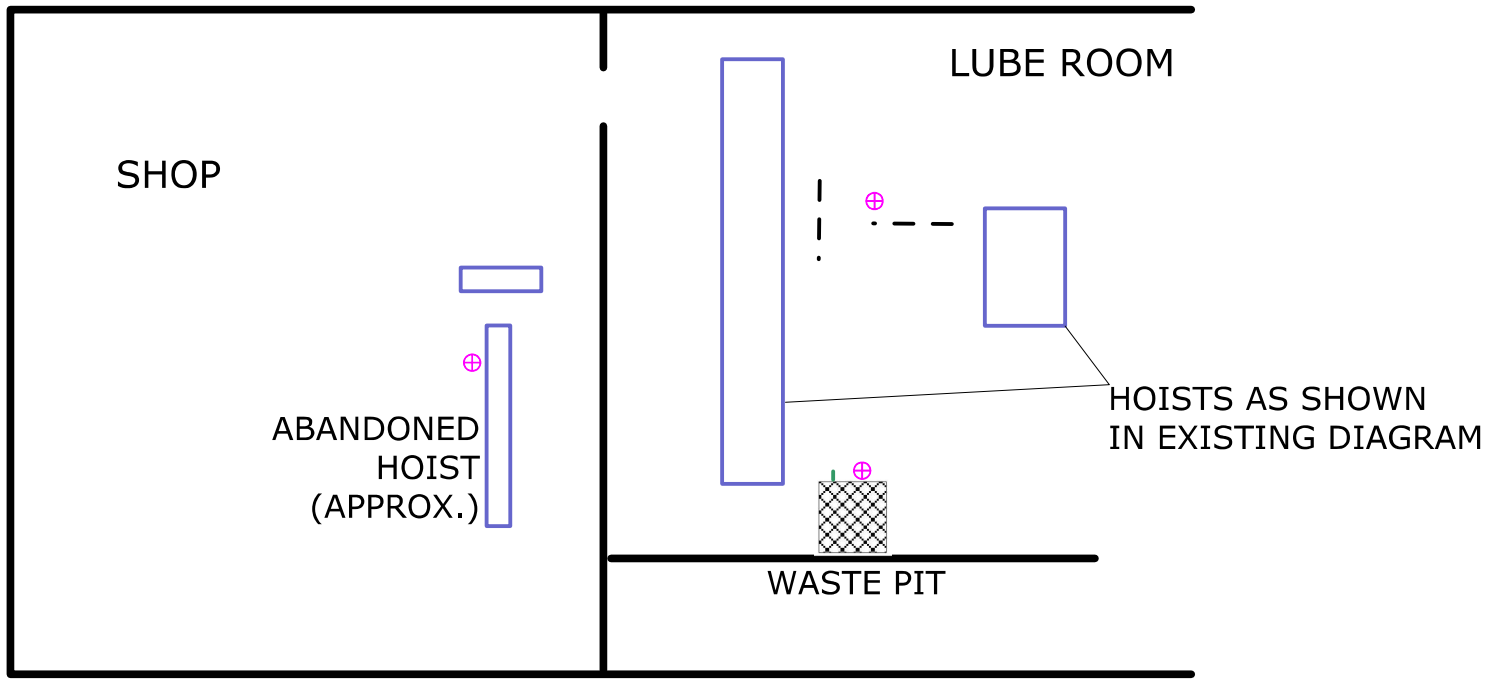
FIGURE 2	Magnetic Contour Map-C.I. = 250 nT	
	Project: 171212	Goodwill Parking Lot 1672 SE Tacoma Street Portland, Oregon
	Drawn by : NT	Prepared for: Terracon
		Survey Date: January 3, 2018



PACIFIC GEOPHYSICS
Applied Geophysics

FIGURE 3	Interpretation Map	
	Project: 171212	Goodwill Parking Lot 1672 SE Tacoma Street Portland, Oregon
	Drawn by : NT	Prepared for: Terracon
		Survey Date: January 3, 2018



BOREHOLES AND DETECTED PIPES
LOCATIONS APPROXIMATE

PACIFIC GEOPHYSICS
Applied Geophysics

N

FIGURE 4	Schematic with Results-Interior
Project: 171212	Goodwill Parking Lot 1672 SE Tacoma Street Portland, Oregon
Drawn by : NT	Prepared for: Terracon
	Survey Date: January 3, 2018

APPENDIX F – PHOTOGRAPHS

Photo 1 General view of the existing Goodwill building and former auto service facility at the site.

Photo 2 View of the suspect former waste pit / valve box located inside the Goodwill building.

Limited Site Investigation

Proposed CVS Pharmacy/Store No. 11185
8123 E 17th Avenue
Portland, Multnomah County, Oregon

March 20, 2019
Terracon Project No. 82187157A

Prepared for:
CVS Pharmacy, Inc.
Woonsocket, Rhode Island

Prepared by:
Terracon Consultants, Inc.
Portland, Oregon

March 20, 2019

CVS Pharmacy, Inc.
One CVS Drive
Woonsocket, Rhode Island 02895-6146

and

T.M. Crowley & Associates

Attn: Shannon Netherton
E: SNetherton@tmcrowley.com

Re: Limited Site Investigation
Proposed CVS Pharmacy/Store No. 11185
8123 SE 17th Avenue
Portland, Multnomah County, Oregon
Terracon Project No. 82187157A

Dear Ms. Netherton:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Limited Site Investigation (LSI) report completed at the above referenced Site in general accordance with our Proposal dated February 14, 2019 (P82197012) and Terracon's Corporate Services Agreement with CVS Pharmacy, Inc., dated April 1, 2015. The report presents data from recent field activities that included a geophysical survey, the completion of soil borings and the collection of soil samples for chemical analysis. The activities were completed to assess the potential presence of compounds of concern from historical auto repair operations and former underground storage tank (UST) systems on the northern portion of the site.

Terracon appreciates this opportunity to provide environmental engineering services to CVS Pharmacy, Inc. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

Rick Rodriguez
Environmental Department Manager

For: Matt Wheaton, R. G.
Principal

TABLE OF CONTENTS

LIMITED SITE INVESTIGATION

Proposed CVS Pharmacy/Store No. 11185
8123 SE 17th Avenue
Portland, Multnomah County, Oregon

March 20, 2019
Terracon Project No. 82187157A

1.0 SITE DESCRIPTION AND BACKGROUND INFORMATION

Terracon has prepared the following Limited Site Investigations (LSI) report for the Proposed CVS Pharmacy/Store No. 11185 located at 1672 SE Tacoma Street & 8123 SE 17th Avenue in Portland, Oregon. Exhibit 1 is a Site Diagram showing Terracon's approximate soil boring and sampling locations. The site is an approximately 0.57-acre tract of land comprising two parcels (Parcel Numbers R267566 and R267565). The site is developed with a 3,406-square-foot retail/warehouse building at 1672 Tacoma Street & 8117 SE 17th Avenue (Goodwill Donation Center & Penguin Pub; respectively) and paved parking areas, referred to as the "Northern Parcel" (Parcel No. R267565); and a 3,750-square-foot retail building at 8123 SE 17th Avenue (Sam's Attic) and paved parking areas, referred to as the "Southern Parcel" (Parcel No. R267566). It is our understanding that the client intends to redevelop the site with a CVS pharmacy store.

The LSI scope of services for this Site were outlined in Terracon's Proposal No. P82197012 prepared for T.M. Crowley & Associates (T.M. Crowley) and dated February 14, 2019. As part of the redevelopment of the site, a subsurface stormwater retention basin and infiltration gallery will be installed in the parking area of the South Parcel. Portland Bureau of Environmental Services (BES), following a review of the planned redevelopment, indicated concerns regarding potential impacts in site soils in the vicinity of the proposed stormwater infiltration system that, if present, could result in the migration of impacts to groundwater. To address this concern, BES has requested soil and groundwater (if present) in the area of the stormwater retention system be evaluated for the potential impacts. BES requested soil and groundwater sampling be completed in general accordance with their document *Soil/Groundwater Sampling for Infiltration Facilities Located in Commercial/Industrial Areas*, (BES Protocol) a copy of which is attached to this report for reference (Appendix B).

2.0 SCOPE OF SERVICES

The objective of the proposed LSI is to evaluate subsurface soil conditions in accordance with BES Protocol in the vicinity of the proposed stormwater retention basin and infiltration gallery, to be located on the Southern Parcel. Results of this LSI will support Portland BES' evaluation and permit approval for the proposed redevelopment of the site.

2.1 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These Limited Site Investigation services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

2.2 Additional Scope Limitations

Findings and conclusions resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the Site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this Limited Site Investigation. Subsurface conditions may vary from those encountered at specific test pits, borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, and our findings, are based solely upon data obtained at the time and within the scope of these services.

2.3 Reliance

This LSI report is prepared for the exclusive use and reliance of T.M. Crowley and CVS Pharmacy, Inc., its parent affilates and subsidiaries and their successors, assigns, and grantees and in accordance with the Corporate Services Agreement, Use or reliance by any other party is prohibited without the written authorization of T.M. Crowley and CVS Pharmacy, Inc., and Terracon Consultants, Inc. (Terracon).

Reliance on the LSI by the client and all authorized parties will be subject to the terms, conditions and limitations stated in the LSI report, the Terracon proposal, and the Corporate Services Agreement. The limitation of liability defined in the Corporate Services Agreement is the aggregate limit of Terracon's liability to the client and all relying parties.

3.0 FIELD INVESTIGATION

Terracon conducted the fieldwork under a safety plan developed for this project. Work was performed using Occupational Safety and Health Administration (OSHA) Level D work attire consisting of hard hats, safety glasses, protective gloves, and protective boots. Prior to field

activities, Underground Service Alert (Dig Alert Ticket No: 19040375) was requested by Terracon personnel for clearance of public underground utilities and the boring locations were cleared by a private utility locating service.

3.1 Soil Sampling

Terracon completed subsurface soil sampling at the site on February 21, 2019 by advancing two soil borings (B9 and B10) using direct-push drilling equipment by an Oregon licensed driller. The two borings were advanced in the parking lot of the southern parcel in the area of a proposed stormwater retention basin and infiltration gallery. The approximate boring locations are illustrated on Exhibit 1 in Appendix A.

Borings B9 and B10 were advanced to approximately 16.5 feet below the ground surface (bgs), at which refusal was encountered. Groundwater was not encountered in any of the borings during drilling activities.

Per Portland BES Protocol, soil sampling procedures for borings B-9 and B-10 were completed as follows:

- A composite soil sample will be collected from an interval of five below the design excavation depth of the proposed stormwater infiltration area (5.5 feet to 10.5 feet bgs to for B9, and 5.5 feet to 10.5 feet bgs for B10).
- A composite soil sample will be collected from an interval of five feet below the initial composite sample (10.5-15.5 bgs for B9, and 10.5-15.5 bgs for B10).
- In addition to the above sampling intervals, a grab soil sample was collected from the upper interval of 0 to 5 feet bgs from each soil boring.

To the extent practicable soil samples were screened “continuously” from each of the borings. Soil was observed to document subsurface conditions and visual and/or olfactory indications of petroleum hydrocarbons or other impacts. The samples were field-screened with a photoionization detector (PID) to semi-quantitatively estimate the presence of volatile organic compounds (VOCs) using the “headspace method.” The PID field screening results from the borings are summarized on the boring logs in Appendix B. Six soil samples from the two borings were selected for laboratory analysis, at depths determined by the Portland BES.

After packaging each sample in laboratory-provided containers, Terracon recorded the sample time on each container label in permanent ink and placed the filled containers in an ice-filled cooler with the chain-of-custody for transport to the nearest FedEx location. FedEx then delivered the samples to Pace Analytical, an Oregon-certified laboratory, for analysis. The samples were analyzed under standard chain-of-custody procedures using rush three-day turnaround time.

After sampling, the borings were decommissioned by backfilling the borings with bentonite chips immediately upon the conclusion of field work for this investigation. The boreholes were then capped with asphalt as appropriate to approximately match the existing ground surface.

Investigation-derived waste (IDW) consisting of soil cuttings and equipment decontamination water generated during the field activities were placed into a secure 5-gallon poly-drum and staged near the building on the western portion of the site. IDW will be stored at the site and disposed of to the appropriate disposal facility during construction and excavations activities proposed for the site.

3.2 Groundwater Sampling

The Portland BES protocol included the requirement to evaluate of groundwater if encountered during the advancement of soil borings. Groundwater was not encountered during in soil borings advancement and no groundwater samples were collected.

3.3 Laboratory Analysis

The six soil samples collected from borings B9 and B10 were submitted to an Oregon-certified laboratory and analyzed the following constituents of concern (COCs); total petroleum hydrocarbons (TPH) as gasoline-range organics (GRO) by Northwest Method NWTPH-Gx and TPH as diesel-range organics (DRO) and residual-(oil) range organics (RRO) by Northwest Method NWTPH-Dx; respectively, volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260B; semi-volatile organic compounds (SVOCs) by EPA 8270C; and Resource Conservations and Recovery Act (RCRA) 8 metals by EPA Method 6010/7471. The samples were analyzed under standard chain-of-custody procedures with a standard five-business day turnaround time.

4.0 RESULTS OF THE FIELD INVESTIGATION

4.1 Geology/Hydrogeology

In summary, approximately five feet of fill material consisting of brown sand with gravel overlies brown silty gravel and sand with cobbles and fractured rock to the maximum depths explored of 16.5 feet bgs in borings B9 and B10.

Groundwater was not encountered in either of the borings during drilling activities at the site. Groundwater is expected to be present at depths at least 40 feet bgs, and Terracon infers flow to be west-northwest, towards the Willamette River.

4.2 Field Screening

A total of six soil samples were collected from the two soil borings, at intervals determined by the City of Portland Bureau of Environmental Services (BES). The samples were field screened using the headspace method. Elevated PID responses (i.e. greater than 2 ppm) or unusual odors were not detected in any of the soil samples The PID responses from the collected soil samples are summarized on the boring logs in Appendix C.

5.0 ANALYTICAL RESULTS

The following sections describe the results of the testing. The detected laboratory analytical results are compared to the applicable DEQ RBCs and/or Clean Fill Values on Table 1 in Appendix D. The laboratory analytical reports and chain-of-custody records are attached in Appendix E.

5.1 Soil Sample Results

Composite soil samples collected from soil borings B-9 at 10-15 feet bgs and B-10 at 5-10 feet bgs reported concentrations of RRO of 738 milligrams per kilogram (mg/kg) and 178 mg/kg respectively; however, these constituents are below all applicable Oregon Department of Environmental Quality (DEQ) Risk-Based Concentrations (RBCs) and Oregon Clean Fill Values (CFVs). The other four soil sample did not have detections for TPH above laboratory detection limits.

All samples from both soil borings were analyzed for RCRA metals; and were reported to contain Arsenic, ranging from non-detected (ND) to 3.64 mg/kg; Barium from 91.4 to 225 mg.kg; Chromium from 11.8 mg/kg to 18.6 mg/kg; Lead from 3.45 to 7.12 mg/kg; and Mercury from ND to 0.0362 mg/kg. Reported concentrations of RCRA metals were below applicable DEQ RBCs and CFVs for the site.

No soil samples from soil borings B-9 and B-10 reported had detections for volatile organic compounds (VOCs) above laboratory reporting limits. Eleven semi-volatile organic compounds (SVOCs) were detected in the six oil samples; however, reported VOCs and SVOCs were below all applicable DEQ RBCs or CFVs for the site.

The results of the soil samples are summarized in Table 1 of Appendix D.

6.0 CONCLUSIONS

Based on the scope of services described in this report and subject to the limitations described herein, Terracon concludes the following:

- Two soil borings were advanced and soil samples were collected within designated intervals and beneath the proposed stormwater retention system and infiltration gallery at the site, in response to the Portland BES comments of proposed site plans.
- Constituents of concern (TPH, SVOCs, five of the eight RCRA metals) were detected in the collected soil samples; however, all COCs were reported below all applicable DEQ RBCs and DEQ CFVs.

APPENDIX A – EXHIBITS

Exhibit 1 – Site Diagram and Soil Boring Locations

= Approximate Site Boundary

= Approximate Soil Boring Location

N

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	RJR
Drawn by:	LRM
Checked by:	RJR
Approved by:	RJR

Project No.	P82187157A
Scale:	AS SHOWN
File Name:	Exhibits
Date:	March, 2019

Terracon
4103 SE International Way Ste 300
Portland, OR 97222-8854

SITE DIAGRAM AND SOIL BORING LOCATIONS

Proposed CVS Pharmacy/Store No. 11185
1672 SE Tacoma Street & 8123 SE 17th Avenue
Portland, OR

Exhibit 1

APPENDIX B – Soil/Groundwater Sampling for Infiltration Facilities Located in Commercial/Industrial Areas

Soil/Groundwater Sampling for Infiltration Facilities
Located in Commercial/Industrial Areas

Soil and groundwater sampling is conducted at proposed infiltration facilities for the purposes of protection of excavation and construction workers, characterizing soil for disposal, and to assess the environmental suitability of in-situ[1] soils for stormwater infiltration at a proposed site. Due to the nature of these facilities and their locations in an urban environment, it must be demonstrated that groundwater is protected from both: a) pollutants in stormwater run-off and b) potential pre-existing in-situ contaminants in the soil volume through which the stormwater will be infiltrated.

The Groundwater Protectiveness Demonstration (GPD) developed by the City of Portland Underground Injection Control Program demonstrates that a vertical separation distance of 5 vertical feet between: a) the elevation of stormwater infiltration into soil, and b) seasonal high groundwater level, is protective of groundwater for stormwater pollutants only. The approach developed for the GPD was for underground injection applications in which the point of infiltration is relatively deep compared to surface infiltration facilities. It provides reasonable approximations of loading, fate, and transport of pollutants within in-situ soil due to stormwater infiltration, but assumes that no contaminants exist in this soil prior to infiltration. Often this is not the case for surface facilities, and concentrations of constituents of concern (COCs) and their leachable components in facility soils can exceed groundwater protectiveness criteria set by the Oregon Department of Environmental Quality (DEQ).

Many COCs are relatively immobile in soils, depending on site conditions; however, the potential for COC migration to groundwater must be evaluated in accordance with ASTM Standard E1689-95(2014).

To quantitatively demonstrate that infiltration activities will not adversely impact groundwater, the exposure pathway must be shown to be incomplete in accordance with ASTM Standard E1689-95(2014) Standard Guide for Developing Conceptual Site Models for Contaminated Sites § 6.5 *Identifying Migration Pathways*. An exposure pathway is considered incomplete if any one of the following three elements are missing:

1. A mechanism of contaminant release from primary or secondary sources (leachable contamination)

2. A transport medium if potential environmental receptors are not located at the source (stormwater infiltration)

3. A point of potential contact of environmental receptors with contaminated medium (seasonal high groundwater level)

Element #1 is evaluated using analytical data developed from a subsurface soil sample or samples collected from the facility being evaluated.

Element #2, a transport medium, will be present as stormwater runoff in any engineered stormwater infiltration facility by design because stormwater will be collected, conveyed, and infiltrated through the in-situ soil of the facility.

[1] (In-situ = in situation) In this case: existing sub-surface soils that are located at a proposed infiltration facility location

Element #3 is evaluated by assessing the groundwater level, or lack thereof, directly under the proposed facility location in close vertical proximity during soil sampling.

The following soil and groundwater sampling methods evaluate proposed site conditions for pollutant/contaminant migration to groundwater pathway completeness.

Field Sampling Methods for Commercial/Industrial Areas:

Proposed stormwater facility locations are sampled using a direct-push core sampler or hand auger. For Commercial/Industrial locations the upper 10 vertical feet of soil found directly below the facility location is sampled and analyzed

5 feet depth interval (#1):

- A soil sample is collected at a depth interval of 5 vertical feet directly below the final excavated ground surface (leave-surface) to evaluate the environmental conditions of the in-situ soil that stormwater will be infiltrated through.

- The soil sample collected from the 5-foot depth interval is composited in its entirety. The entire soil volume of the extracted soil core is mixed thoroughly (composited) rather than sub-sampling aliquots of soil from the soil core and mixing the aliquots.

5 feet depth interval (#2):
The second 5-foot vertical soil sample is collected directly below the first sample interval in the soil boring and handled the same as the first 5-foot sample.

Groundwater Assessment:
The soil boring should be advanced to a terminal depth of 25 feet below the leave-surface of the proposed facility to check for the presence of groundwater or signs of seasonal high groundwater levels to demonstrate and evaluate adequate separation distance as defined by the Groundwater Protectiveness Demonstration. If groundwater is encountered within this depth interval, then a groundwater sample should be collected and analyzed.

Analysis:

Standard analytes for soil and groundwater include polynuclear aromatic hydrocarbons (PAHs) and the following seven metals: Arsenic, Cadmium, Chromium, Lead, Mercury, Copper, and Zinc (As, Cd, Cr, Pb, Hg, Cu, and Zn). Groundwater should be analyzed for both total and dissolved metals. Other analytes may be added if historic and/or proximal environmental conditions warrant broader analysis.

The results of the analysis of the first 5-foot depth interval sample are compared to groundwater protection trigger values to determine if leachability testing, *Synthetic Precipitate Leaching Procedure* (SPLP[2]), is required.

If the soil sample contains total metals concentrations greater than their respective trigger levels, then a follow-up (SPLP) analysis will be performed on the sample for the respective COC or COCs.

[2] The Synthetic Precipitate Leaching Procedure (SPLP) is designed to simulate the leaching a COC will undergo if it is located in soil that experiences stormwater infiltration.

The results of the SPLP analysis are compared to their respective DEQ Risk-Based Concentration (RBC) for Ingestion and Inhalation of Tapwater RBC_{tw} to determine if the site location is suitable for stormwater infiltration.

With these data and the underlying research of the Groundwater Protectiveness Demonstration the pollutant/contaminant migration to groundwater pathway can be adequately evaluated for completeness through infiltration facilities in a quantifiable and scientifically defensible manner using ASTM E1689-95(2014).

Constiuent Criteria for CSA Stormwater Infiltration Characterization

Constiuent	**Trigger Level**	**TCLP Limit**	**SPLP Limit**
Arsenic	100 mg/kg	5.0 mg/L	0.000038 mg/L
Cadmium	20 mg/kg	1.0 mg/L	0.005 mg/L
Chromium	100 mg/kg	5.0 mg/L	0.1 mg/L
Copper	40 mg/kg	N/A	1.3 mg/L
Lead	100 mg/kg	5.0 mg/L	0.015 mg/L
Mercury	4 mg/kg	4.0 mg/kg	0.002 mg/L
Molybdenum	20 mg/kg	1.0 mg/L	0.1 mg/L
Nickel	100 mg/kg	N/A	0.4 mg/L
Selenium	20 mg/kg	1.0 mg/L	0.1 mg/L
Silver	100 mg/kg	5.0 mg/L	0.1 mg/L
Zinc	370 mg/kg	N/A	4.7 mg/L
PCBs	0.5 mg/kg	N/A	0.000005 mg/L

APPENDIX C – UNIFIED SOIL CLASSIFICATON SYSTEM AND BORING LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

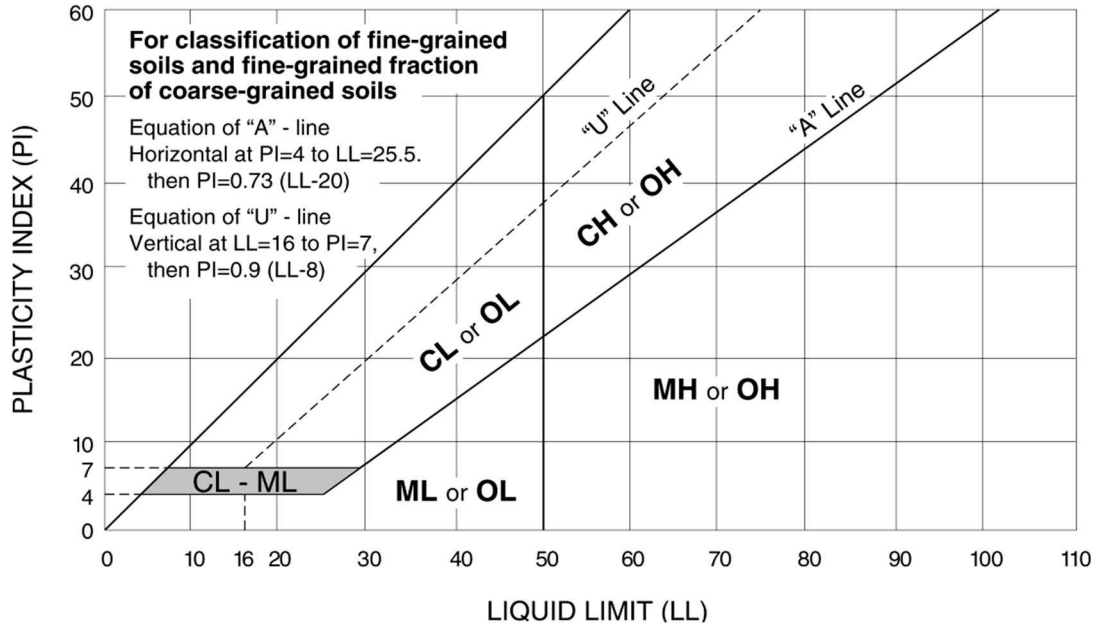
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



Terracon

BORING LOG NO. B-9

PROJECT: CVS # 11185

CLIENT: T.M. Crowley and Associates

SITE: 8123 SE 17th Avenue
Portland, OR 97202

LOCATION See Exhibit A-2

Surface Elev.: 99 (Ft.)

DEPTH	MATERIAL DESCRIPTION	ELEVATION (Ft.)	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)
	SANDY SILT WITH pebbles (SM), angular, brown, dry, loose.						
2.5		96.5				70	0.0
3.5	**SAND POORLY GRADED with angular gravel (SP)**, fine grained, angular gravel, dry. Gravel lense at 3.0 feet. Wet seam at 3.5 feet	95.5					
	SANDY SILT WITH GRAVEL (SM), angular, brown, dry, loose.		5			50	.2
	Dark brown to black sand lense.		10			80	.2
	1 inch gravel lense.		15			100	.2
16.5		82.5					
	Refusal at 16.5 Feet						

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
Direct push

Abandonment Method:
Bentonite chips

Notes:
Grab soil sample collected at 0 to 2.5 feet. Composite soil samples collected at 5 to 10 feet and 10 to 15 feet .

WATER LEVEL OBSERVATIONS

Terracon

Boring Started: 2/21/2019	Boring Completed: 2-21-2019
Drill Rig: DR009	Driller: Cascade
Project No.: 82187157A	Exhibit: B-2

BORING LOG NO. B-10

PROJECT: CVS # 11185

CLIENT: T.M. Crowley and Associates

SITE: 8123 SE 17th Avenue
Portland, OR 97202

LOCATION See Exhibit A-2

Surface Elev.: 99 (Ft.)

GRAPHIC LOG	DEPTH	MATERIAL DESCRIPTION	ELEVATION (Ft.)	DEPTH (ft)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (%)	OVA/PID (ppm)
		SANDY SILT (SM), trace cobles and gravel, angular, brown, dry, loose, poorly graded.					100	0.0
	5.0		94	5				
		SANDY SILT WITH GRAVEL AND CLAY (SM)					70	0.0
		Dark brown mottling.		10			60	0.0
		2 inch wet seam at the termination of boring. Refusal at 16.5 feet.		15			100	0.0
	16.5		82.5					
		Refusal at 16.5 Feet						

The stratification lines represent the approximate transition between differing soil types and/or rock types; in-situ these transitions may be gradual or may occur at different depths than shown.

Advancement Method:
DIrect push

Abandonment Method:
Bentonite chips

Notes:
Grab soil sample collected at 2.5 to 4 feet. Composite soil samples collected at 5 to 10 feet and 10 to 15 feet .

WATER LEVEL OBSERVATIONS

Terracon

Boring Started: 2/21/2019	Boring Completed: 2/21/2019
Drill Rig: DR009	Driller: Cascade
Project No.: 82187157A	Exhibit: B-1

APPENDIX D – TABLES

Table 1 – Summary of Soil Analytical Results

Table 1

Summary of Soil Analytical Results
CVS No. 11185 LSI
8123 SE 17th Avenue, Portland, Oregon
Terracon Project No. 82187157A

All analytical resulted are reporting in milligrams per kilograms (mg/kg)

Sample ID	Sample Date	Sample Depth (feet)	TPH			RCRA Metals							SVOCs										
			GRO	DRO	RRO	Arsenic	Barium	Chromium (III)	Lead	Mercury	Selenium	Silver	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(g,h,i) perylene	Chrysene	Dibenzo(a,h) anthracene	Fluoranthene	Indeno(1,2,3-cd) pyrene	Phenanthrene	Phenol	Pyrene
Occ. RBCss			20,000	14,000	36,000	1.9	220,000	>Max	800	350	….	5,800	21	2.1	21	….	2,100	2.1	30,000	21	….	….	23,000
Cons. RBCss			9,700	4,600	11,000	15	69,000	530,000	800	110	….	1,800	170	17	170	….	17,000	17	10,000	170	….	….	7,500
Exc. RBCss			>Max	>Max	>Max	420	>Max	>Max	800	2,900	….	49,000	4,800	490	4,900	….	490,000	490	280,000	4,900	….	….	210,000
Occ. RBCso			69,000	>Max	>Max	NV	NV	NV	NV	NV	….	NV	>Csat	NV	NV	….	NV	NV	NV	NV	….	….	>Max
Occ. RBCsi			>Max	>Max	>Max	NV	NV	NV	NV	NV	….	NV	>Csat	NV	NV	….	NV	NV	NV	NV	….	….	>Max
Occ. RBCsw			130	>Max	>Max	*	*	*	30	*	….	*	>Csat	>Csat	>Csat	….	>Csat	>Csat	>Csat	>Csat	….	….	>Csat
CFV/OBM			….	….	….	8.80	790	76	28	0.23	0.71	4.2	0.15	0.015	0.15	….	14	0.015	29	0.15	….	30	1,700
B-9	2/21/2019	2.5-4	ND	ND	ND	ND	**225**	**15.4**	**3.60**	**0.0268**	ND	ND	ND	**0.00808**	ND	ND	**0.00925**	ND	**0.00756**	ND	**0.00849**	ND	ND
B-9	2/21/2019	5-10	ND	ND	ND	ND	**115**	**11.9**	**3.45**	**.0257**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
B-9	2/21/2019	10-15	ND	ND	**738**	ND	**133**	**12.3**	**4.52**	ND	ND	ND	**0.0118**	**0.0153**	**0.0287**	**0.0225**	**0.018**	**0.00851**	**0.0387**	**0.00752**	**0.0334**	ND	**0.0400**
B-10	2/21/2019	0-2.5	ND	ND	ND	**3.64**	**187**	**18.6**	**7.12**	**.0362**	ND	ND	ND	ND	**0.0677**	**0.0495**	ND	ND	**0.0520**	ND	ND	ND	**0.0695**
B-10	2/21/2019	5-10	ND	ND	**178**	ND	**106**	**15.7**	**5.02**	ND	ND	ND	ND	**0.00943**	ND	ND	**0.0116**	ND	ND	ND	ND	ND	ND
B-10	2/21/2019	10-15	ND	ND	ND	ND	**91.4**	**11.8**	**4.32**	ND	ND	ND	**0.00677**	**0.00998**	**0.0193**	**0.0150**	**0.0108**	ND	**0.0162**	ND	**0.0123**	ND	**0.0216**

Notes and Qualifiers:

Color highlighted cells indicate reported concentration exceeds CFVs or Commerical RBCs.

Analytes with no detection above the laboratory reporting limit are not presented in the table above. A full list of analytes is included in the laboratory analytical report.

…. = No Published RBCs or CFV/OBLM, or the exposure pathway for this compound is indirect and has been addressed through a direct exposure pathway scenario

>Csat = The soil RBC exceeds the limit of three-phase equilibrium partitioning.

>Max = The constituent RBC for this pathway is calculated as greater than 1,000,000 mg/kg. Therefore, this substance is deemed not to pose risks in this scenario.

NV = This chemical is considered "nonvolatile" for purposes of the exposure calculations.

TPH = Total Petroleum Hydrocarbons

GRO = TPH in the Gasoline Range Organics - Analyzed by Northwest Method NWTPH-Gx

DRO = TPH in the Diesel Range Organics - Analyzed by Northwest Method NWTPH-Dx

RRO = TPH in the Residual-Oil Range Organics - Analyzed by Northwest Method NWTPH-Dx

SVOCs = Semi-Volatile Organic Compounds - nalyzed by Environmental Protection Agency (EPA) Method 8270D

RCRA Metals = Resource Conservations Recovery Act Metals - Analyzed by EPA Methods 6000 Series and 7174

ND = Not detected above laboratoy detection levels.

Oregon DEQ Soil Exposure Pathways

Occ. = Occupational receptor

Cons. = Construction Worker receptor

Exc. = Excavation Worker receptor

RBCss = Soil Ingestion, Dermal Contact, and Inhalation

RBCso = Volatilization to Outdoor Air

RBCsi = Vapor Intrusion into Buildings

RBCsw = Leaching to Groundwater

CFV/OBM = DEQ Clean Fill Values and Oregon Background Levels for Metals for the Portland Basin

APPENDIX D – WASTE DISPOSAL DOCUMENTATION

Customer Summary Report

Hillsboro Landfill - S03305 (USA) 05/01/2019 12:00 AM - 06/24/2019 11:59 PM Operation Type: All

Customer: All - Ticket Type: All - Customer Type: All - PMT Category: All - Profile: 130297OR

Ticket Date	Ticket ID	Customer	Generator	Profile	Truck	Material	Tons
6/17/2019	1529082	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8540-SOLO	Cont Soil Pet-RGC-Tons	18.74
6/17/2019	1529085	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8544	Cont Soil Pet-RGC-Tons	20.30
6/17/2019	1529090	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8542-SOLO	Cont Soil Pet-RGC-Tons	19.76
6/17/2019	1529097	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8547-SOLO	Cont Soil Pet-RGC-Tons	14.55
6/17/2019	1529099	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8543-SOLO	Cont Soil Pet-RGC-Tons	19.76
6/17/2019	1529135	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8540-SOLO	Cont Soil Pet-RGC-Tons	19.59
6/17/2019	1529136	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8544	Cont Soil Pet-RGC-Tons	20.45
6/17/2019	1529143	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8542-SOLO	Cont Soil Pet-RGC-Tons	20.73
6/17/2019	1529146	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8543-SOLO	Cont Soil Pet-RGC-Tons	18.57
6/17/2019	1529149	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8547-SOLO	Cont Soil Pet-RGC-Tons	19.77
6/17/2019	1529183	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8544	Cont Soil Pet-RGC-Tons	18.57
6/17/2019	1529184	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8540-SOLO	Cont Soil Pet-RGC-Tons	19.32
6/17/2019	1529187	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8542-SOLO	Cont Soil Pet-RGC-Tons	19.54
6/17/2019	1529190	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8543-SOLO	Cont Soil Pet-RGC-Tons	19.26
6/17/2019	1529194	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8547-SOLO	Cont Soil Pet-RGC-Tons	20.31
6/18/2019	1529259	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8543-SOLO	Cont Soil Pet-RGC-Tons	20.23
6/18/2019	1529260	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8547-SOLO	Cont Soil Pet-RGC-Tons	19.70
6/18/2019	1529263	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8554	Cont Soil Pet-RGC-Tons	15.93
6/18/2019	1529267	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8540-SOLO	Cont Soil Pet-RGC-Tons	19.56
6/18/2019	1529270	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8547-SOLO	Cont Soil Pet-RGC-Tons	19.20
6/18/2019	1529300	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8554	Cont Soil Pet-RGC-Tons	15.95
6/18/2019	1529304	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8543-SOLO	Cont Soil Pet-RGC-Tons	20.09
6/18/2019	1529316	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8547-SOLO	Cont Soil Pet-RGC-Tons	19.65
6/18/2019	1529318	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8540-SOLO	Cont Soil Pet-RGC-Tons	20.72
6/18/2019	1529319	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8547-SOLO	Cont Soil Pet-RGC-Tons	20.72
6/18/2019	1529341	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8554	Cont Soil Pet-RGC-Tons	16.04
6/18/2019	1529353	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8543-SOLO	Cont Soil Pet-RGC-Tons	19.71
6/18/2019	1529361	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8547-SOLO	Cont Soil Pet-RGC-Tons	19.92
6/18/2019	1529363	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8544	Cont Soil Pet-RGC-Tons	20.92
6/18/2019	1529365	COLUMBIA PAVING AND EXCAVATION INC	OR-TM CROWLEY ASSOC 8145 SE	130297OR	8540-SOLO	Cont Soil Pet-RGC-Tons	19.35
TOTALS:	**30 loads**						**576.91**

Customer Summary Report

Hillsboro Landfill - S03305 (USA) 06/01/2019 12:00 AM - 07/29/2019 11:59 PM Operation Type: All

Customer: All - Ticket Type: All - Customer Type: All - PMT Category: All - Profile: 131018OR

Ticket Date	Ticket ID	Customer	Generator	Profile	Truck	Material	Tons
7/22/2019	1533125	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	33	Cont Soil Pet-RGC-Tons	12.27
7/22/2019	1533126	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	77-SOLO	Cont Soil Pet-RGC-Tons	13.82
7/22/2019	1533148	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	3143	Cont Soil Pet-RGC-Tons	18.35
7/22/2019	1533179	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	33	Cont Soil Pet-RGC-Tons	13.93
7/22/2019	1533181	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	77-SOLO	Cont Soil Pet-RGC-Tons	17.22
7/22/2019	1533205	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	3143	Cont Soil Pet-RGC-Tons	11.58
7/22/2019	1533220	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	77-SOLO	Cont Soil Pet-RGC-Tons	15.65
7/22/2019	1533236	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	3143	Cont Soil Pet-RGC-Tons	12.53
7/23/2019	1533329	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	77-SOLO	Cont Soil Pet-RGC-Tons	12.26
7/23/2019	1533355	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	1803-SOLO	Cont Soil Pet-RGC-Tons	13.09
7/23/2019	1533376	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	77-SOLO	Cont Soil Pet-RGC-Tons	13.83
7/23/2019	1533397	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	1803-SOLO	Cont Soil Pet-RGC-Tons	9.70
7/23/2019	1533407	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	77-SOLO	Cont Soil Pet-RGC-Tons	12.91
7/24/2019	1533494	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	3143	Cont Soil Pet-RGC-Tons	13.09
7/24/2019	1533501	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	33	Cont Soil Pet-RGC-Tons	11.66
7/24/2019	1533502	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	77-SOLO	Cont Soil Pet-RGC-Tons	11.55
7/24/2019	1533531	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	3143	Cont Soil Pet-RGC-Tons	12.71
7/24/2019	1533540	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	77-SOLO	Cont Soil Pet-RGC-Tons	13.85
7/24/2019	1533567	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	3143	Cont Soil Pet-RGC-Tons	11.41
7/25/2019	1533614	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	9715	Cont Soil Pet-RGC-Tons	16.52
7/25/2019	1533658	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	9715	Cont Soil Pet-RGC-Tons	17.68
7/25/2019	1533667	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	25-solo	Cont Soil Pet-RGC-Tons	11.98
7/25/2019	1533720	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	9715	Cont Soil Pet-RGC-Tons	19.21
7/26/2019	1533855	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	25-solo	Cont Soil Pet-RGC-Tons	12.90
7/26/2019	1533856	ANDERSON ENVIRONMENTAL CONTRACTING LLC	OR-TM CROWLEY ASSOC 8145 SE	131018OR	93-SOLO	Cont Soil Pet-RGC-Tons	11.66
TOTALS:	**25 loads**						**341.36**