

**Interim Cleanup Action Work Plan
1401, 1407 & 1409 Pacific Avenue
Sauro's Property
Tacoma, Washington**

May 18, 2009

Prepared for

City of Tacoma



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TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1-1
1.1 SITE BACKGROUND	1-1
1.2 PREVIOUS INVESTIGATIONS	1-2
2.0 SITE CONDITIONS	2-1
2.1 FILL CONDITIONS	2-1
2.2 FOUNDATION AND WALL CONDITIONS	2-2
2.3 STORAGE TANKS	2-4
2.4 HYDROGEOLOGIC SETTING	2-4
3.0 PCE SOIL CONCENTRATIONS	3-1
4.0 INTERIM CLEANUP ACTION	4-1
4.1 SELECTION OF INTERIM CLEANUP ACTION	4-1
4.2 PREPARATION ACTIVITIES	4-2
4.2.1 Permitting	4-2
4.2.2 Site Access	4-2
4.2.3 Underground Utility Locate	4-3
4.2.4 Well Abandonment	4-3
4.2.5 Stormwater Management	4-3
4.2.6 Traffic Control Plan	4-4
4.2.7 Storage Tank Abandonment/Removal	4-5
4.2.8 Shoring	4-5
4.2.9 Waste Profiling and Landfill Acceptance	4-6
4.3 CLEANUP ACTION	4-7
4.3.1 Soil Excavation	4-7
4.3.1.1 Segregation of Debris	4-8
4.3.1.2 Contaminant Distribution in Soil	4-9
4.3.1.3 South Slope (DaVita Building)	4-9
4.3.1.4 Excavation Depth and Volume	4-9
4.3.1.5 Removal	4-10
4.3.2 Disposal	4-10
4.3.3 Residuals Management	4-11
4.3.4 Confirmation Soil Sampling	4-11
4.4 SITE RESTORATION AND BACKFILL	4-11
5.0 REPORTING AND DOCUMENTATION	5-1
6.0 USE OF THIS WORK PLAN	6-1
7.0 REFERENCES	7-1

LIST OF FIGURES

<u>Figure</u>	<u>Title</u>
1	Site Location
2	Site Map
3	Soil and Groundwater Investigation Locations
4	Site Surface Topography
5	Cross Section A-A'
6	Cross Section B-B'
7	Site Paleosurface
8	Groundwater Contour Map June 2007
9	Soil PCE Concentration Contours 48 to 51 Ft Elevation
10	Soil PCE Concentration Contours 45 to 48 Ft Elevation
11	Soil PCE Concentration Contours 42 to 45 Ft Elevation
12	Soil PCE Concentration Contours 39 to 42 Ft Elevation
13	Soil PCE Concentration Contours 36 to 39 Ft Elevation
14	Soil PCE Concentration Contours 33 to 36 Ft Elevation
15	Soil PCE Concentration Contours 30 to 33 Ft Elevation
16	Soil PCE Concentration Contours 27 to 30 Ft Elevation
17	Soil PCE Concentration Contours 24 to 27 Ft Elevation
18	Soil Excavation Categories
19	Estimated Elevation of Low Groundwater Table
20	Estimated Thickness of Soil Above Low Groundwater Table

LIST OF TABLES

<u>Table</u>	<u>Title</u>
1	Soil Analytical Results

LIST OF APPENDICES

<u>Appendix</u>	<u>Title</u>
A	Supplementary Investigation Logs
B	Health and Safety Plan
C	Well Logs
D	Debris Laboratory Analytical Results

1.0 INTRODUCTION

On October 21, 2008 the City of Tacoma (City) entered into a purchase and sale agreement with the Sauro Estate for acquisition of the property on which the Sauro's Cleanarama operated. The transaction closed on January 9, 2009, at which time title to the property transferred from the Sauro Estate to the City, and the City became the owner of the property. The City has elected to conduct an interim action to expedite cleanup of contaminated soil and encourage re-development of the property.

This work plan describes the methods and procedures that will be implemented by the City to complete an interim cleanup action (ICA) at the former Sauro's Cleanarama property (Sauro's property) located at 1401, 1407 and 1409 Pacific Avenue in Tacoma, Washington (Figures 1 and 2). The purpose of the ICA is the removal and off site disposal of soil impacted with volatile organic compounds (VOCs) documented during previous investigations conducted at the Sauro's property. The ICA is part of remedial actions being conducted at the Sauro's property and adjacent properties under Agreed Order (AO) DE 4283 with the Washington State Department of Ecology (Ecology) that became effective on March 30, 2009. The ICA is an interim measure to remove contaminated soil that poses a threat to groundwater; it does not constitute a final cleanup remedy for the site. The final cleanup remedy will be evaluated through a feasibility study and the completed ICA will be evaluated as one part of the final remedy.

1.1 SITE BACKGROUND

The Sauro's property is a vacant lot located in an urban downtown area setting, surrounded by commercial office buildings, roadways and parking structures. The Sauro's property was historically divided into five narrow, east-west trending building lots occupied by long concrete warehouse structures. The three northern lots are now combined into one parcel; the southern two lots remain as separate parcels. The Sauro's Cleanarama operated on the four northern lots (i.e., two existing northern parcels) but did not operate on the southern lot (i.e., southern parcel). The three current parcel locations are shown on Figure 2.

Historical documents and recent geologic interpretations based on subsurface explorations indicate that the majority of the city block along Pacific Avenue between South 14th and 15th Streets traversed a deep and relatively wide drainage gulch trending in a west to east-southeast direction. This drainage depression was filled to accommodate building and street construction. The Sauro's property was initially developed in the late 1800's as hotel and lodging facilities. By 1931, a multi-story commercial building had been built on the property that apparently housed a number of businesses throughout its history, including:

- Tokyo Laundry in the 1920s
- North Coast Transportation Co./Central Terminal/Greyhound Lines from approximately 1923 to 1955
- Gray Co./Asbestos Materials Co. in the 1940s
- Eastern Electroplating Co. from approximately 1942 to 1955
- Depot Cleaners & Hatters in the 1950s
- Sauro's Cleanarama from late 1940s to 1999
- Various taxi companies from approximately 1962 to 1973.

The building on the southern parcel of the Sauro's property (1409 Pacific Avenue) was demolished in approximately 1959 and the parcel has since remained vacant. The northern two parcels were occupied by the former Sauro's Cleanarama from the late 1940s to 1999. The building on the northern two parcels was torn down in 2001 and the property has since remained vacant. A detailed history of Sauro's property activities is presented in a Phase I environmental site assessment report (Landau Associates 2008a).

1.2 PREVIOUS INVESTIGATIONS

Previous site investigations identified significant soil and groundwater impacts primarily related to the release of VOCs. The primary VOC detected at the Sauro's property is tetrachloethene (PCE), a solvent that has been used extensively in the dry-cleaning industry since the 1940s. Other VOCs that were detected include trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride. These VOCs were not typically used as dry cleaning solvent liquids (Doherty 2000a,b). However, all three of these chemicals can occur in soil and groundwater as biologically mediated breakdown products of PCE.

One possible source of PCE contamination was identified as a sump/dry well historically located in the basement of the dry cleaning business (north central portion of the Sauro's property) where wastewater and waste dry cleaning liquids were apparently discharged (GeoEngineers 2001). The sump and surrounding soil were excavated in 2001 (Farallon 2005). Excluding the excavated area, soil contamination has been identified over a large portion of the property; however, the highest concentrations are still around the former sump area on the northern end of the property. Based on December 2007 sampling results, Farallon Consulting, L.L.C (a consultant for the Sauro Estate) estimated that approximately 3,000 tons (2,000 yd³ of VOC-contaminated soil are still present at the Sauro's property at concentrations greater than the Model Toxics Control Act (MTCA) Method B soil cleanup

level of 1.9 mg/kg^{1,2}. A Phase 2 Investigation completed by Landau Associates in 2008 identified PCE impacted soil beyond the Sauro's property boundaries to the north and west, but at concentrations below the cleanup level (Landau Associates 2008b). A supplementary soil investigation was conducted by Landau Associates in April 2009 (Landau Associates 2009a,b). The objective of this supplementary investigation was to further define the distribution of PCE soil concentrations to refine the scope of this interim action. Supplementary soil investigation locations and previous soil investigation locations are shown on Figure 3. Supplementary soil investigation results are presented in Table 1. Boring, hand auger and test pit logs from the supplementary investigation are presented in Appendix A.

¹ 1.9 mg/kg is the MTCA designated Method B standard formula cleanup level based on direct contact exposure.

² Ecology (2008) indicated that 1.9 mg/kg PCE represents the level above which excavated soil from the site would be classified as hazardous waste based on Ecology's "contained-in" policy.

2.0 SITE CONDITIONS

The Sauro's property is 120 ft (east-west) by 125 ft (north-south). The property is bounded to the west by Pacific Avenue, to the north by South 14th Street, to the east by Court A, and to the south by the DaVita Building (commercial office building). North of South 14th Street is a Budget rental car facility (Budget property) containing at-grade and one story below-grade parking. To the northeast, across the intersection of South 14th Street and Court A, is the United States Postal Service (USPS) property, which consists of at-grade parking covering the entire property. To the east of the property, across Court A, is a public parking lot managed by Diamond (Diamond property), which also contains at-grade parking. Property locations are shown on the site plan on Figure 2.

The street level on the west side (Pacific Avenue) and north side (South 14th Street) of the Sauro's property is at about Elevation 62 to 64 ft (NGVD 1929), with the high point located at the northwest corner of the property. Court A, located along the east side of the Sauro's property, slopes gradually downward from about Elevation 64 ft at the northeast property corner to about Elevation 60 ft at the southeast property corner. Site grades inside the property are generally one story lower (approximately Elevation 50 ft) than adjacent street grades within the northern half and up to two stories (approximately Elevation 38 ft) lower within the southern half. Site grades are shown on Figure 4. Subsurface soil and foundation conditions are shown on a north-south cross section and an east-west cross section on Figures 5 and 6 respectively. Cross section locations are shown on Figure 3.

2.1 FILL CONDITIONS

Previous explorations by Landau Associates (2008b) and others confirm the presence of significant fill on the Sauro's property. Below the fill, the native soil is typically dense sand with varying amounts of gravel and silt (ice contact deposit). The deepest fill areas, on the order of 28 to 32 ft deep, are located within the drainage gulch running from the northwest corner of the property towards the eastern portion of the south property line. An estimate of the site paleosurface (original ground surface) is presented on Figure 7.

The fill material appears to consist predominantly of silt and sand size soil with debris. Debris consists predominantly of brick and concrete based on a limited number of test pits conducted at the Sauro's property in April 2009. A small stockpile (roughly 20 yd³) located on the west side of the property appears to contain predominantly debris (i.e., bricks and concrete). The debris content of the stockpile is estimated to be greater than 50 percent. An old access ramp on the southernmost lot at the southeast corner of the property appears to be constructed of old concrete covered by soil and debris. The concrete appears to be spoils from previous construction activity that may form a monolithic block of

weak concrete. A newer ramp structure currently provides access to the northern parcel of the property east from Court A. This ramp appears to be constructed with quarry spalls placed above soil over pre-existing concrete structures associated with the previous building. The concrete beneath this ramp includes intact concrete beams and portions of floor slabs that may be connected to the foundation wall on the east side. The locations of the debris stockpile and ramp structures are shown on Figure 3.

A series of test pits were dug on April 6, 2009 to investigate foundation conditions. A preliminary estimate of the average debris content within the fill across the site is 5 to 15 percent by volume, based on visual observation from the test pits. This estimate is considered very approximate based on the limited coverage of the test pits. Test pit locations are shown on Figure 3. Test pit logs are presented in Appendix A.

2.2 FOUNDATION AND WALL CONDITIONS

The Sauro's property is surrounded by streets on the west, north and east sides, and an adjacent building (DaVita Annex) on the south side. Although most of the previous building interior walls and foundation elements have been removed, the perimeter walls of previous buildings remain largely intact below street grade along the west, north, and east sides of the property. These walls in some cases support the sidewalk and in other areas support the street.

To reduce uncertainty associated with the existing condition of the perimeter wall systems, a number of test pits were advanced within the Sauro's property on April 6, 2009 to explore the actual depth of the remnant perimeter wall and foundation systems. These test pits generally revealed the columns along the north portion of the west property line and the western three-quarters of the north property boundary to extend another floor level below existing grades, with the above-grade walls supported on grade beams at current ground level between these columns. The base of the wall footing along the northern portion of the east property line was confirmed to be supported directly on dense native soils. In general, wall, foundation and ground conditions vary significantly around the perimeter of the property, as summarized below:

- Along Pacific Avenue [west side – southern two-fifths (approximately 50 ft)]: Along the southern 50 ft (i.e., corresponding to the southern two parcels), the sidewalk is vaulted and supported up to 22 ft above interior site grades by concrete columns (with remnant wood forms still in place) and by column-supported reinforced concrete floors. An old stone wall with a battered face (likely a gravity retaining wall), located about 5 to 10 ft west of the property line, supports the road embankment fill west of the vaulted sidewalk. The height of the stone gravity wall appears to be on the order of 22 ft along this section of wall, based on visual inspection.
- Along Pacific Avenue [west side – northern three-fifths (approximately 75 ft)]: Along the 75 ft (i.e., corresponding to the northern parcel), the sidewalk is also vaulted, but supported by

the remaining old building perimeter walls. These remnant walls are supported by columns that extend another floor below grade. The stone wall supporting Pacific Avenue continues northward behind these old basement walls; however, the height of the stone gravity wall appears to be significantly less along this portion of wall. Coring completed on April 17, 2009 indicates a gravity stone wall height ranging from 11 ft within the central portion to 6 ft near the northern end of the west property line. The sidewalk concrete appears to be in relatively good condition. Portions of the old perimeter walls appear to be poured up to or to be braced on the old stone wall. Foundation details for the northern portion of this structure are shown schematically on Figure 6.

- Along South 14th Street (north side): The sidewalk is also vaulted and supported by the remnant building walls, except for the easternmost 12 ft. The property line walls are also supported by deep columns. The vaulted sidewalk is in significantly more disrepair than along Pacific Avenue. A concrete (as opposed to stone) retaining wall is present about 3 to 9 ft behind the remnant building walls and supports the embankment fill below South 14th Street. This concrete retaining wall appears to have been originally constructed with structural connections to the old property line building walls, in the form of horizontal and vertical steel I-beams. Many of these steel members have been severely corroded and currently may not provide structural support to the concrete retaining wall holding up South 14th Street. A recent test pit revealed the base of this old concrete retaining wall to extend at least 7 ft below existing grade (maximum reach for backhoe, base of wall not confirmed). Subsequent coring completed on April 20 and 21, 2009, revealed the walls to be 2 ft thick (horizontally) and 25 ft tall, extending approximately 12 ft below current grade inside the property. Foundation details are shown on Figure 5.
- Along South 14th Street (north side – easternmost 12 ft): This portion of the north wall consists of a slab-on-grade sidewalk. The sidewalk and street appear to be supported by the old perimeter building wall acting as a backfilled retaining wall. The change in construction methods appear to be related to the morphology and extent of the old gulch (i.e., the elevation of the paleosurface rises up in this location).
- Along Court A [east side – northern four-fifths (approximately 100 ft)]: The sidewalk along this side of the property is constructed as concrete slab-on-grade, supported by the backfill behind the remnant old building perimeter walls. These old perimeter walls are functioning as retaining walls and appear to remain along most of this side. Foundation details for the northern portion of this wall structure are shown on Figure 6.
- Along Court A [east side – southern one-fifth (approximately 25 ft)]: The sidewalk along this portion of wall is also constructed as a concrete slab-on-grade. A weaker old remnant concrete wall appears to be present, but may not be continuous to the corner of the property. This sidewalk and older remnant property line wall appears to be partially supported by the old concrete debris access ramp. The concrete appears to be spoils from previous construction activity that may form a monolithic block of weak concrete.
- Along DaVita Annex (south side): Based on visual inspection and recent test pit excavation, the DaVita Annex appears to extend another 4 to 5 ft below existing site grades. Old relic foundation elements can be observed at ground level along portions of the DaVita Annex wall; however, these relic structures do not appear to be structurally connected to the Annex wall. Remnants of an old warehouse floor (buried) were also observed at a depth of about 3 to 4 ft below the surface in a test pit near the eastern portion of the wall. This old floor,

probably associated with the southernmost parcel development, appears to be constructed of concrete and brick. Foundation details are shown on Figure 5.

2.3 STORAGE TANKS

Two storage tanks are located at the Sauro's property. Both tanks are located under the vaulted sidewalk along South 14th Street. One tank appears to have contained fuel oil and the other may have contained gasoline based on odor. The first tank (Tank A) is a steel tank resting atop dirt and debris. It is not anchored to a structure; it appears to be dumped or pushed in place. The fill pipe is not connected. Tank A is 4 ft in diameter and 4 ft long (about 375 gallons). Based on a video scan performed by APS, Inc. on April 13, 2009, this tank is empty. The second tank (Tank B) is buried behind a concrete wall and concrete slab between the gravity wall and the remnant building wall. Tank B was identified by a fill line sticking up through the concrete slab. A video scan through the fill line indicated that this tank is empty, with minor sludge in the bottom. The tank appears to be steel about 4 ft diameter and about 8 ft long (approximately 750 gallons). An old capped vent pipe was observed at the northeast corner of the site outside the old remnant wall. It was not determined if this vent pipe was associated with Tank B.

Although these two tanks are located beneath the "ground" (i.e., sidewalk) surface, they are exempt from the Ecology underground storage tank (UST) regulations (WAC 173-360) per the exemption listed in WAC 173-360-110(2)(o), which indicates that UST systems, including any piping connected thereto, are exempt from the UST requirements if the storage tank is situated in an underground area (such as a basement, cellar, vault, mine-working drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

2.4 HYDROGEOLOGIC SETTING

Previous investigations identified soil conditions that were classified as fill, ice contact deposits and glacial till. Soil textures encountered in previous borings were variable consisting of silt, sand, and gravel making soil classifications difficult. Groundwater was typically encountered between about 15 and 20 ft BGS near the site³ and at about 45 to 50 ft BGS east of the Sauro's property along South 14th Street. During March and April 2009, groundwater appeared to be at the ground surface at the south end of the property where ponded water was observed.

Groundwater flow was characterized as being generally eastward towards the Thea Foss Waterway. Locally, beneath the Sauro's property it appears that there is a component of shallow

groundwater flow towards the southeast that is influenced by orientation of the site paleosurface (see Figure 7). An estimate of the site groundwater table during June 2007 (representative of seasonal high water conditions) is shown on Figure 8.

³ The depth to groundwater near the site refers to the depth from street grade. Wells drilled at the site were generally drilled from a ground surface 10 to 13 ft below grade due to the below-grade excavation at the site. Consequently, these wells often encountered groundwater within 10 ft BGS.

3.0 PCE SOIL CONCENTRATIONS

A considerable amount of VOC soil concentration data exists for the property from previous investigations and the recent supplemental remedial investigation borings. In almost all cases, PCE is the chlorinated VOC compound detected at the highest concentration by a considerable margin. Other VOCs that are detected include TCE, cis-1,2-DCE, vinyl chloride and acetone⁴. The occurrence of these other VOCs is related to insitu reductive dechlorination of PCE. In some cases PCE is the only chlorinated VOC compound detected. Occasionally, cis-1,2-DCE is detected at the highest concentration due to reductive dechlorination processes occurring in the soil. Landau Associates compiled soil VOC data and prepared a current estimate of the distribution of soil PCE concentrations. Figure 3 shows the existing soil sample locations. Table 1 presents supplemental RI investigation soil data collected by Landau Associates. Other soil VOC data is presented in the *Phase 2 Investigation Report* (Landau Associates 2008b).

Characterization of Sauro's property soil concentrations was developed from the existing site soil database. Three dimensional coordinates (i.e., northing, easting and elevation) were assigned to each soil concentration data point. The data was then interpolated to a three-dimensional grid using an inverse distance weighted algorithm with the Groundwater Modeling System (Version 6.0) (GMS) computer program interpolation and visualization modules. These data were then contoured to provide a three dimensional representation of PCE soil concentrations. For visualization purposes, this soil characterization is presented as plan view concentration contour plots for successive 3-ft thick layers (i.e., horizontal slices) of site soil. Figures 9 through 16 show the estimated extent of contaminated soil in each layer. PCE contaminant concentrations in each layer are contoured to evaluate soil concentration greater than 1.9 mg/kg PCE (the contained-in determination level), the MTCA Method A cleanup level of 0.05 mg/kg, and the Method B cleanup level of 0.01 mg/kg for protection of groundwater.

The identified source of the PCE released to soil is a former sump located in the northeast portion of the property. In 2001 GeoEngineers completed an excavation of the sump area and removed approximately 330 tons of contaminated soil; the final excavation measured approximately 27 ft wide by 33 ft long by 15 ft deep. Some contaminated soil remained outside of the excavation. The excavation was backfilled. The area around the north side of the property where the sump was located still exhibits the highest PCE concentrations. The GeoEngineers excavation area is shown on Figure 3.

⁴ Acetone is not a chlorinated VOC. It occurs as a byproduct of reductive dechlorination of PCE. It is not a persistent chemical and biodegrades relatively quickly.

4.0 INTERIM CLEANUP ACTION

This work plan identifies the scope and procedures that will be followed during the excavation and off site disposal of impacted soil as an interim source removal action. Soil with concentrations of PCE above cleanup levels will be excavated down to the water table and transported off site to a permitted landfill. The soil removal is expected to significantly reduce the potential for exposure of human and terrestrial ecological receptors to contamination in soil, and remove a source of contamination to groundwater. This work plan includes a description of activities that will be completed prior to initiation of cleanup activities, and a description of excavation activities, reporting and documentation. A site-specific Health and Safety Plan (HASP), which outlines measures to be implemented for worker protection, is provided as Appendix B. All work at the Sauro's property will be conducted in accordance with a health and safety plan that meets or exceeds the requirements of the plan in Appendix B.

4.1 SELECTION OF INTERIM CLEANUP ACTION

Cleanup actions for the Sauro's property were previously evaluated as part of a Phase 2 investigation (Landau Associates 2008b). Two separate cleanup scenarios were evaluated. Scenario 1, termed the "no development" scenario, included remedial alternatives that address contamination without extensive development in the surrounding area. Scenario 2, termed the "development" scenario, included a remedial alternative that incorporates extensive offsite development including soil excavation and dewatering. Each of the scenarios included source control as a primary element, which included soil vapor extraction (SVE) and/or excavation and off site disposal of contaminated soil down to the water table. The purpose of SVE would be to remove PCE in soil to a concentration below 1.9 mg/kg so it does not classify as hazardous waste.⁵ If SVE was not implemented, a portion of the soil would be disposed of as hazardous waste and a portion of the soil would be disposed of as non-hazardous waste. Excavation and disposal could be implemented immediately while SVE may take several years to complete.

The City has elected to conduct an interim action to expedite cleanup activities and encourage re-development of the property. Based on previous evaluation, soil removal activities were selected as an interim measure that could immediately reduce the risk to human health and the environment and facilitate future Sauro's property development. Elements of the interim action are:

- Shoring the Sauro's property to support excavation of sidewalls during soil removal.
- Abandonment of existing monitoring wells within the Sauro's property

⁵ Based on discussions between Farallon and Ecology, soil with PCE concentrations below 1.9 mg/kg could be disposed of as non-hazardous under Ecology's "contained-in" policy.

- Abandonment/removal of onsite storage tanks.
- Excavating soil above the MTCA Method A PCE soil cleanup level of 0.50 mg/kg down to the water table and disposing of it offsite.
 - Excavated soil above 1.9 mg/kg PCE would be disposed of at a hazardous waste (Subtitle C) landfill.
 - Excavated soil less than 1.9 mg/kg PCE would be disposed of at a solid waste (Subtitle D) landfill per a contained-in determination⁶.
- Debris in the soil may be screened out and disposed of at an inert waste landfill per a contained-in determination.
- Backfilling the excavation with clean fill to a depth of 2 ft above the estimated high groundwater table.

4.2 PREPARATION ACTIVITIES

Prior to beginning excavation, a number of preparation activities will be completed, which are summarized below.

4.2.1 PERMITTING

Soil excavation will require several permits from the City of Tacoma. Permits include a building permit for the shoring system, a street occupancy permit for the placement of shoring tie backs within the right-of-way, and a barricade permit for temporary street closure.

4.2.2 SITE ACCESS

The City has recently purchased the Sauro's property and is currently the legal owner. The property is fenced with a locked gate. Access to the property will be restricted to authorized personnel only and will be arranged through the City.

Access to the Sauro's property for excavation activities will be via the northern ramp (Figure 3) located off Court A. The ramp is constructed of soil, concrete debris and quarry spalls, and accesses the upper (northern) portion of the property from the east side. The ramp is available to use for access during mobilization and as excavation proceeds; however, the ramp will ultimately be removed as part of the Sauro's property cleanup. Therefore, demobilization of equipment and supplies following completion of excavation will require an alternate method. This may include use of cranes to remove equipment or

⁶ Landau Associates will submit a request and obtain a contained-in determination from Ecology prior to starting soil excavation.

construction of a temporary ramp structure that can be disassembled and removed after equipment and supplies have been demobilized from the property. Additionally, as excavation proceeds, an alternate method of removing soil from the excavation, such as a conveyor system, will be needed.

4.2.3 UNDERGROUND UTILITY LOCATE

In conjunction with the site preparation work, a private utility locate will be required for the work areas to identify potential subsurface utilities that may be located within the planned excavation areas or other areas where intrusive activities may occur (e.g., installation of shoring tie backs). The public utilities will also be informed of the excavation activities and will be asked to mark public utilities in the rights-of-way or easements that exist on or adjacent to the subject property.

4.2.4 WELL ABANDONMENT

Prior to initiating cleanup activities, all monitoring wells installed at the Sauro's property will be abandoned by a licensed driller or professional engineer in accordance with Ecology guidelines outlined in WAC 173-160. It is anticipated that filling the well with bentonite grout or bentonite chips will be adequate for abandonment. A total of 10 monitoring wells are located on the property (Figure 7)⁷. These wells are constructed of 2-inch or 4-inch PVC pipe with slotted PVC screen to depths of between approximately 20 and 50 ft BGS. Construction details for the monitoring wells located on property are included in the well logs presented in Appendix C.

4.2.5 STORMWATER MANAGEMENT

To minimize potential stormwater run-on and runoff, cleanup activities will be conducted during the dry season (July through October), if feasible. In addition, best management/engineering practices will be incorporated into a temporary erosion and sediment control plan and a spill prevention control and countermeasure plan. Because the site surface is greater than 10 ft below the surrounding street grade, there is minimal potential for runoff occurring from the Sauro's property. However, there is potential for stormwater to run onto the property and come into contact with contaminated soil that is exposed during excavation. Best management practices for minimizing stormwater runon/runoff include, but are not limited to the following:

- Placing of straw bales or berms along the perimeters of Sauro's property at street grade.

⁷ Fourteen monitoring wells have been installed at the site; however, monitoring wells MW-5 and MW-5s were abandoned and removed during the 2001 GeoEngineers excavation and wells RNS-MW1 and MW-7 were abandoned by Farallon in 2007.

- Placing straw bales or berms around the perimeter of the loading areas to prevent runoff from coming into contact with residual soil that may be spilled while loading the trucks.
- Cleaning up residual soil in the truck loading area between loadings.
- Covering holes in the surrounding asphalt pavement to limit runoff from entering the Sauro's property.
- Covering stockpiles with plastic sheeting when left exposed.
- Placing inserts into catch-basin to prevent residual soil/sediment from construction activities from entering stormwater drain system.

4.2.6 TRAFFIC CONTROL PLAN

A traffic control plan will be developed that documents traffic control, truck routing and street operation issues. It will likely be necessary to close off a portion of South 14th Street and/or Court A during the interim action. The traffic control plan will include requirements for flaggers and signage. The traffic control plan will be submitted to the City for approval as part of a barricade permit application. Issues that will be addressed in the traffic control plan are discussed below.

Trucks will be used for transporting impacted soil from the excavation area off site for disposal. The trucks will either transport the soil to the designated landfill site or transport it to a rail facility for transport to the landfill. A preplanned truck route will be established prior to excavation. The truck route will be part of a traffic control plan that will be submitted to the City for approval. All hauling will conform to the approved traffic control plan. A truck wash or cleaning area will be constructed near the loading area to limit the potential for tracking soil off site. The cleaning area will provide for catching and containing residual soil that falls to the ground during loading, and for containing precipitation that may fall directly onto the loading area. Berms or other containment features will be used to prevent runoff from entering the loading area and contacting contaminated soils. Provisions will be made for cleaning of the street at the entrance to the Sauro's property, as needed.

Any traffic to/from the subject property as part of the ICA will be within the City's standard construction work window (7 AM to 9 PM Monday through Friday and 9 AM to 9 PM Saturday and Sunday). It is anticipated that work may take place on the weekends to minimize traffic disturbance. Provisions (i.e., flag person, signage) will be implemented to allow a safe flow of traffic along downtown streets included in the planned transport route. Truck trips will be timed to minimize impact to local traffic during busy periods, to the extent possible.

4.2.7 STORAGE TANK ABANDONMENT/REMOVAL

The two storage tanks beneath the sidewalk at the north end of the Sauro's property will be abandoned and removed in accordance with the *2006 International Fire Code* as adopted and amended under WAC 51-54 and *Tacoma Municipal Code Title 3*. Appropriate precautions and procedures will be used to ensure the safe and environmentally protective abandonment, removal, and disposal of the tanks and their contents.

4.2.8 SHORING

To remove the contaminated soil, vertical excavation along the north, east and west property lines will need to be shored to maintain site stability and not undermine adjacent roadways. Soil along the south side of the site where the excavation depth is shallow, will be sloped away from the existing DaVita building in order to protect the building foundation. The estimated vertical maximum shoring heights along the perimeter of the site are presented below.

- West Property Boundary (along Pacific Avenue)
 - 10 ft along the southwest one-third
 - 18 ft along northern two-thirds.
- North Property Boundary (along South 14th Street)
 - 18 ft.
- East Property Boundary (along Court A)
 - 17 ft along the northern two-thirds
 - 20 ft along the southern third, where shoring may need to extend up to adjacent street grade when the concrete rubble in front of the wall is removed.
- South Property Boundary (along the DaVita Annex foundation).
 - Soil will be sloped away from the building to a maximum excavation depth of 12 ft.

To adequately protect adjacent buildings, roadways and old road embankment retaining wall systems (gravity walls), the shoring system will consist of a tieback soldier pile and lagging wall with limited allowable deflection at the top of the wall. To minimize the risk of undermining adjacent structures, no vibration installation methods will be allowed. The design and permitting of the shoring system will be completed by Landau Associates.

Shoring will be placed directly inside the existing remnant property line walls and foundations (approximately 18 to 36 inches inside the existing property lines). This placement was selected to minimize the risk of causing slope instability to adjacent roadways. Some of the remnant foundation wall structures on the site appear to partially support the road embankment retaining wall systems. In order to limit the risk of damage to the road embankment retaining wall systems that could damage roads or underlying utilities, placing the shoring inside the existing walls was decided to be the most practicable option. The shoring will be designed to stay in place until the property is developed with a new building.

On the south end of the property, the City explored options of placing shoring against or underpinning the existing DaVita Annex building foundation. No information was available regarding the construction of the Annex foundation. To limit the risk of damaging the Annex building and because the excavation is shallow (maximum of 8 ft) at the south end of the property, the preferred shoring method is to slope the soil away from the building at a 2:1 slope. The slope of the excavation is shown in the cross section on Figure 5. The soil wedge that will remain in place is discussed in Section 4.3.1.

A future developer may decide to make maximum use of the property and ultimately place new foundation walls on the property lines; in this case the City will make arrangements for remediation of the additional contaminated soil that must be removed between the temporary shoring (walls or soil slope) and the permanent foundation walls at the time of development. If this situation arises, the City will seek Ecology approval for the supplemental cleanup action, implement appropriate health and safety measures and implement proper disposal of the soil.

The shoring wall will be constructed by the contractor in accordance with standard temporary excavation design guidelines and construction practices. After the environmental remediation is complete, the shoring system will need to provide excavation support until the site is developed in the future. The temporary shoring wall design life will be defined as 5 years from start of construction. Due to the longer than usual temporary construction time frame, the temporary shoring wall system will also be designed for appropriate seismic loading criteria according to the City of Tacoma building code. The City's code requires any shoring with a design life longer than 2 years to be designed for full seismic loading and to have appropriate long term corrosion protection.

4.2.9 WASTE PROFILING AND LANDFILL ACCEPTANCE

All excavated soil will be disposed of in accordance with local, state and federal regulations. Prior to beginning cleanup activities, a waste disposal authorization or certificate of acceptance for disposal of the excavated soil and debris will be obtained from the landfill. Copies of waste manifests

and weight receipts for all soil and debris transported off site for disposal will be maintained for each load and submitted to the City and Ecology following completion of the cleanup.

4.3 CLEANUP ACTION

The cleanup action will consist of removing soil down to the water table at the time of excavation. The water table at the time of excavation is expected to be at a seasonally low level. Soil will be disposed of at a hazardous waste landfill or solid waste landfill depending on concentration. Debris may be segregated and disposed at an inert waste landfill with appropriate approval from Ecology. After soil excavation, the Sauro's property will be backfilled above the seasonal high water table. The anticipated high and low groundwater levels are shown on Figures 5 and 6. If groundwater levels are higher than expected, the excavation will be terminated at this higher elevation..

Documentation of all field activities, including the areas excavated, the amount of soil removed and the number of trucks used, will be recorded in daily field logs and documented in a final ICA report prepared at the completion of field activities.

4.3.1 SOIL EXCAVATION

Debris and contaminated soil at the Sauro's property will be removed down to the water table and transported off site to permitted landfills in compliance with local, state and federal regulations. Debris and contaminated soil to be excavated from the property has been divided into three categories:

- Category 1: soil above the water table with concentrations of PCE greater than 1.9 mg/kg
- Category 2: soil above the water table with concentrations of PCE less than or equal to 1.9 mg/kg
- Category 3: debris (brick and concrete) which is assumed to be uncontaminated.

Category 1 soil is considered a hazardous/dangerous waste, and will be transported to a landfill facility permitted to accept hazardous/dangerous waste (Subtitle C landfill). Category 2 soil will be disposed of as solid waste according to Ecology's contained-in policy. This soil will be disposed of in a solid waste landfill (Subtitle D landfill). Category 3 debris is distributed throughout fill at the property. Depending on the amount of debris, the debris may be screened and segregated from soil. The segregated debris may be disposed of at an inert or solid waste landfill depending on ecology approval.

4.3.1.1 Segregation of Debris

Substantial amounts of debris are located on the site both intermixed in soil (smaller chunks of brick and concrete) and as large pieces of remnant building foundations. Debris samples were collected from three locations on the site with the highest levels of contamination in soil (the stockpile on the west side of the site, the northeast area near the former sump, and the old ramp in the southeast corner). The intent of the debris samples was to characterize the debris for disposal after it was segregated from soil. Samples were intended to be representative of typical debris on the site. Two of the samples [the stockpile (whole brick) and the sample from near the former sump (concrete chunk)] were of buried debris and were collected from approximately 1 ft below the surface⁸. The third sample was of concrete from the ramp in the southeast corner. The ramp sample was chiseled from the monolithic block of concrete that forms the bulk of the ramp, and the sample had been partially buried in the contaminated soil on top of the ramp. All samples had bulk soil brushed from the surface to simulate the effect of sieving or brushing. Using a rock hammer, the samples were then broken into smaller pieces to fit into laboratory-supplied jars and submitted for analytical testing of PCE, TCE, and vinyl chloride. VOCs were not detected in any of the samples. The laboratory results indicate that debris is likely suitable for disposal at an inert waste landfill; however, disposal of debris as inert waste will depend on Ecology approval. Disposal of debris and inert waste is currently under review by Ecology. Laboratory analytical data is provided in Appendix D.

To segregate debris from soil, large chunks of solid concrete would have residual soil brushed off and would be placed in containers or trucks for appropriate disposal. Segregation of debris within the soil would be done via sieving. The sieving operation would likely be set up to sieve bulk batches of soil directly into trucks and debris would then be placed into separate trucks or disposal containers. Organic debris (e.g., pieces of wood) would be picked out and placed in a container for disposal as solid waste since organic debris is not allowed in an inert waste landfill. The sieve would use a curtain and potentially be covered to minimize dust. Air monitoring would be required around the sieving operation, and workers would be required to have the appropriate level of respiratory protection based on the air monitoring results. Air monitoring would also be used to verify that the sieving operation does not pose a risk to public health and safety.

⁸ Due to the amount of debris, 1 ft below ground surface was the maximum depth that could reasonably be reached using hand tools. Samples were chosen that had been in contact with soil contaminated above the contained in limit of 1.9 mg/kg.

4.3.1.2 Contaminant Distribution in Soil

The distribution of PCE in site soil has been characterized based on numerous borings and soil samples. These data are presented in Section 3. Based on the existing Sauro's property characterization, areas containing Category 1 and Category 2 soil have been identified. Figure 18 presents Sauro's property soil categories for the purpose of disposal. Soil from the stockpile along the west wall of the property will be considered Category 1⁹. Soil on top of the old ramp in the southeast corner will also be considered Category 1¹⁰.

The current excavation plan will require removal of soil directly from the excavation without stockpiling. Therefore, soil disposition will be based on the existing soil characterization presented on Figures 9 through 16. Any additional soil sampling for waste disposal will be at the discretion of the disposal facility or remediation contractor.

4.3.1.3 South Slope (DaVita Building)

Along the southern side of the property, soil will be sloped away from the DaVita Building to protect the building foundation. The maximum excavation depth will be 12 ft. Approximately 200 yd³ of contaminated soil will be left in place. Based on the maximum concentration of PCE in soil collected from that area (2.2 mg/kg), the three-phase partitioning model was used to calculate the potential for soil leaching to groundwater. The model derived a groundwater concentration of 206 µg/L PCE that would result from leaching of the soil. However, the model is conservative and assumes homogeneous soil concentrations throughout the soil column. Sampling shows that soil conditions are highly variable ranging from 0.0008 mg/kg to the maximum concentration of 2.2 mg/kg. Additionally, groundwater concentrations at the adjacent shallow monitoring well, MW-8s, were only 4.0 µg/L. Based on existing conditions, the three-phase partitioning model appears to be overly conservative for this site. However, since contamination is being left in place, those areas will be covered with an impervious geotextile fabric prior to placement of backfill. The impervious geotextile fabric will prevent infiltration of rainwater and additional leaching to groundwater from soil in the unsaturated zone.

4.3.1.4 Excavation Depth and Volume

Based on water level measurements made to date, it is expected that the water table may fluctuate a maximum of up to 5 ft throughout the year. The water levels shown in Figure 8 were measured in June 2007, a time when water levels were likely near but not at their highest level. Excavation is planned for

⁹ See sample LAI-STKPL in Table 1. This sample was collected from the stockpile.

¹⁰ See sample LAI-HA2(2) in Table 1. This sample was collected on top of the old ramp.

late summer and fall of 2009. Therefore, the final excavated grade is estimated to be 4 ft below the June 2007 water table. An estimate of the final excavation elevation is presented on Figure 19. An estimate of the thickness of soil that will be excavated during the interim action was calculated by subtracting the site topography (Figure 4) from the estimated final excavation depth (Figure 19). The estimated soil thickness of soil to be excavated is shown on Figure 20.

Based on soil thickness estimates provided on Figure 20, a maximum of approximately 8,900 yd³ of soil will be excavated and transported off site for disposal. This includes 2,040 yd³ of Category 1 soil and 7,860 yd³ of Category 2 soil. These estimates do not account for segregation of debris from soil in each category. Debris estimates range from 5 percent to 75 percent across the site, and the average debris content may be around 10 to 15 percent. Debris is planned to be segregated and disposed of as inert waste.

4.3.1.5 Removal

Sequencing of excavation activities will be the responsibility of the contractor, however excavation will be accomplished in a manner that minimizes the potential of cross contamination or mixing of soil from the areas defined by each category. Because the excavated grade will be as much as 20 ft below the surrounding street grade, removal of soil from the Sauro's property will not likely be possible using existing or constructed ramps. Soil excavation and removal may require a track-mounted excavator with a conveyor belt ramp to load soil in trucks at the street level. Other methods, such as crane-operated equipment may also be considered to the extent that they can accomplish the excavation with a sufficient level of precision in a safe, timely, and cost effective manner. Where shoring is present inside the property boundary, soil will be removed in a manner that does not compromise the integrity of the shoring but still removes impacted soil that may be present. This may require excavation using smaller equipment in areas that have limited access.

Soil excavation and removal will be conducted in a manner that minimizes impacts to surrounding properties and limits the generation of air born dust and particulates. Site soil will be wetted to maintain moisture and limit dust during excavation. Trucks transporting the excavated soil will line their truck beds so that soil will not escape during transport. Loads will also be covered so that wind blown dust will not be generated during transport to the disposal facility.

4.3.2 DISPOSAL

Previous soil sampling and analysis will be used to identify the impacted soil for disposal. The impacted soil will be transported off site in lined trucks for disposal at a permitted landfill. Soil

designated as hazardous waste will be transported to a Subtitle C landfill such as the Waste Management Chemical Waste Landfill in Arlington, Oregon. Soil designated as non-hazardous waste will be disposed of at a municipal solid waste landfill such as the Land Recovery, Inc. (LRI) landfill in Graham, Washington. Debris will be disposed of at an inert waste landfill such as the WM Dixon Company Waller Road Inert Landfill pending approval from Ecology and the Tacoma-Pierce County Health Department. Prior to beginning field work, the remediation contractor will obtain approval for soil disposal at the designated landfill. Additional soil sampling and profiling will be completed, as necessary, to obtain approval for disposal. An authorized field representative for the City will provide oversight and maintain records to document the amount of soil hauled off site. Trucking manifests and certificates of disposal will also be used to track the soil disposed off site.

Truck loads will be monitored through the use of a local scale or a scale set up near the Sauro's property to comply with Washington State Department of Transportation weight limits, as appropriate.

4.3.3 RESIDUALS MANAGEMENT

Residuals, such as tyvek and other disposable products used during completion of the cleanup will be placed in containers as work progresses and transported off site for disposal as solid waste at the completion of field activities. Liquids used for cleaning and decontamination will be contained in drums and profiled prior to disposal. Weight receipts and waste manifests from disposal of residuals will also be retained to document and track the final disposal of all wastes from the Sauro's property.

4.3.4 CONFIRMATION SOIL SAMPLING

After excavation is complete, confirmation soil samples will be collected and analyzed for VOCs. A total of 25 samples will be collected on an evenly-spaced grid across the Sauro's property. Soil samples will be collected between 0 and 6 inches below the final grade.

4.4 SITE RESTORATION AND BACKFILL

Following completion of excavation, the Sauro's property will be backfilled with clean fill. The backfill will be placed in lifts and compacted in accordance with construction specifications.

The current plan is for the shoring to be designed to stay in place for five years. Backfill will be placed to a minimum 2 ft above the seasonal high water table (approximately 6 ft above the original excavation depth) to account for potential groundwater level fluctuations. Additionally on the northern half of the west side and the western two-thirds of the north side of the site, fill will be placed at a 2:1 slope from the top of the shoring to the top of the backfill. These slopes are designed to provide

protection against liquefaction in the event of a large earthquake and are part of the 5-year shoring design. Based on a uniform depth of 6 ft above the base of excavated soil and the slopes on the north and west sides of the property, approximately 4,000 yd³ of backfill will be placed and compacted at the Sauro's property following excavation.

After the first one foot of fill is placed and compacted, a permeable geotextile fabric will be laid across the Sauro's property to serve as a marker to indicate the presence of potentially contaminated soil below (an impervious fabric will be placed over the contaminated soil wedge at the south end of the site). After backfill and compaction is complete, the property will be secured with permanent fencing to prevent unauthorized access.

5.0 REPORTING AND DOCUMENTATION

The results of the ICA will be summarized and presented in an interim cleanup action report. The report will include documentation of the activities conducted and an evaluation of any data collected. Figures will be used to illustrate the nature and extent of contamination, the extent of the excavation, soil lithology, and analytical results, as appropriate. A draft report will be prepared for Ecology review, and a final version will be prepared incorporating comments and changes.

6.0 USE OF THIS WORK PLAN

This work plan has been prepared for the exclusive use of the City of Tacoma for specific application to the former Sauro's Cleanarama property. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau Associates, shall be at the user's sole risk. Landau Associates warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

This document has been prepared under the supervision and direction of the following key staff.

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7.0 REFERENCES

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TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-HA1(2) OT00A 3/30/2009	LAI-HA1-3.5 OU15F 04/06/09	LAI-HA2(2) OT00B 3/30/2009	LAI-HA3-3.5 OU15D 04/06/09	LAI-HA4-3.3 OU15C 04/06/09	LAI-HA5-3.0 OU15B 04/06/09	LAI-HA6-4.0 OU15A 04/06/09	LAI-HA7-4.0 OU15E 04/06/09
VOLATILES (ug/kg)								
Method SW8260B								
Chloromethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Bromomethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Vinyl Chloride	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Chloroethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Methylene Chloride	1.6	2.2 U	3.3	3.0 U	9.4 U	1.6 U	3.2 U	2.7 U
Acetone	27	24	89 E	82	170	100	130	23
Carbon Disulfide	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,1-Dichloroethene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,1-Dichloroethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
trans-1,2-Dichloroethene	0.8 U	0.7 U	4.1	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
cis-1,2-Dichloroethene	0.8 U	0.7 U	330	7.6	36	22	29	0.8 U
Chloroform	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,2-Dichloroethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
2-Butanone	3.8 U	3.7 U	7.8	3.8 U	17 U	5.1	7.0	4.2 U
1,1,1-Trichloroethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Carbon Tetrachloride	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Vinyl Acetate	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
Bromodichloromethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,2-Dichloropropane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
cis-1,3-Dichloropropene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Trichloroethene	0.8 U	0.7 U	2,300	15	34	38	63	0.8 U
Dibromochloromethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,1,2-Trichloroethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Benzene	0.8	0.7 U	5.0	0.8 U	3.3 U	1.4	1.7	0.8 U
trans-1,3-Dichloropropene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
2-Chloroethyl vinyl ether	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
Bromoform	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
4-Methyl-2-Pentanone (MIBK)	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
2-Hexanone	3.8 U	3.7 U	4.2 U	110 M	17 U	3.5 U	3.8 U	4.2 U
Tetrachloroethene	8.8	0.8	27,000	500	340	2,200	2,100	1.9
1,1,2,2-Tetrachloroethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Toluene	1.7	0.7 U	5.2	12	3.3 U	1.1	1.5	0.8 U
Chlorobenzene	0.8 U	0.7 U	0.9	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Ethylbenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Styrene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Trichlorofluoromethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,1,2-Trichloro-1,2,2-trifluoroethane	1.5 U	1.5 U	1.7 U	1.5 U	6.6 U	1.4 U	1.5 U	1.7 U
m, p-Xylene	0.8	0.7 U	1.5	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U

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o-Xylene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,2-Dichlorobenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,3-Dichlorobenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,4-Dichlorobenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Acrolein	38 U	37 U	42 U	38 U	170 U	35 U	38 U	42 U
Methyl Iodide	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Bromoethane	1.5 U	1.5 U	1.7 U	1.5 U	6.6 U	1.4 U	1.5 U	1.7 U
Acrylonitrile	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
1,1-Dichloropropene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Dibromomethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,1,1,2-Tetrachloroethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,2-Dibromo-3-chloropropane	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
1,2,3-Trichloropropane	1.5 U	1.5 U	1.7 U	1.5 U	6.6 U	1.4 U	1.5 U	1.7 U
trans-1,4-Dichloro-2-butene	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
1,3,5-Trimethylbenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,2,4-Trimethylbenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Hexachlorobutadiene	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
Ethylene Dibromide	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Bromochloromethane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
2,2-Dichloropropane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,3-Dichloropropane	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Isopropylbenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
n-Propylbenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
Bromobenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
2-Chlorotoluene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
4-Chlorotoluene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
tert-Butylbenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
sec-Butylbenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
4-Isopropyltoluene	0.8 U	0.7 U	0.8 U	2.0	3.3 U	0.7 U	0.8 U	0.8 U
n-Butylbenzene	0.8 U	0.7 U	0.8 U	0.8 U	3.3 U	0.7 U	0.8 U	0.8 U
1,2,4-Trichlorobenzene	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
Naphthalene	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U
1,2,3-Trichlorobenzene	3.8 U	3.7 U	4.2 U	3.8 U	17 U	3.5 U	3.8 U	4.2 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P1-(5-6) OU22I 04/06/09	LAI-P1-(10-11) OU22J 04/06/09	LAI-P1-(15-16) OU22K 04/06/09	LAI-P1-(18.5-19.5) OU22L 04/06/09	LAI-P2-(5-6) OU22A 04/06/09	LAI-P2-(6.5-7.25) OU22B 04/06/09	LAI-P2-(10-11) OU22C 04/06/09	LAI-P2-(15-16) OU22D 04/06/09
VOLATILES (ug/kg)								
Method SW8260B								
Chloromethane	320 U	98	280 U	1.0 U	120	46 U	48 U	64 U
Bromomethane	370	160	280 U	1.0 U	240	46 U	48 U	64 U
Vinyl Chloride	320 U	52 U	280 U	1.0 U	49 U	1,900	48 U	64 U
Chloroethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Methylene Chloride	650 U	100 U	560 U	3.4	99 U	91 U	96 U	130 U
Acetone	1,600 U	260 U	1,400 U	55	250 U	230 U	240 U	320 U
Carbon Disulfide	320 U	52 U	280 U	2.5	49 U	46 U	48 U	64 U
1,1-Dichloroethene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,1-Dichloroethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
trans-1,2-Dichloroethene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
cis-1,2-Dichloroethene	320 U	52 U	280 U	1.0 U	62	2,000	48 U	110
Chloroform	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,2-Dichloroethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
2-Butanone	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
1,1,1-Trichloroethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Carbon Tetrachloride	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Vinyl Acetate	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
Bromodichloromethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,2-Dichloropropane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
cis-1,3-Dichloropropene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Trichloroethene	320 U	52 U	280 U	1.8	100	120	48 U	350
Dibromochloromethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,1,2-Trichloroethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Benzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
trans-1,3-Dichloropropene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
2-Chloroethyl vinyl ether	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
Bromoform	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
4-Methyl-2-Pentanone (MIBK)	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
2-Hexanone	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
Tetrachloroethene	33,000	5,900	2,100	7.3	3,400	46 U	1,800	7,300
1,1,2,2-Tetrachloroethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Toluene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Chlorobenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Ethylbenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Styrene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Trichlorofluoromethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,1,2-Trichloro-1,2,2-trifluoroethane	650 U	100 U	560 U	2.0 U	99 U	91 U	96 U	130 U
m, p-Xylene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P1-(5-6) OU22I 04/06/09	LAI-P1-(10-11) OU22J 04/06/09	LAI-P1-(15-16) OU22K 04/06/09	LAI-P1-(18.5-19.5) OU22L 04/06/09	LAI-P2-(5-6) OU22A 04/06/09	LAI-P2-(6.5-7.25) OU22B 04/06/09	LAI-P2-(10-11) OU22C 04/06/09	LAI-P2-(15-16) OU22D 04/06/09
o-Xylene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,2-Dichlorobenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,3-Dichlorobenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,4-Dichlorobenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Acrolein	16,000 U	2,600 U	14,000 U	51 U	2,500 U	2,300 U	2,400 U	3,200 U
Methyl Iodide	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Bromoethane	650 U	100 U	560 U	2.0 U	99 U	91 U	96 U	130 U
Acrylonitrile	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
1,1-Dichloropropene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Dibromomethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,1,1,2-Tetrachloroethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,2-Dibromo-3-chloropropane	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
1,2,3-Trichloropropane	650 U	100 U	560 U	2.0 U	99 U	91 U	96 U	130 U
trans-1,4-Dichloro-2-butene	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
1,3,5-Trimethylbenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,2,4-Trimethylbenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Hexachlorobutadiene	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
Ethylene Dibromide	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Bromochloromethane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
2,2-Dichloropropane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,3-Dichloropropane	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Isopropylbenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
n-Propylbenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
Bromobenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
2-Chlorotoluene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
4-Chlorotoluene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
tert-Butylbenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
sec-Butylbenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
4-Isopropyltoluene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
n-Butylbenzene	320 U	52 U	280 U	1.0 U	49 U	46 U	48 U	64 U
1,2,4-Trichlorobenzene	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
Naphthalene	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U
1,2,3-Trichlorobenzene	1,600 U	260 U	1,400 U	5.1 U	250 U	230 U	240 U	320 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P3-(5-6) OU22E 04/06/09	LAI-P3-(7-8) OU22F 04/06/09	LAI-P3-(10-11) OU22G 04/06/09	LAI-P3-(13.5-14.5) OU22H 04/06/09	LAI-P4-3.0 OU15G 04/06/09	LAI-P4-8.0 OU15H 04/06/09	LAI-P4-13.0 OU15I 04/06/09	LAI-P4-18.0 OU15J 04/06/09
VOLATILES (ug/kg)								
Method SW8260B								
Chloromethane	48 U	52 U	81 U	120	0.6 U	0.7 U	0.6 U	1.3 U
Bromomethane	48 U	52 U	81 U	220	0.6 U	0.7 U	0.6 U	1.3 U
Vinyl Chloride	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	26
Chloroethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Methylene Chloride	96 U	100 U	160 U	110 U	1.8 U	2.7 U	1.9 U	3.9 U
Acetone	240 U	260 U	400 U	270 U	12	44	25	73
Carbon Disulfide	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	15
1,1-Dichloroethene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,1-Dichloroethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
trans-1,2-Dichloroethene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	2.9
cis-1,2-Dichloroethene	48 U	52 U	81 U	55 U	0.6 U	9.7	7.0	43
Chloroform	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,2-Dichloroethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
2-Butanone	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
1,1,1-Trichloroethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Carbon Tetrachloride	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Vinyl Acetate	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
Bromodichloromethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,2-Dichloropropane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
cis-1,3-Dichloropropene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Trichloroethene	48 U	52 U	81 U	55 U	0.7	12	6.6	24
Dibromochloromethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,1,2-Trichloroethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Benzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	2.1
trans-1,3-Dichloropropene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
2-Chloroethyl vinyl ether	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
Bromoform	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
4-Methyl-2-Pentanone (MIBK)	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
2-Hexanone	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
Tetrachloroethene	580	730	480	570	32	1,500	750	76
1,1,2,2-Tetrachloroethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Toluene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.4
Chlorobenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Ethylbenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Styrene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Trichlorofluoromethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,1,2-Trichloro-1,2,2-trifluoroethane	96 U	100 U	160 U	110 U	1.2 U	1.3 U	1.1 U	2.6 U
m, p-Xylene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P3-(5-6) OU22E 04/06/09	LAI-P3-(7-8) OU22F 04/06/09	LAI-P3-(10-11) OU22G 04/06/09	LAI-P3-(13.5-14.5) OU22H 04/06/09	LAI-P4-3.0 OU15G 04/06/09	LAI-P4-8.0 OU15H 04/06/09	LAI-P4-13.0 OU15I 04/06/09	LAI-P4-18.0 OU15J 04/06/09
o-Xylene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,2-Dichlorobenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,3-Dichlorobenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,4-Dichlorobenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Acrolein	2,400 U	2,600 U	4,000 U	2,700 U	30 U	34 U	28 U	66 U
Methyl Iodide	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Bromoethane	96 U	100 U	160 U	110 U	1.2 U	1.3 U	1.1 U	2.6 U
Acrylonitrile	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
1,1-Dichloropropene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Dibromomethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,1,1,2-Tetrachloroethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,2-Dibromo-3-chloropropane	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
1,2,3-Trichloropropane	96 U	100 U	160 U	110 U	1.2 U	1.3 U	1.1 U	2.6 U
trans-1,4-Dichloro-2-butene	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
1,3,5-Trimethylbenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,2,4-Trimethylbenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Hexachlorobutadiene	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
Ethylene Dibromide	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Bromochloromethane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
2,2-Dichloropropane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,3-Dichloropropane	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Isopropylbenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
n-Propylbenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
Bromobenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
2-Chlorotoluene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
4-Chlorotoluene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
tert-Butylbenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
sec-Butylbenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
4-Isopropyltoluene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
n-Butylbenzene	48 U	52 U	81 U	55 U	0.6 U	0.7 U	0.6 U	1.3 U
1,2,4-Trichlorobenzene	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U
Naphthalene	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	11
1,2,3-Trichlorobenzene	240 U	260 U	400 U	270 U	3.0 U	3.4 U	2.8 U	6.6 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P5-3.0 OU16A 04/03/09	LAI-P5-8.7 OU16B 04/03/09	LAI-P5-11.0 OU16C 04/03/09	LAI-P5-14.0 OU16D 04/03/09	LAI-P6-4.0 OU16E 04/03/09	LAI-P6-8.0 OU16F 04/03/09	LAI-P6-12.0 OU16G 04/03/09	LAI-P7-(3-4) OU22M 04/06/09
VOLATILES (ug/kg)								
Method SW8260B								
Chloromethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	90
Bromomethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	140
Vinyl Chloride	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Chloroethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Methylene Chloride	270 U	270 U	310 U	360 U	450 U	260 U	300 U	110 U
Acetone	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
Carbon Disulfide	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,1-Dichloroethene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,1-Dichloroethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
trans-1,2-Dichloroethene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
cis-1,2-Dichloroethene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Chloroform	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,2-Dichloroethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
2-Butanone	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
1,1,1-Trichloroethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Carbon Tetrachloride	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Vinyl Acetate	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
Bromodichloromethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,2-Dichloropropane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
cis-1,3-Dichloropropene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Trichloroethene	36 U	35 U	39 U	50 U	70 U	65	47 U	55 U
Dibromochloromethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,1,2-Trichloroethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Benzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
trans-1,3-Dichloropropene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
2-Chloroethyl vinyl ether	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
Bromoform	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
4-Methyl-2-Pentanone (MIBK)	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
2-Hexanone	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
Tetrachloroethene	420	830	320	1,100	1,700	3,200	380	840
1,1,2,2-Tetrachloroethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Toluene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Chlorobenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Ethylbenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Styrene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Trichlorofluoromethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,1,2-Trichloro-1,2,2-trifluoroethane	72 U	69 U	77 U	99 U	140 U	85 U	95 U	110 U
m, p-Xylene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P5-3.0 OU16A 04/03/09	LAI-P5-8.7 OU16B 04/03/09	LAI-P5-11.0 OU16C 04/03/09	LAI-P5-14.0 OU16D 04/03/09	LAI-P6-4.0 OU16E 04/03/09	LAI-P6-8.0 OU16F 04/03/09	LAI-P6-12.0 OU16G 04/03/09	LAI-P7-(3-4) OU22M 04/06/09
o-Xylene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,2-Dichlorobenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,3-Dichlorobenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,4-Dichlorobenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Acrolein	1,800 U	1,700 U	1,900 U	2,500 U	3,500 U	2,100 U	2,400 U	2,800 U
Methyl Iodide	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Bromoethane	72 U	69 U	77 U	99 U	140 U	85 U	95 U	110 U
Acrylonitrile	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
1,1-Dichloropropene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Dibromomethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,1,1,2-Tetrachloroethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,2-Dibromo-3-chloropropane	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
1,2,3-Trichloropropane	72 U	69 U	77 U	99 U	140 U	85 U	95 U	110 U
trans-1,4-Dichloro-2-butene	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
1,3,5-Trimethylbenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,2,4-Trimethylbenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Hexachlorobutadiene	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
Ethylene Dibromide	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Bromochloromethane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
2,2-Dichloropropane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,3-Dichloropropane	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Isopropylbenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
n-Propylbenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
Bromobenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
2-Chlorotoluene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
4-Chlorotoluene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
tert-Butylbenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
sec-Butylbenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
4-Isopropyltoluene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
n-Butylbenzene	36 U	35 U	39 U	50 U	70 U	42 U	47 U	55 U
1,2,4-Trichlorobenzene	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
Naphthalene	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U
1,2,3-Trichlorobenzene	180 U	170 U	190 U	250 U	350 U	210 U	240 U	280 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P7-(7.5-8.5) OU22N 04/06/09	LAI-P7-(11.5-12.5) OU22O 04/06/09	LAI-P7-(15.5-16.5) OU22S 04/06/09	LAI-P8-8.0 OU16I 04/03/09	LAI-P8-12.0 OU16J 04/03/09	LAI-P9-(5.5-6.5) OU23A 04/06/09	LAI-P9-(11-12) OU23B 04/06/09	LAI-P10-5.5 OU16H 04/03/09
VOLATILES (ug/kg)								
Method SW8260B								
Chloromethane	92	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Bromomethane	120	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Vinyl Chloride	52 U	1.1 U	55,000	40 U	41 U	63 U	75 U	79 U
Chloroethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Methylene Chloride	100 U	2.2	200 U	300 U	320 U	130 U	150 U	590 U
Acetone	260 U	13	510 U	200 U	210 U	320 U	370 U	400 U
Carbon Disulfide	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,1-Dichloroethene	52 U	1.1 U	450	40 U	41 U	63 U	75 U	79 U
1,1-Dichloroethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
trans-1,2-Dichloroethene	52 U	1.1 U	2,500	40 U	41 U	63 U	75 U	79 U
cis-1,2-Dichloroethene	52 U	7.9	400,000	40	41 U	63 U	75 U	140
Chloroform	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,2-Dichloroethane	52 U	1.1 U	190	40 U	41 U	63 U	75 U	79 U
2-Butanone	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
1,1,1-Trichloroethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Carbon Tetrachloride	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Vinyl Acetate	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
Bromodichloromethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,2-Dichloropropane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
cis-1,3-Dichloropropene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Trichloroethene	52 U	4.5	17,000	120	41 U	63 U	75 U	100
Dibromochloromethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,1,2-Trichloroethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Benzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
trans-1,3-Dichloropropene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
2-Chloroethyl vinyl ether	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
Bromoform	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
4-Methyl-2-Pentanone (MIBK)	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
2-Hexanone	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
Tetrachloroethene	1,600	160	36,000	3,100	660	460	840	430
1,1,2,2-Tetrachloroethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Toluene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Chlorobenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Ethylbenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Styrene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Trichlorofluoromethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,1,2-Trichloro-1,2,2-trifluoroethane	100 U	2.2 U	200 U	79 U	82 U	130 U	150 U	160 U
m, p-Xylene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P7-(7.5-8.5) OU22N 04/06/09	LAI-P7-(11.5-12.5) OU22O 04/06/09	LAI-P7-(15.5-16.5) OU22S 04/06/09	LAI-P8-8.0 OU16I 04/03/09	LAI-P8-12.0 OU16J 04/03/09	LAI-P9-(5.5-6.5) OU23A 04/06/09	LAI-P9-(11-12) OU23B 04/06/09	LAI-P10-5.5 OU16H 04/03/09
o-Xylene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,2-Dichlorobenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,3-Dichlorobenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,4-Dichlorobenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Acrolein	2,600 U	55 U	5,100 U	2,000 U	2,100 U	3,200 U	3,700 U	4,000 U
Methyl Iodide	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Bromoethane	100 U	2.2 U	200 U	79 U	82 U	130 U	150 U	160 U
Acrylonitrile	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
1,1-Dichloropropene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Dibromomethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,1,1,2-Tetrachloroethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,2-Dibromo-3-chloropropane	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
1,2,3-Trichloropropane	100 U	2.2 U	200 U	79 U	82 U	130 U	150 U	160 U
trans-1,4-Dichloro-2-butene	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
1,3,5-Trimethylbenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,2,4-Trimethylbenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Hexachlorobutadiene	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
Ethylene Dibromide	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Bromochloromethane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
2,2-Dichloropropane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,3-Dichloropropane	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Isopropylbenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
n-Propylbenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
Bromobenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
2-Chlorotoluene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
4-Chlorotoluene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
tert-Butylbenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
sec-Butylbenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
4-Isopropyltoluene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
n-Butylbenzene	52 U	1.1 U	100 U	40 U	41 U	63 U	75 U	79 U
1,2,4-Trichlorobenzene	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
Naphthalene	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U
1,2,3-Trichlorobenzene	260 U	5.5 U	510 U	200 U	210 U	320 U	370 U	400 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

	LAI-P11-(5-6) OU22P 04/06/09	LAI-P11-(9.5-10.5) OU22Q 04/06/09	LAI-P11-(15-16) OU22R 04/06/09	LAI-STKPL OU23C 04/06/09
VOLATILES (ug/kg)				
Method SW8260B				
Chloromethane	1.1 U	1.0 U	1.2 U	56 U
Bromomethane	1.1 U	1.0 U	1.2 U	56 U
Vinyl Chloride	1.1 U	1.0 U	1.2 U	56 U
Chloroethane	1.1 U	1.0 U	1.2 U	56 U
Methylene Chloride	3.8	3.1	2.4	110 U
Acetone	32	25	11	280 U
Carbon Disulfide	1.1 U	1.0 U	1.2 U	56 U
1,1-Dichloroethene	1.1 U	1.0 U	1.2 U	56 U
1,1-Dichloroethane	1.1 U	1.0 U	1.2 U	56 U
trans-1,2-Dichloroethene	1.1 U	1.0 U	1.2 U	56 U
cis-1,2-Dichloroethene	1.1 U	1.0 U	1.2 U	56 U
Chloroform	1.1 U	1.0 U	1.2 U	56 U
1,2-Dichloroethane	1.1 U	1.0 U	1.2 U	56 U
2-Butanone	5.4 U	5.0 U	5.9 U	280 U
1,1,1-Trichloroethane	1.1 U	1.0 U	1.2 U	56 U
Carbon Tetrachloride	1.1 U	1.0 U	1.2 U	56 U
Vinyl Acetate	5.4 U	5.0 U	5.9 U	280 U
Bromodichloromethane	1.1 U	1.0 U	1.2 U	56 U
1,2-Dichloropropane	1.1 U	1.0 U	1.2 U	56 U
cis-1,3-Dichloropropene	1.1 U	1.0 U	1.2 U	56 U
Trichloroethene	1.6	2.8	1.2 U	72
Dibromochloromethane	1.1 U	1.0 U	1.2 U	56 U
1,1,2-Trichloroethane	1.1 U	1.0 U	1.2 U	56 U
Benzene	1.1 U	1.0 U	1.2 U	56 U
trans-1,3-Dichloropropene	1.1 U	1.0 U	1.2 U	56 U
2-Chloroethyl vinyl ether	5.4 U	5.0 U	5.9 U	280 U
Bromoform	1.1 U	1.0 U	1.2 U	56 U
4-Methyl-2-Pentanone (MIBK)	5.4 U	5.0 U	5.9 U	280 U
2-Hexanone	5.4 U	5.0 U	5.9 U	280 U
Tetrachloroethene	43	90	12	2,200
1,1,2,2-Tetrachloroethane	1.1 U	1.0 U	1.2 U	56 U
Toluene	1.1 U	1.0 U	1.2 U	56 U
Chlorobenzene	1.1 U	1.0 U	1.2 U	56 U
Ethylbenzene	1.1 U	1.0 U	1.2 U	56 U
Styrene	1.1 U	1.0 U	1.2 U	56 U
Trichlorofluoromethane	1.1 U	1.0 U	1.2 U	56 U
1,1,2-Trichloro-1,2,2-trifluoroethane	2.2 U	2.0 U	2.4 U	110 U
m, p-Xylene	1.1 U	1.0 U	1.2 U	56 U

TABLE 1
SOIL ANALYTICAL RESULTS
SUPPLEMENTAL REMEDIAL INVESTIGATION
SAURO PROPERTY
CITY OF TACOMA

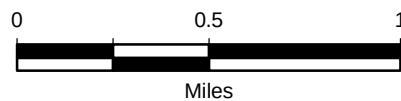
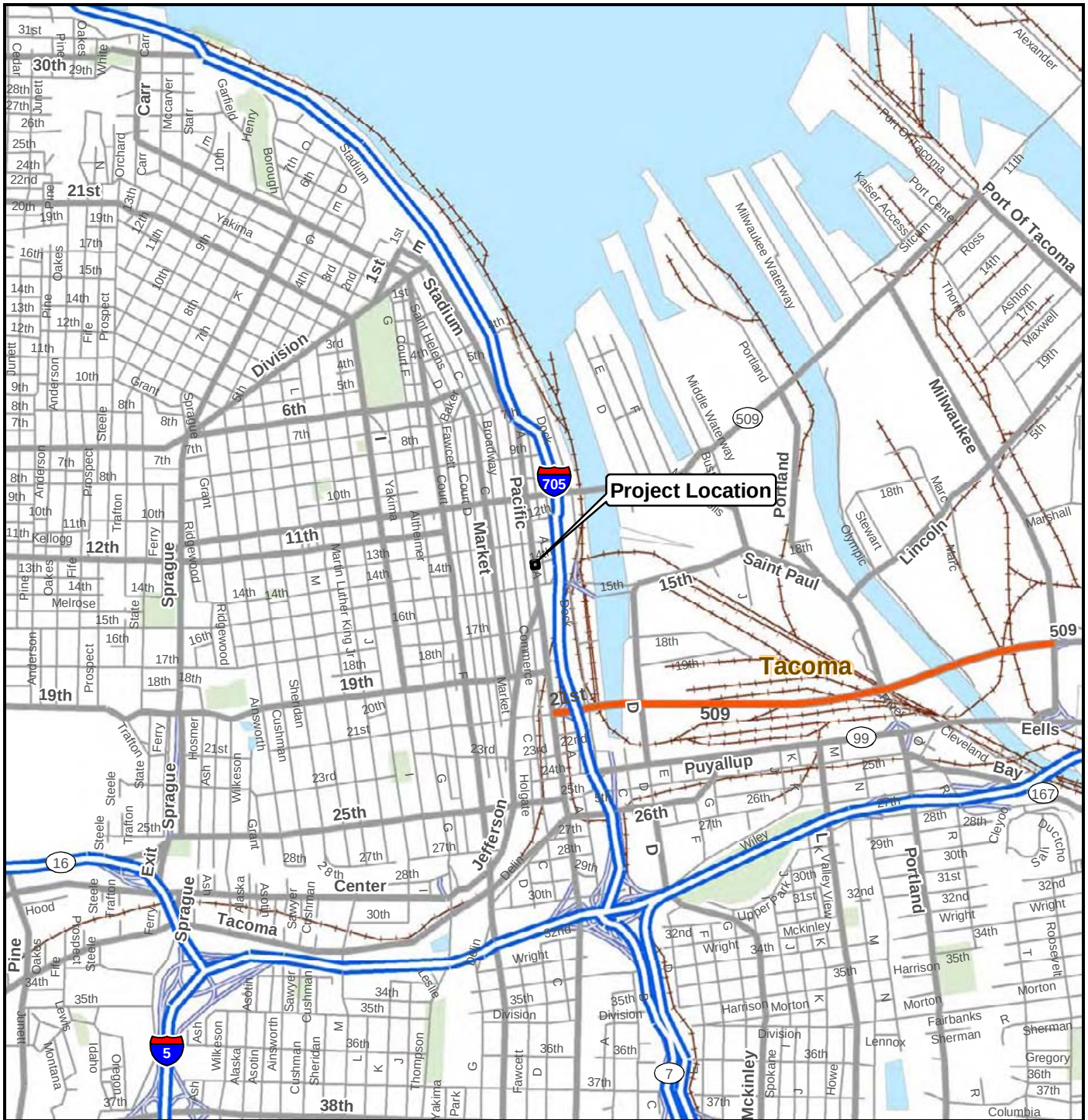
	LAI-P11-(5-6) OU22P 04/06/09	LAI-P11-(9.5-10.5) OU22Q 04/06/09	LAI-P11-(15-16) OU22R 04/06/09	LAI-STKPL OU23C 04/06/09
o-Xylene	1.1 U	1.0 U	1.2 U	56 U
1,2-Dichlorobenzene	1.1 U	1.0 U	1.2 U	56 U
1,3-Dichlorobenzene	1.1 U	1.0 U	1.2 U	56 U
1,4-Dichlorobenzene	1.1 U	1.0 U	1.2 U	56 U
Acrolein	54 U	50 U	59 U	2,800 U
Methyl Iodide	1.1 U	1.0 U	1.2 U	56 U
Bromoethane	2.2 U	2.0 U	2.4 U	110 U
Acrylonitrile	5.4 U	5.0 U	5.9 U	280 U
1,1-Dichloropropene	1.1 U	1.0 U	1.2 U	56 U
Dibromomethane	1.1 U	1.0 U	1.2 U	56 U
1,1,1,2-Tetrachloroethane	1.1 U	1.0 U	1.2 U	56 U
1,2-Dibromo-3-chloropropane	5.4 U	5.0 U	5.9 U	280 U
1,2,3-Trichloropropane	2.2 U	2.0 U	2.4 U	110 U
trans-1,4-Dichloro-2-butene	5.4 U	5.0 U	5.9 U	280 U
1,3,5-Trimethylbenzene	1.1 U	1.0 U	1.2 U	56 U
1,2,4-Trimethylbenzene	1.1 U	1.0 U	1.2 U	56 U
Hexachlorobutadiene	5.4 U	5.0 U	5.9 U	280 U
Ethylene Dibromide	1.1 U	1.0 U	1.2 U	56 U
Bromochloromethane	1.1 U	1.0 U	1.2 U	56 U
2,2-Dichloropropane	1.1 U	1.0 U	1.2 U	56 U
1,3-Dichloropropane	1.1 U	1.0 U	1.2 U	56 U
Isopropylbenzene	1.1 U	1.0 U	1.2 U	56 U
n-Propylbenzene	1.1 U	1.0 U	1.2 U	56 U
Bromobenzene	1.1 U	1.0 U	1.2 U	56 U
2-Chlorotoluene	1.1 U	1.0 U	1.2 U	56 U
4-Chlorotoluene	1.1 U	1.0 U	1.2 U	56 U
tert-Butylbenzene	1.1 U	1.0 U	1.2 U	56 U
sec-Butylbenzene	1.1 U	1.0 U	1.2 U	56 U
4-Isopropyltoluene	1.1 U	1.0 U	1.2 U	56 U
n-Butylbenzene	1.1 U	1.0 U	1.2 U	56 U
1,2,4-Trichlorobenzene	5.4 U	5.0 U	5.9 U	280 U
Naphthalene	5.4 U	5.0 U	5.9 U	280 U
1,2,3-Trichlorobenzene	5.4 U	5.0 U	5.9 U	280 U

U = Indicates the compound was undetected at the reported concentration.

Bold indicates detected compound.

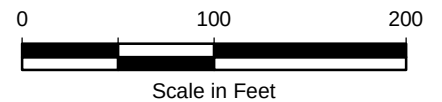
E = The concentration indicated for this analyte is an estimated value above the calibration range of the instrument. This value is considered an estimate. The detect in the initial run was reported as not detected in the second analysis due to the high amount of dilution necessary to quantitate the data.

M = Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match.



Data Source: ESRI 2006



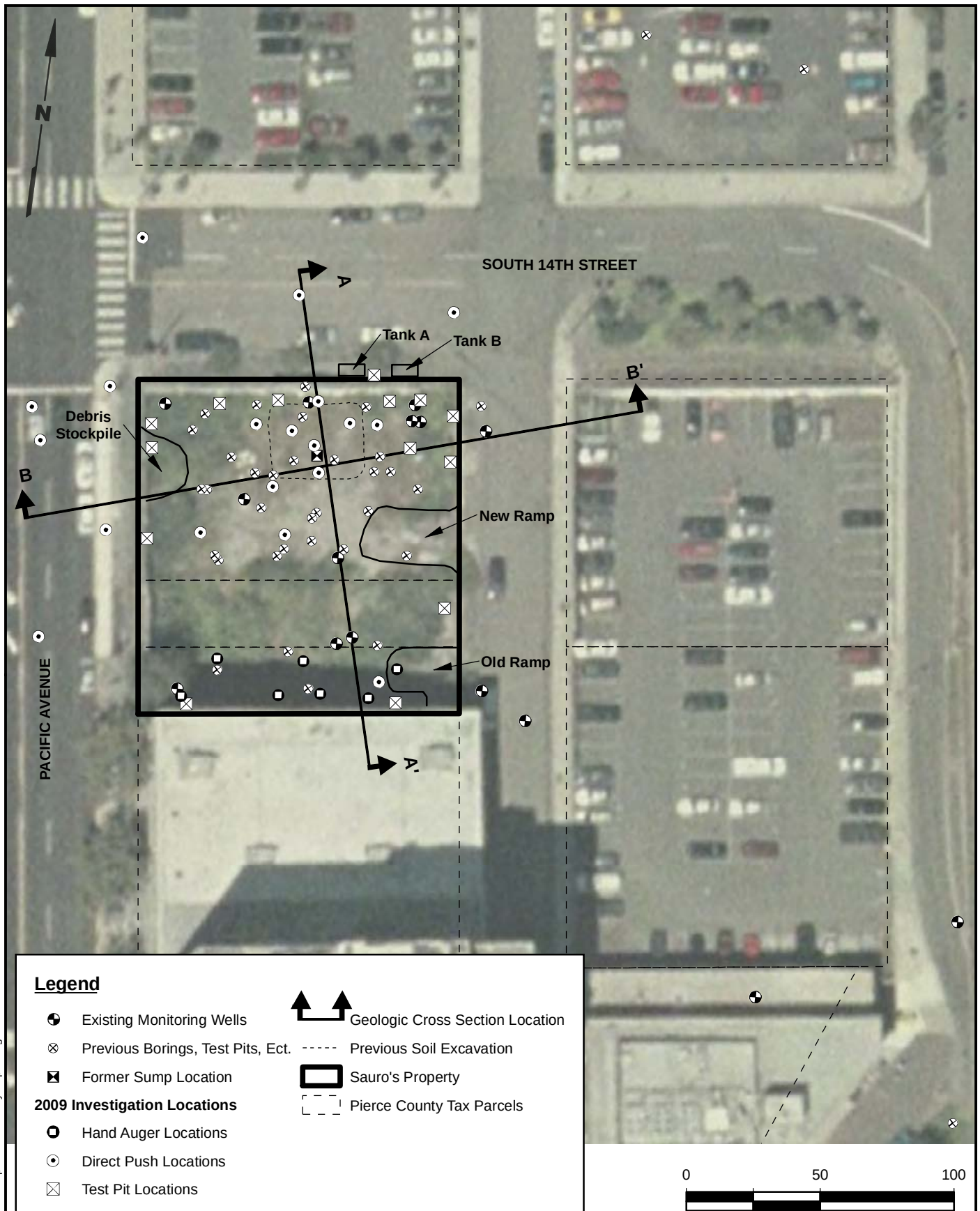


Data Source: Pierce County GIS; ESRI

Sauro's Property
Tacoma, Washington

Site Map

Figure
2



Base Map Source: ESRI Image Server (2005 Aerial Image); Pierce County (Parcel Data)

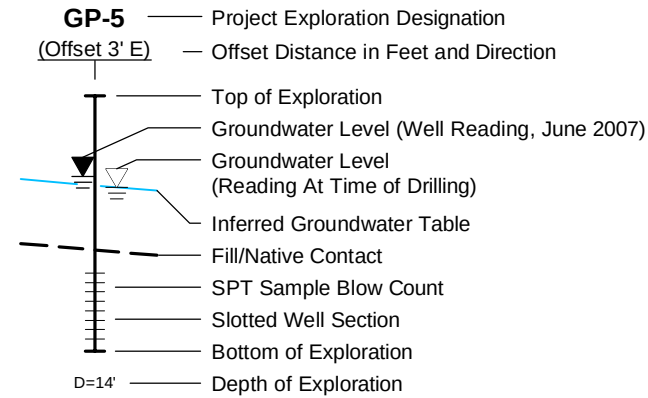
Y:\Projects\094048\Mapdocs\Summary Report\Fig4.mxd 4/27/2009



Base Map Source: ESRI Image Server (2005 Aerial Image); Pierce County (Parcel Data); City of Tacoma (Contour Data)

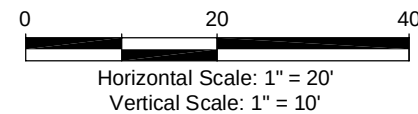
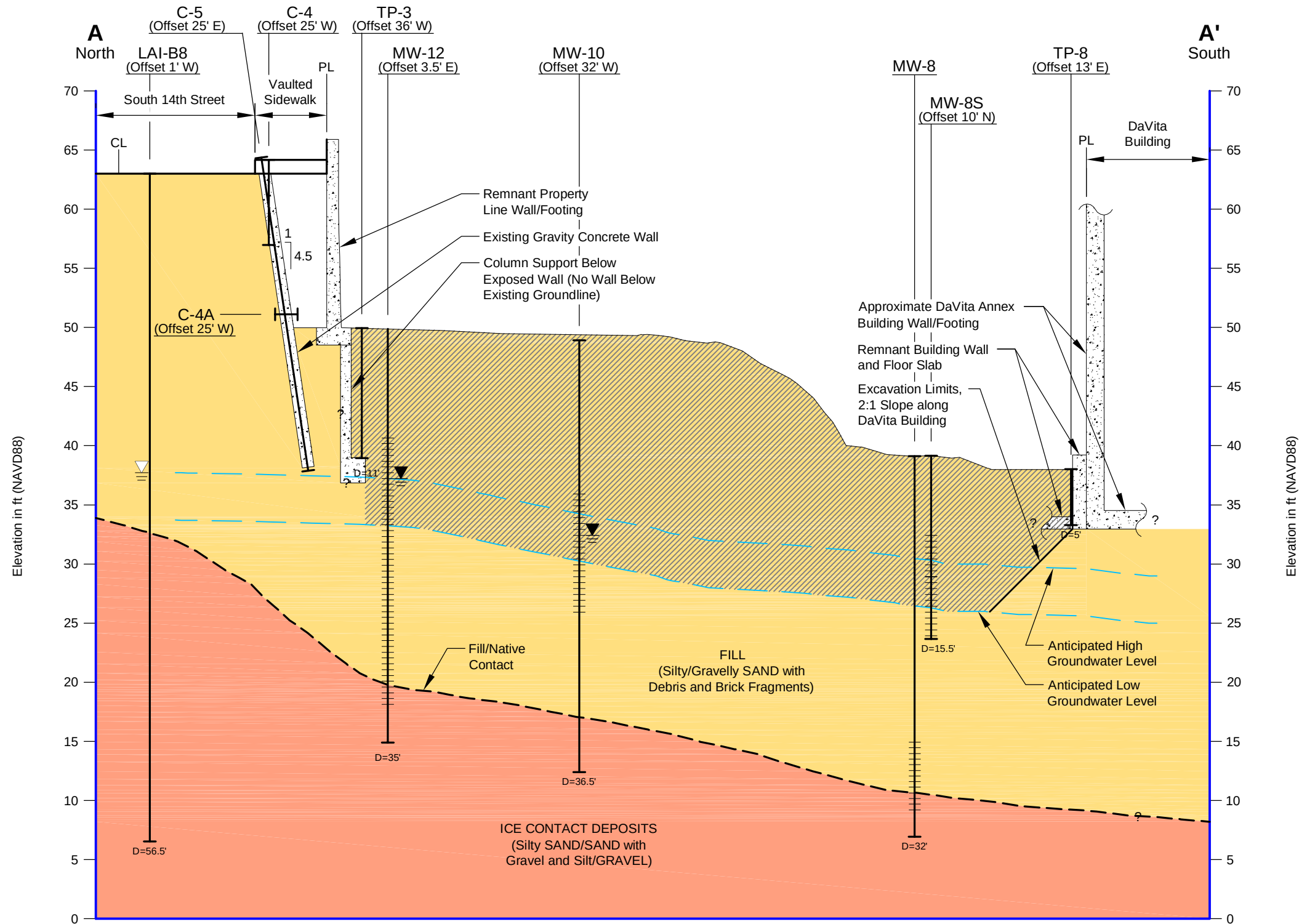
Legend

- Fill
- Qvi (Ice Contact Deposit)
- Planned Environmental Remediation Excavation



Notes

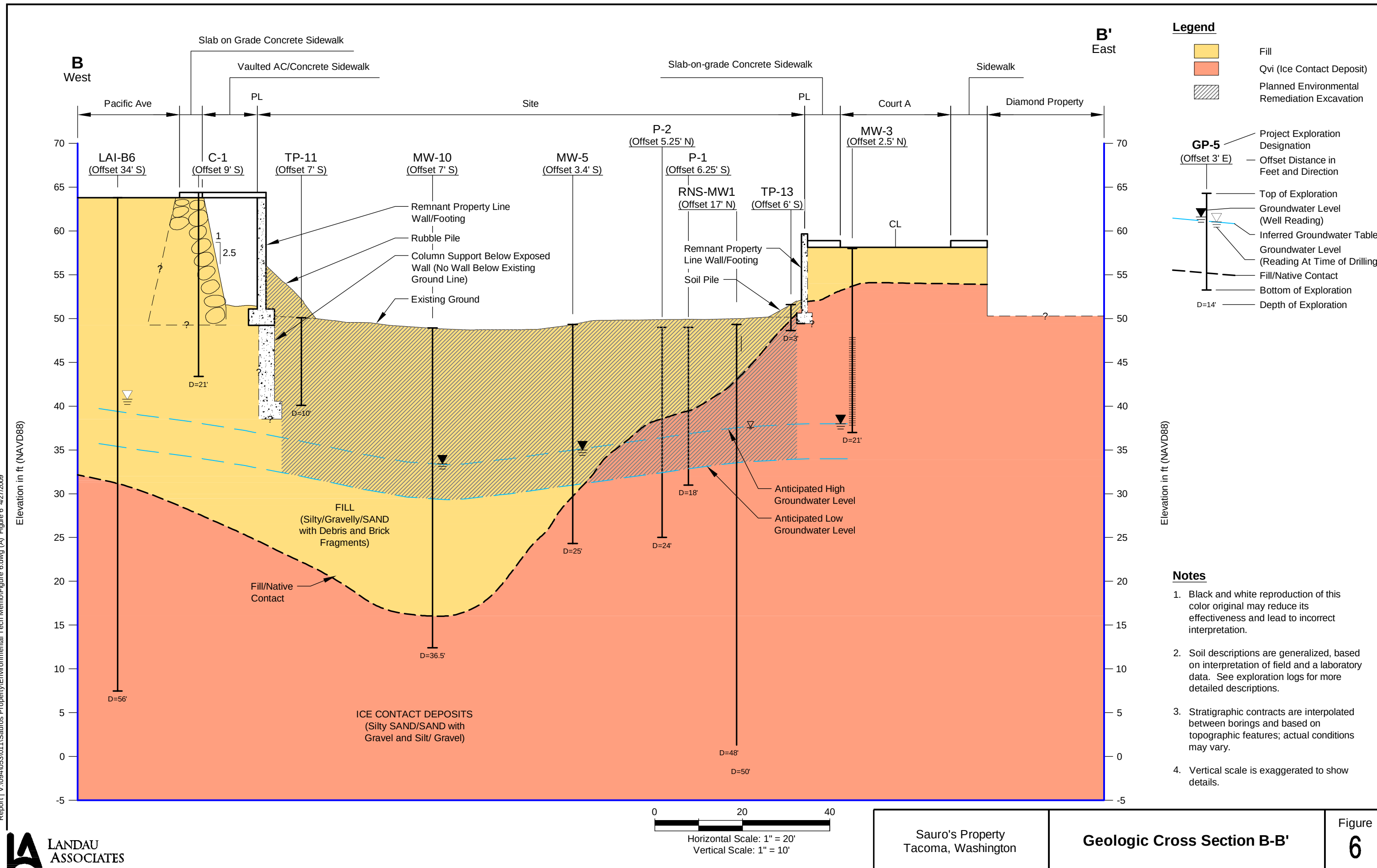
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.
2. Soil descriptions are generalized, based on interpretation of field and a laboratory data. See exploration logs for more detailed descriptions.
3. Stratigraphic contracts are interpolated between borings and based on topographic features; actual conditions may vary.
4. Vertical scale is exaggerated to show details.



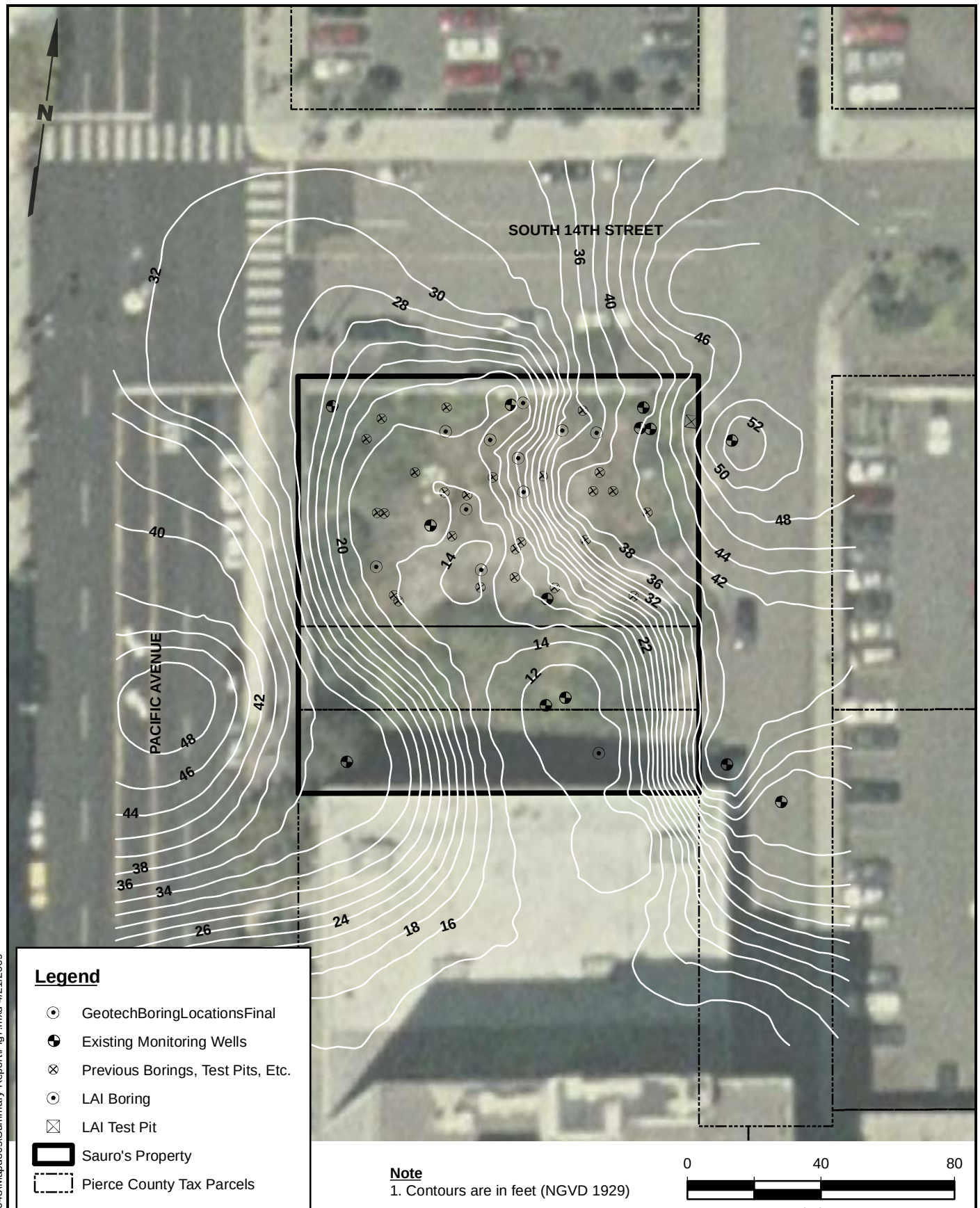
Sauro's Property
Tacoma, Washington

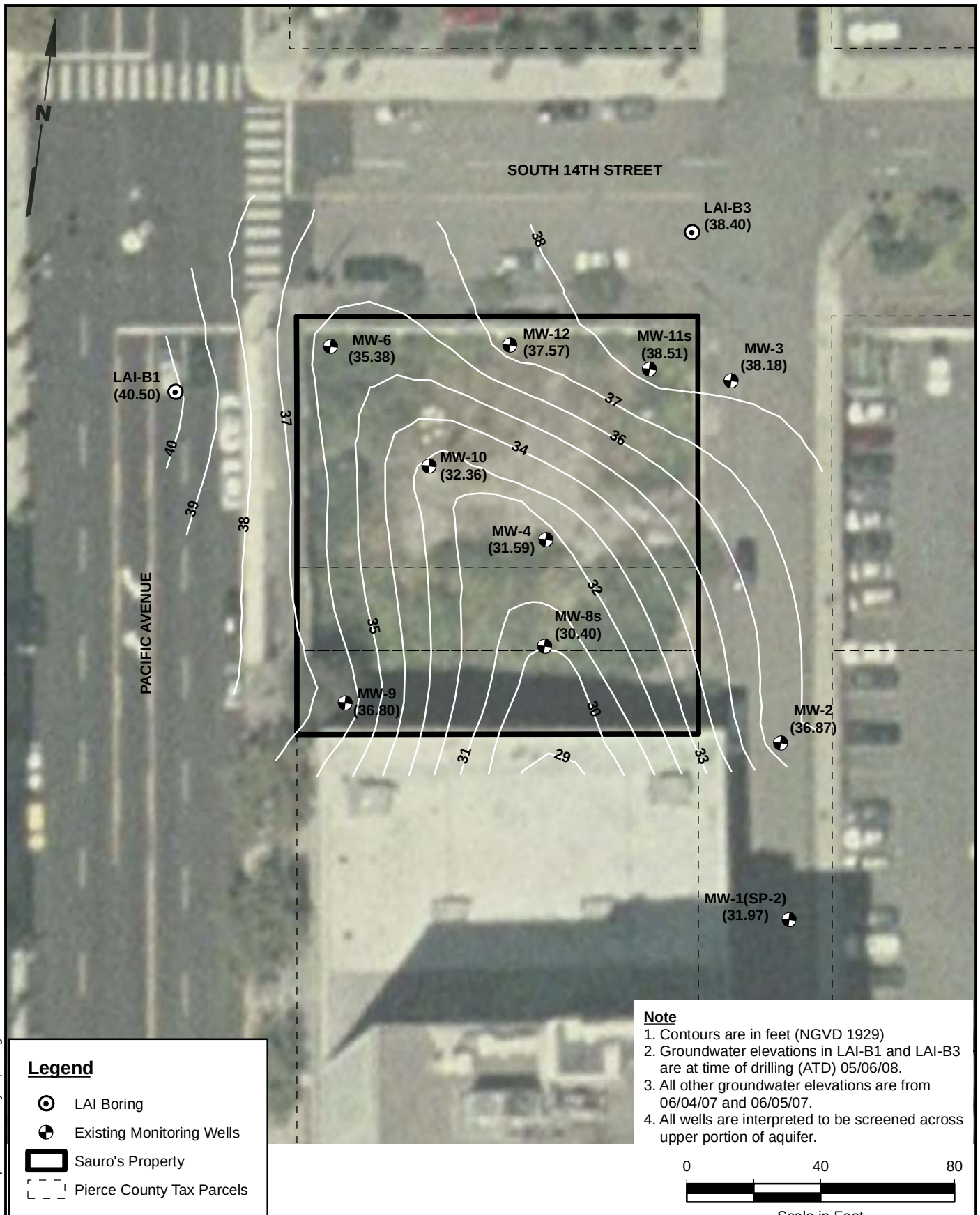
Geologic Cross Section A-A'

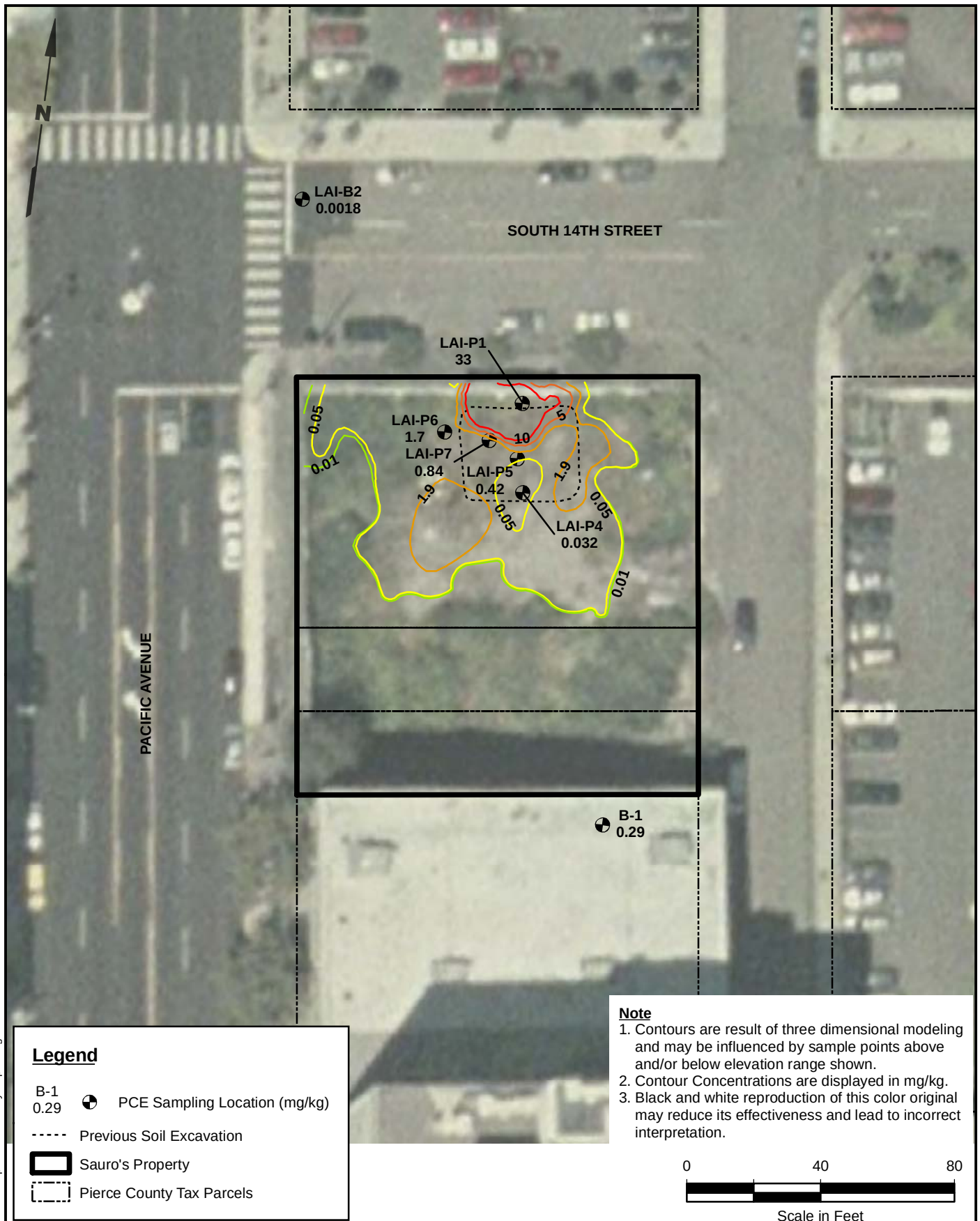
Figure
5



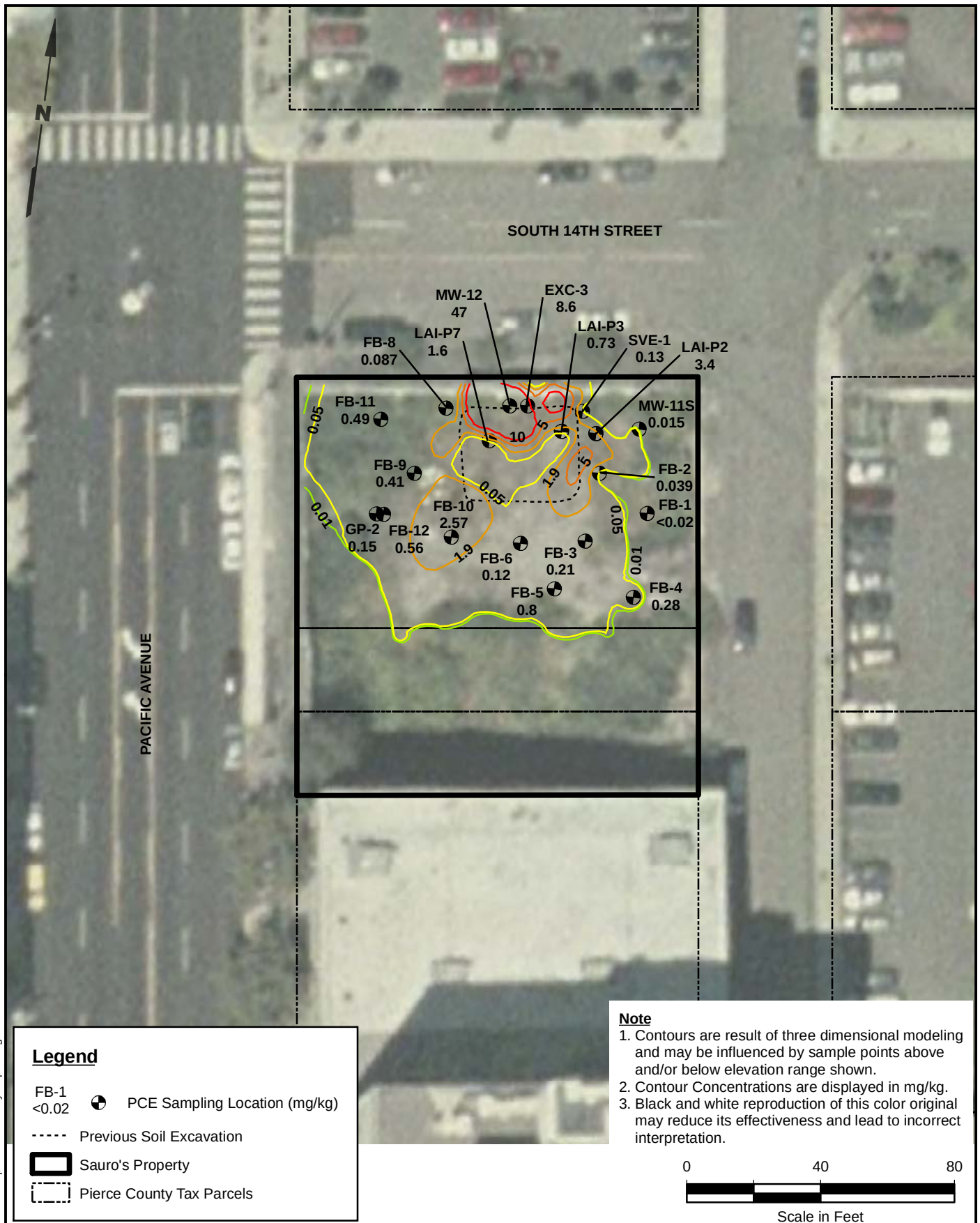
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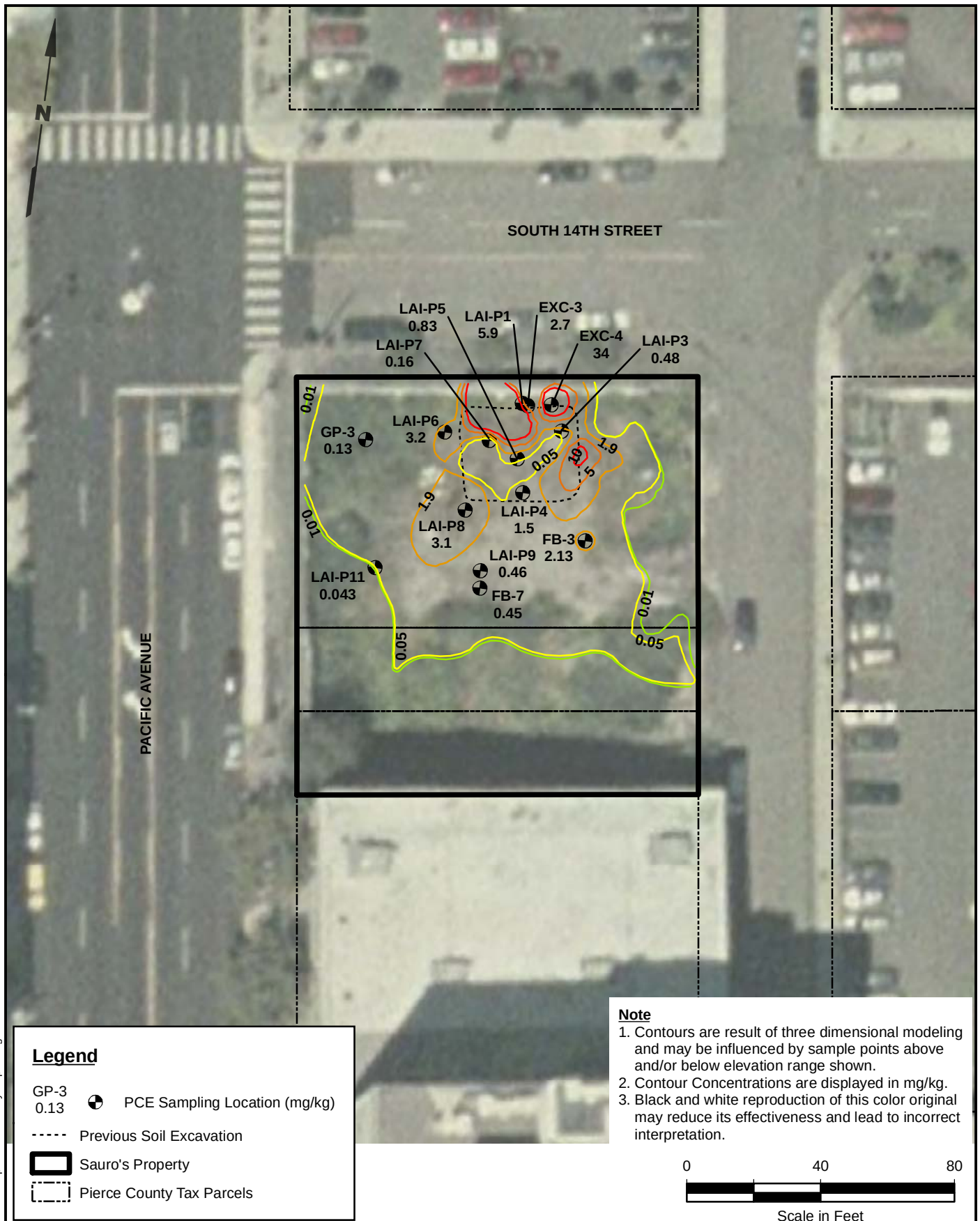




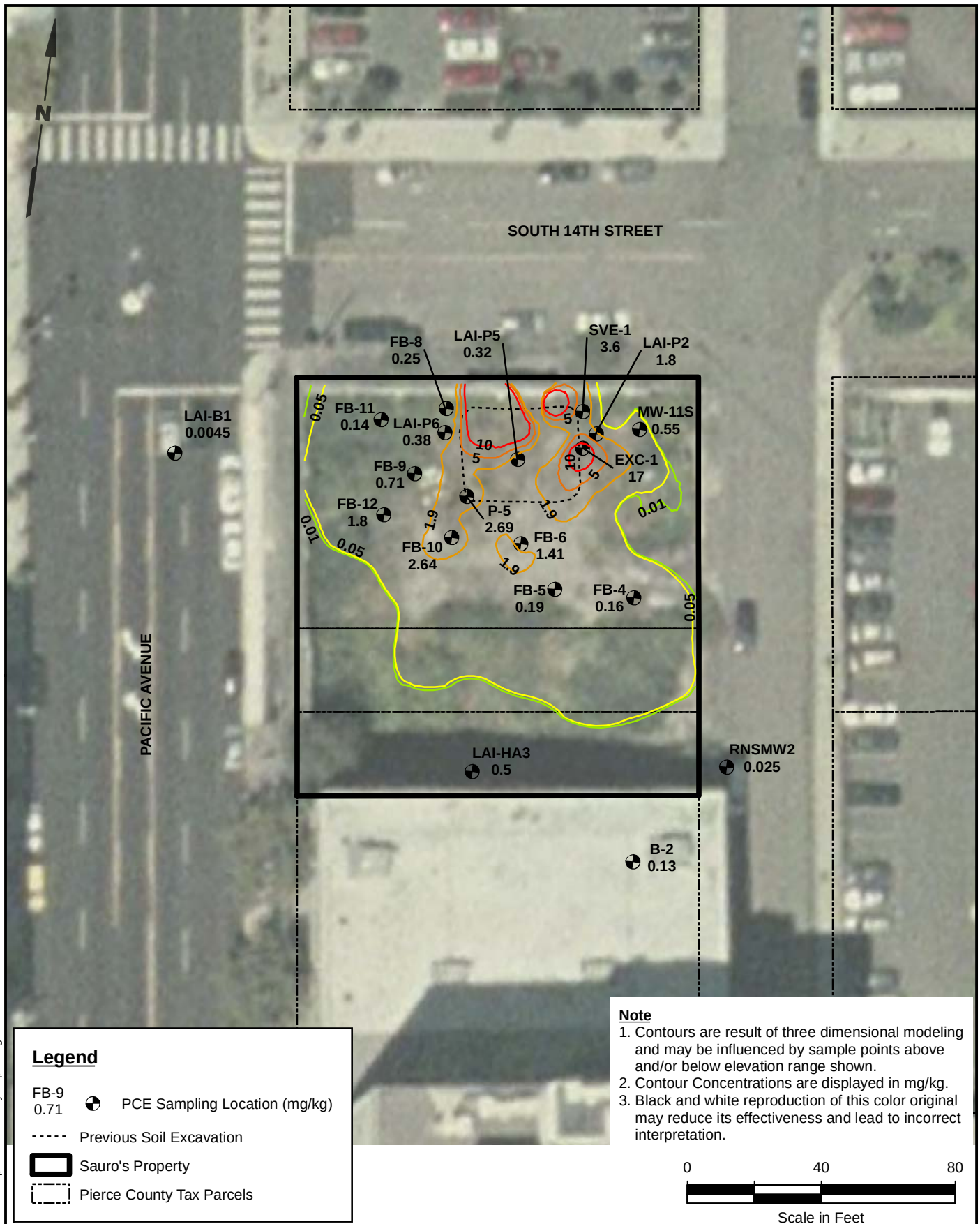
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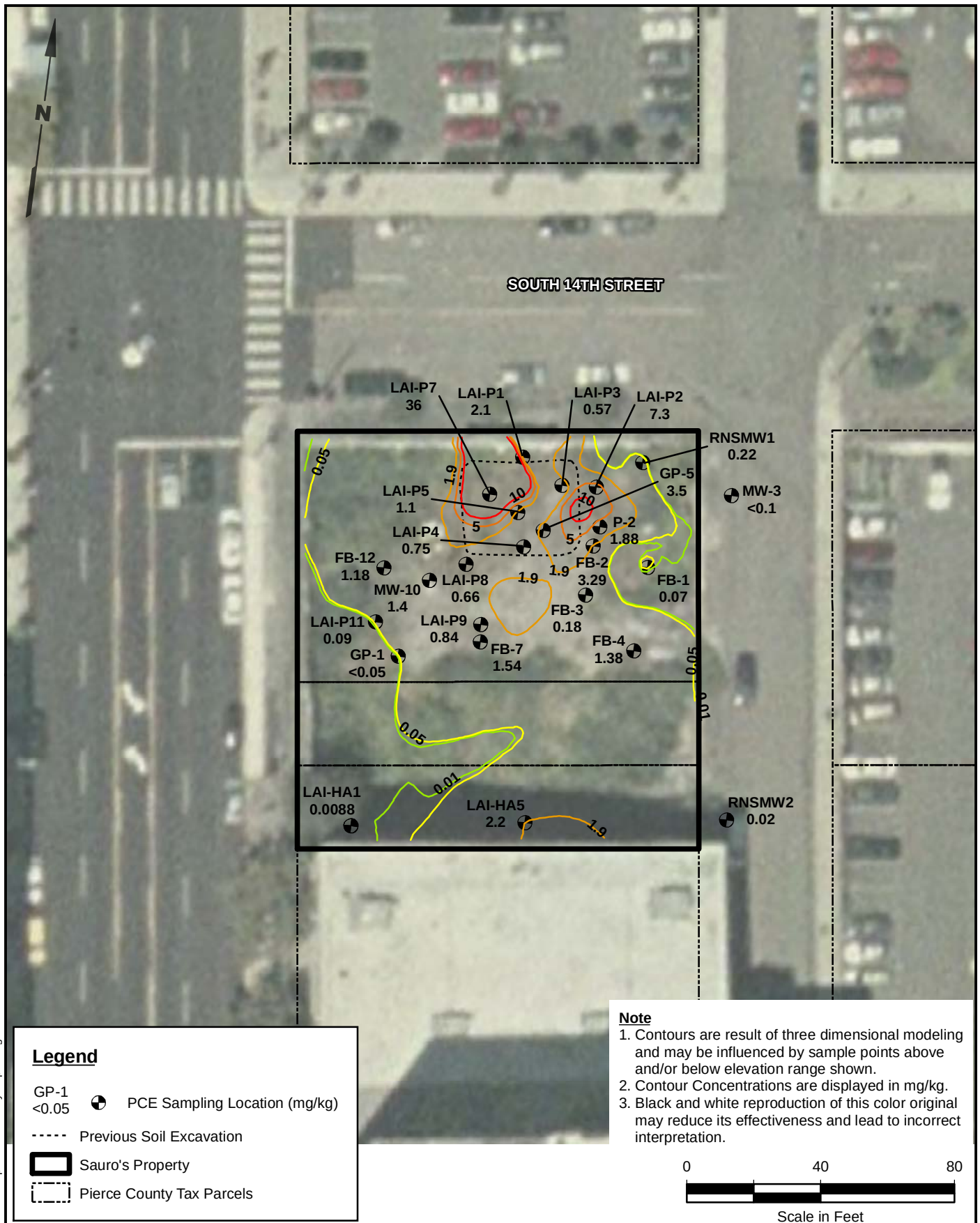
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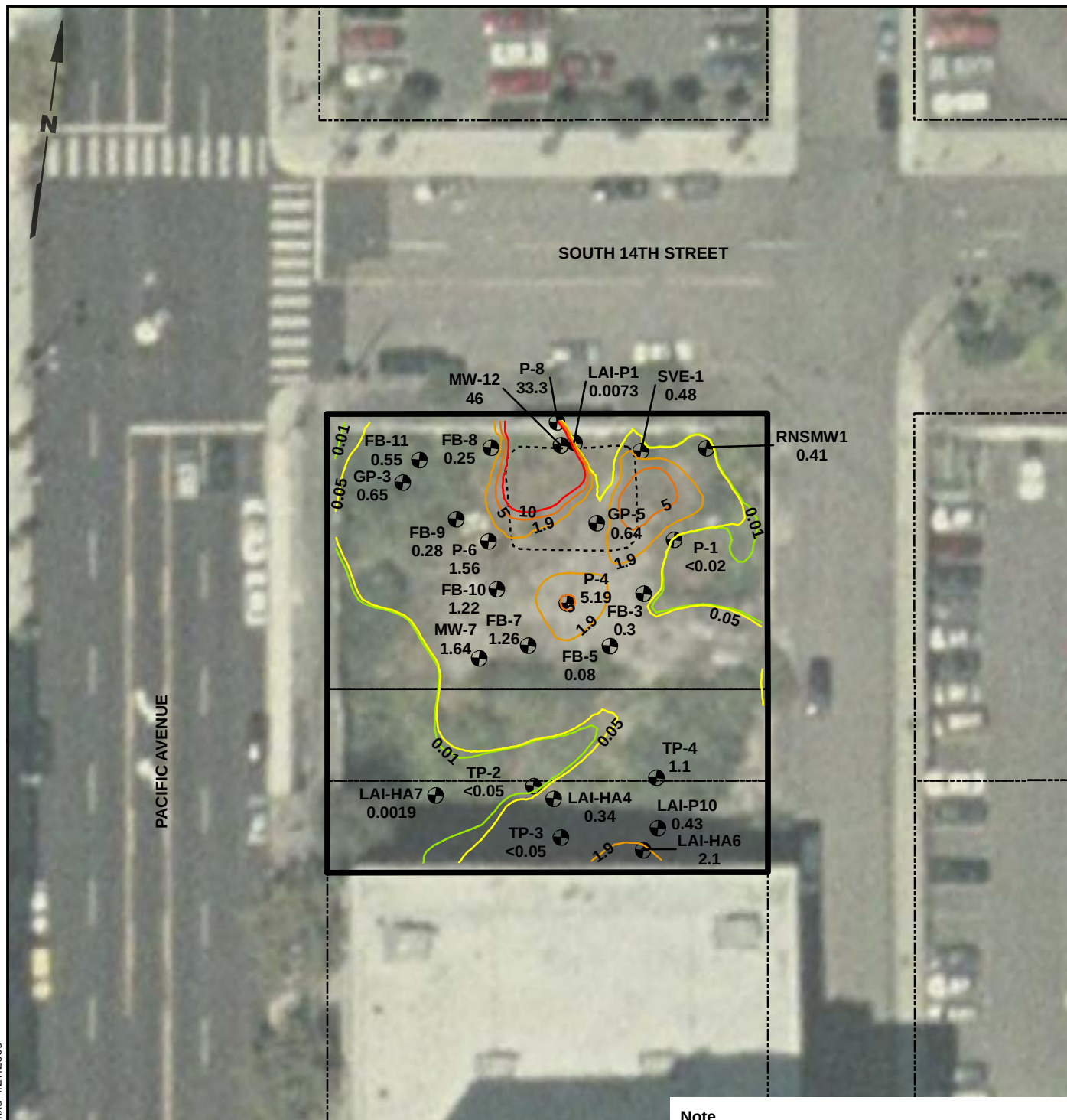
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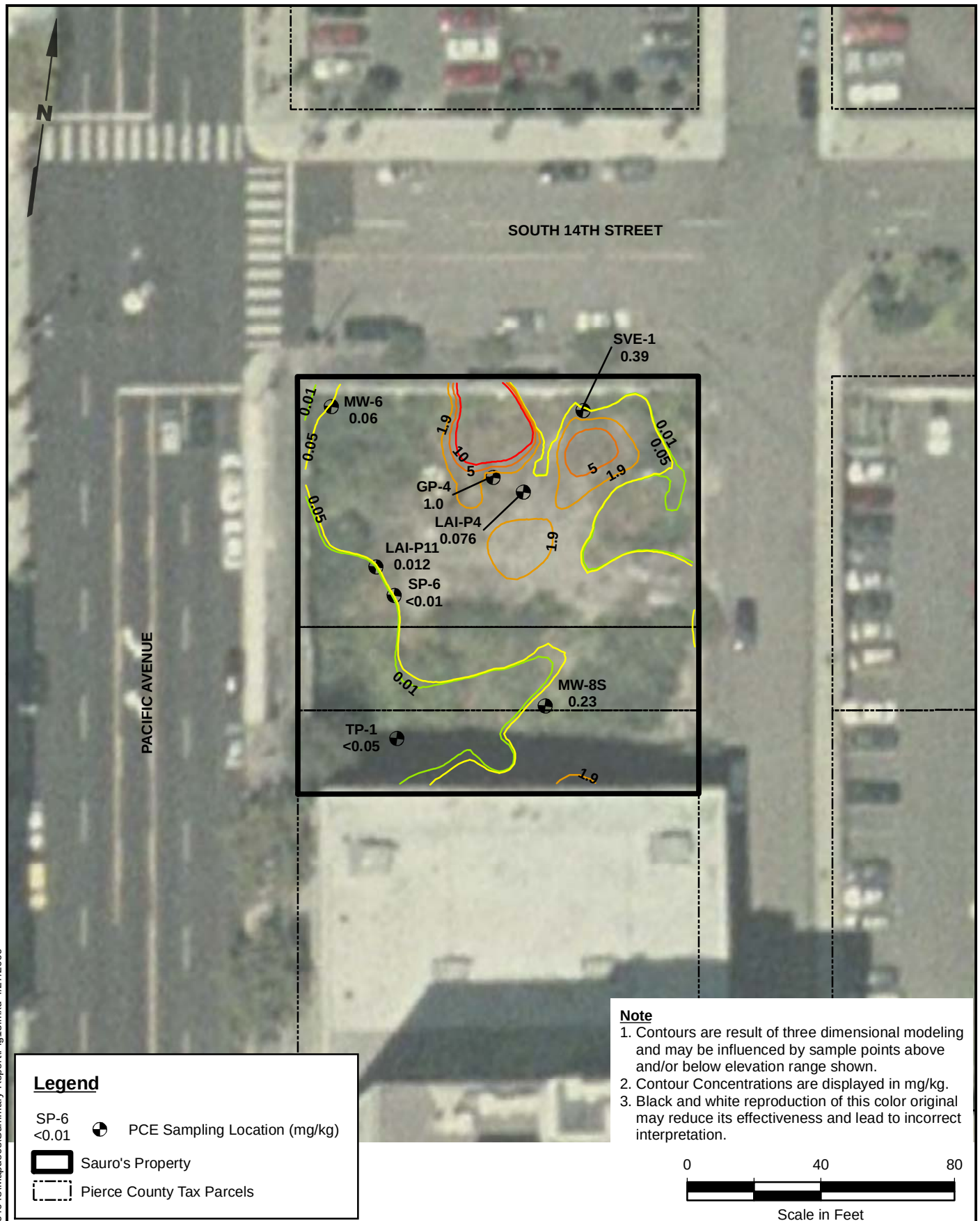


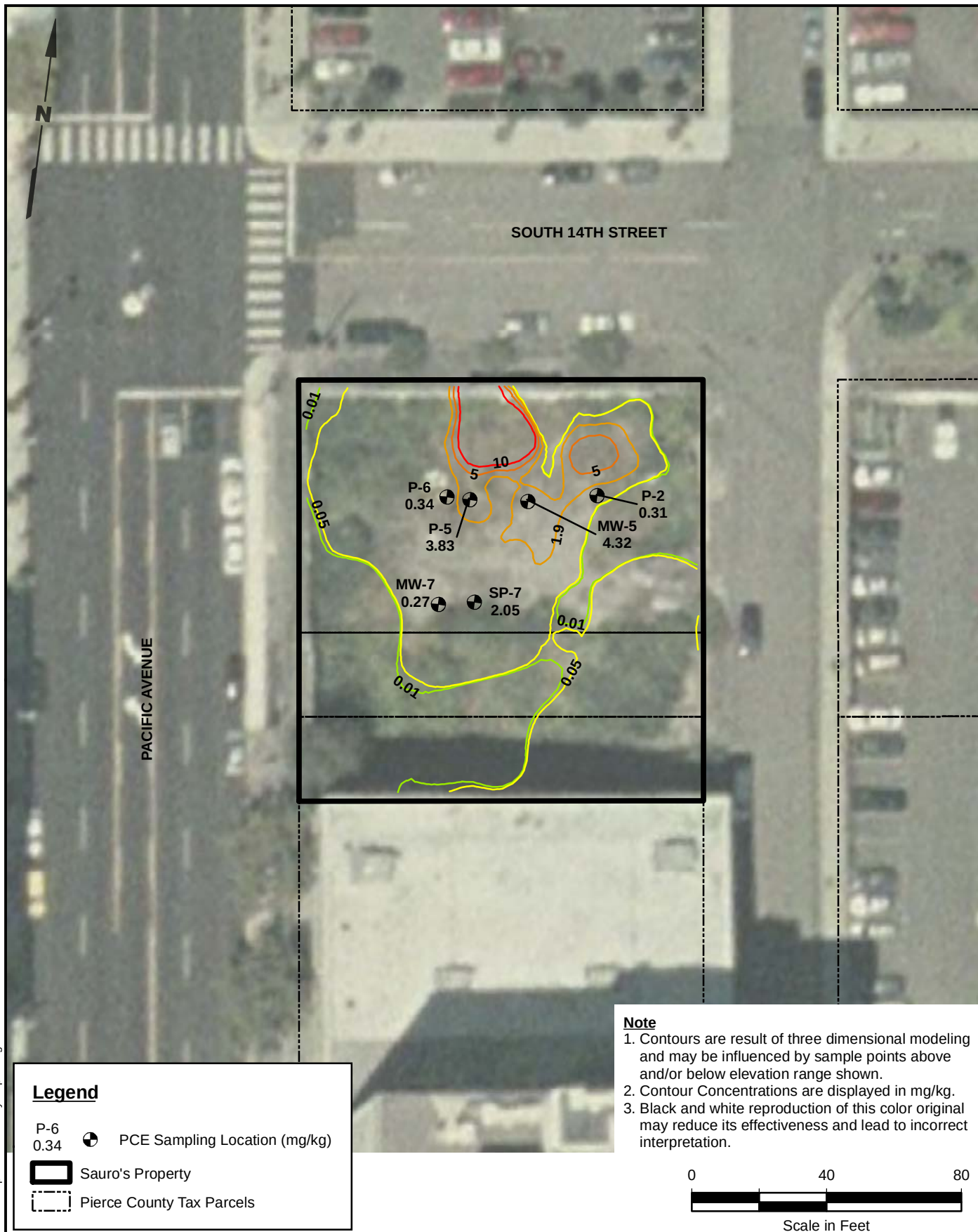
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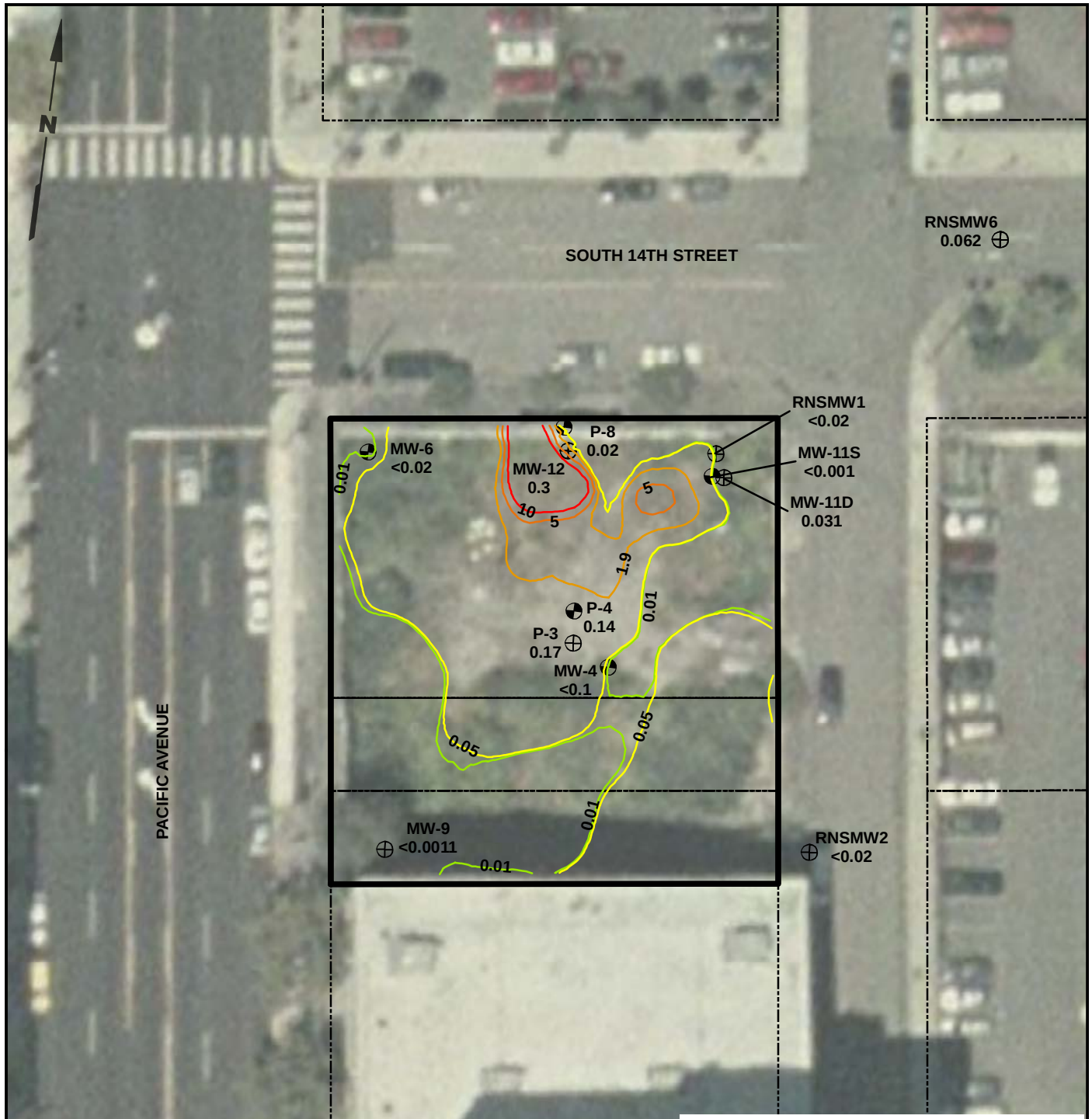
Base Map Source: ESRI Image Server (2005 Aerial Image); Pierce County (Parcel Data)

Y:\Projects\094048\Mapdocs\Summary Report\Fig15.mxd 4/27/2009





Y:\Projects\094048\Mapdocs\Summary Report\Fig17.mxd 4/21/2009

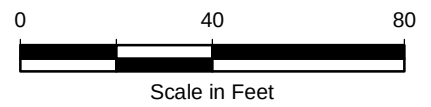


Legend

- MW-4
<0.1 ● PCE Sampling Location (mg/kg)
- P-3
0.13 ⊕ PCE Sampling Locations Below 24 ft (mg/kg)
- ▭ Sauro's Property
- ▭ Pierce County Tax Parcels

Note

1. Contours are result of three dimensional modeling and may be influenced by sample points above and/or below elevation range shown.
2. Contour Concentrations are displayed in mg/kg.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



Base Map Source: ESRI Image Server (2005 Aerial Image); Pierce County (Parcel Data)

Y:\Projects\094048\Mapdocs\Summary Report\Fig18.mxd 4/27/2009



Legend

- Sauro's Property
- Pierce County Tax Parcels

Soil contamination categories

- Category 1: Soil PCE concentrations >1.9 mg/kg
- Category 2: Soil PCE concentrations between 0.01 and 1.9 mg/kg

Note

1. Categories are estimates based on three dimensional modeling results. Actual site conditions may vary.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



Scale in Feet

Base Map Source: ESRI Image Server (2005 Aerial Image); Pierce County (Parcel Data)

Y:\Projects\094048\Mapdocs\Summary Report\Fig19.mxd 5/18/2009



Y:\Projects\094048\Mapdocs\Summary Report\Fig20.mxd 5/18/2009



Legend

- Sauro's Property
- Pierce County Tax Parcels

Note

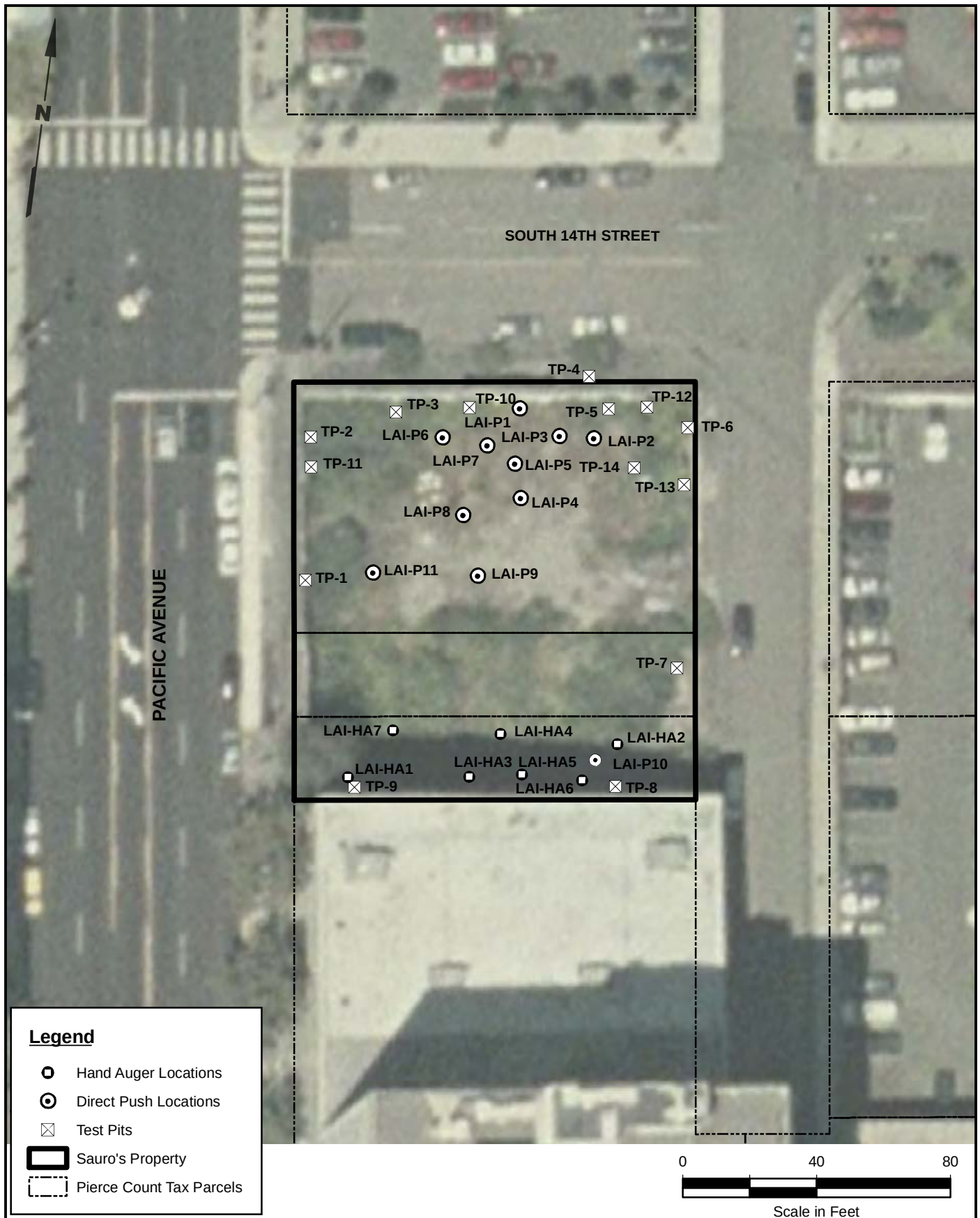
1. Contours are in feet (NGVD 1929)



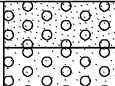
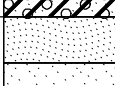
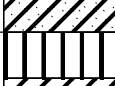
Base Map Source: ESRI Image Server (2005 Aerial Image); Pierce County (Parcel Data)

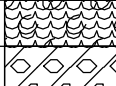
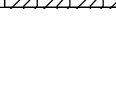
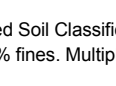
Supplementary Investigation Logs

A-1	Landau Associates Additional Investigation Locations
A-2	Soil Classification System and Key
A-3	Log of Boring LAI-P01
A-4	Log of Boring LAI-P02
A-5	Log of Boring LAI-P03
A-6	Log of Boring LAI-P04
A-7	Log of Boring LAI-P05
A-8	Log of Boring LAI-P06
A-9	Log of Boring LAI-P07
A-10	Log of Boring LAI-P08
A-11	Log of Boring LAI-P09
A-12	Log of Boring LAI-P09b
A-13	Log of Boring LAI-P10
A-14	Log of Boring LAI-P10b
A-15	Log of Boring LAI-P11
A-16	Log of Soil Borings
A-17	Log of Soil Borings
A-18	Log of Soil Borings
A-19	Log of Soil Borings
A-20	Log of Test Pits
A-21	Log of Test Pits
A-22	Log of Test Pits
A-23	Log of Test Pits
A-24	Log of Test Pits
A-25	Log of Test Pits
A-26	Log of Test Pits



Soil Classification System

	MAJOR DIVISIONS		GRAPHIC SYMBOL	USCS LETTER SYMBOL ⁽¹⁾	TYPICAL DESCRIPTIONS ⁽²⁾⁽³⁾
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
				ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
		SILT AND CLAY (Liquid limit greater than 50)		CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
				MH	Inorganic silt; micaceous or diatomaceous fine sand
	HIGHLY ORGANIC SOIL			CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
				PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

NOTES:

- USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
- Soil descriptions are based on the general approach presented in the *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*, outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the *Standard Test Method for Classification of Soils for Engineering Purposes*, as outlined in ASTM D 2487.
- Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:
 - Primary Constituent: > 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
 - Secondary Constituents: > 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
 - > 15% and ≤ 30% - "gravelly," "sandy," "silty," etc.
 - Additional Constituents: > 5% and ≤ 15% - "with gravel," "with sand," "with silt," etc.
 - ≤ 5% - "trace gravel," "trace sand," "trace silt," etc., or not noted.

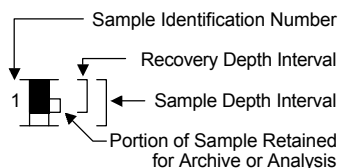
4/28/09 Y:\094\048.01\01\T094048.010.GPJ SCS WSDOT 10F2

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Rotosonic
5	Air Rotary (Rock)
6	Wash Rotary (Rock)
7	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

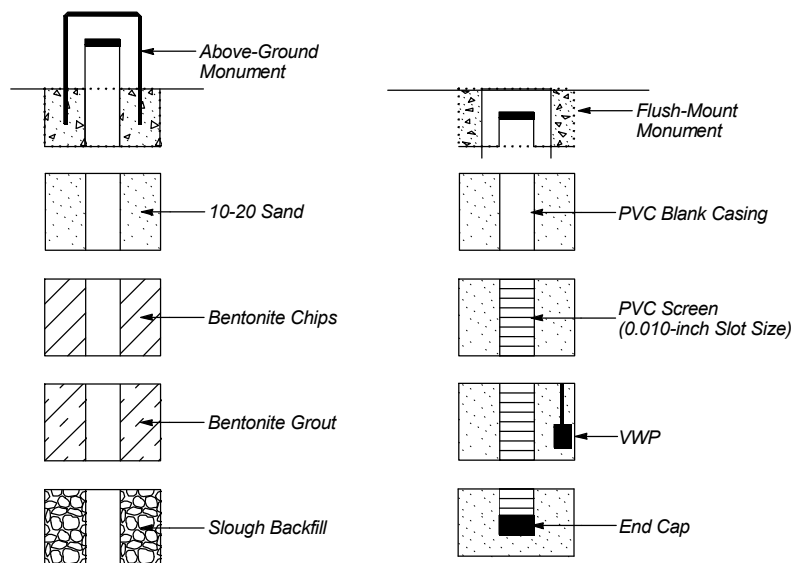
Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
VST	Vane Shear Test
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

- ▽ Approximate water elevation at time of drilling (ATD).
- ▼ Approximate water elevation at other time(s). When multiple water levels are obtained other than ATD, only a representative range is shown. See text for additional information.

Note: Groundwater levels can fluctuate due to precipitation, seasonal conditions, and other factors.

Well Log Graphics



LAI-P01

SAMPLE DATA

SOIL PROFILE

GROUNDWATER

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: <u>Geoprobe™</u> Ground Elevation (ft): <u>Not Measured</u>	Water Level
0				0		SP	Brown, very gravelly, medium to coarse SAND; no odor (medium dense, damp)	
				0			(FILL)	
		e3		0.2		SM	Light brown, silty, fine to coarse SAND with gravel; no odor (medium dense, damp)	
5	LAI-P1-(5-6)			0				
		e3		0				
10	LAI-P1-(10-11)			0		GP	Gray, sandy, fine to coarse GRAVEL; no odor (medium dense, damp)	
		e3		0				
15	LAI-P1-(15-16)			0		SP	Light brown, gravelly, fine to medium SAND; no odor (loose, damp)	
		e3		0				
				0		WD	Dark brown wood chunks in sandy matrix; no odor (loose, wet)	▽ ATD
	LAI-P1-(18.5-19.5)			0		SM	Mottled gray, orange, and brown, silty, fine to medium SAND; no odor (loose, wet)	
20				0				

Boring Completed 04/06/09
Total Depth of Boring = 20.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

94048.01 4/28/09 Y:\094\048.01\10\094048.010.GPJ SOIL BORING LOG

LAI-P02

SAMPLE DATA

SOIL PROFILE

GROUNDWATER

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: <u>Geoprobe™</u> Ground Elevation (ft): <u>Not Measured</u>	Water Level
0								
0.7						SP-SM	Brown, very gravelly, fine to coarse SAND with silt, occasional rootlets and brick fragments; no odor (loose to medium dense, damp)	
1.0						SP	Light brown, medium SAND with trace gravel and trace silt; no odor (loose, damp)	
0.4		e3				SM	Brown, silty, gravelly, fine to coarse SAND with occasional brick fragments; no odor (loose, damp to wet)	
5	LAI-P2-(5-6)			0				
	LAI-P2-(6.5-7.25)			0				
		e3		0				
10	LAI-P2-(10-11)			0.7				
		e3		2.2				
				1.7				
15	LAI-P2-(15-16)			0.1				ATD
		e3		0.4		ML	Light brown to gray, sandy SILT with trace roots; no odor (very soft, wet)	
				0.2				
				0		GP	Greenish-gray, sandy, fine to coarse GRAVEL; no odor (medium dense, wet)	
				0.1				
20								

Boring Completed 04/06/09
Total Depth of Boring = 20.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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LAI-P03

SAMPLE DATA

SOIL PROFILE

GROUNDWATER

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: <u>Geoprobe™</u> Ground Elevation (ft): <u>Not Measured</u>	
0				0.1		SP		
		e3		0			Brown to gray, very gravelly, fine to coarse SAND with cobble and abundant brick fragments; no odor (loose to medium dense)	Groundwater not encountered.
5	LAI-P3-(5-6)			0				
	LAI-P3-(7-8)	e3		0.4				
				0.9				
10	LAI-P3-(10-11)			0		SM	Brown, silty, fine SAND; no odor (loose, damp)	
		e3		0		SP	Brown, very gravelly, medium to coarse SAND; no odor (loose to medium dense, damp to moist)	
	LAI-P3-(13.5-14.5)			1.8				
15				0				

Boring Completed 04/06/09
Total Depth of Boring = 15.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

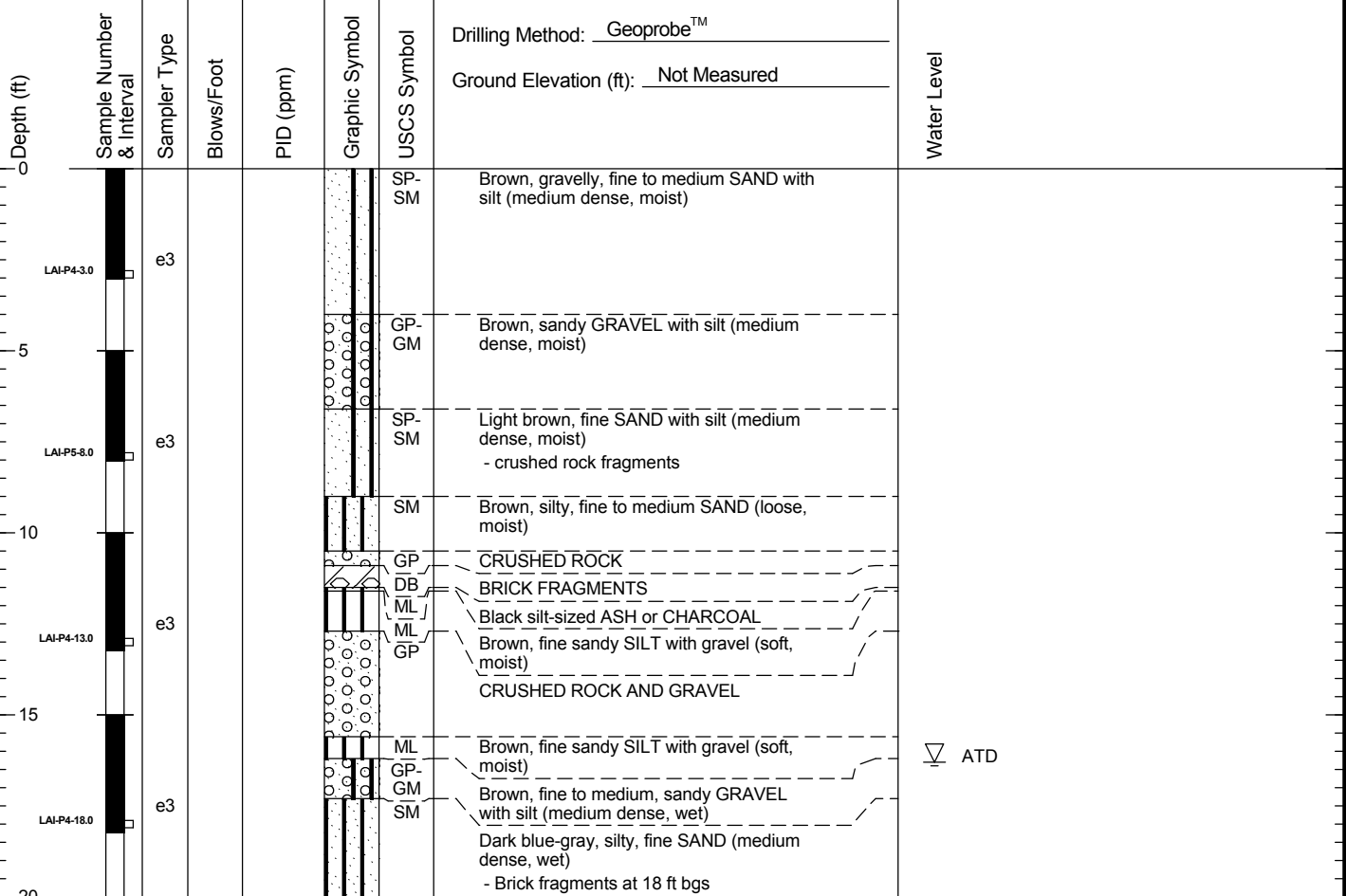
94048.01 4/28/09 Y:\0941048.01\10\094048.010.GPJ SOIL BORING LOG

LAI-P04

SAMPLE DATA

SOIL PROFILE

GROUNDWATER



Boring Completed 04/03/09
Total Depth of Boring = 20.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

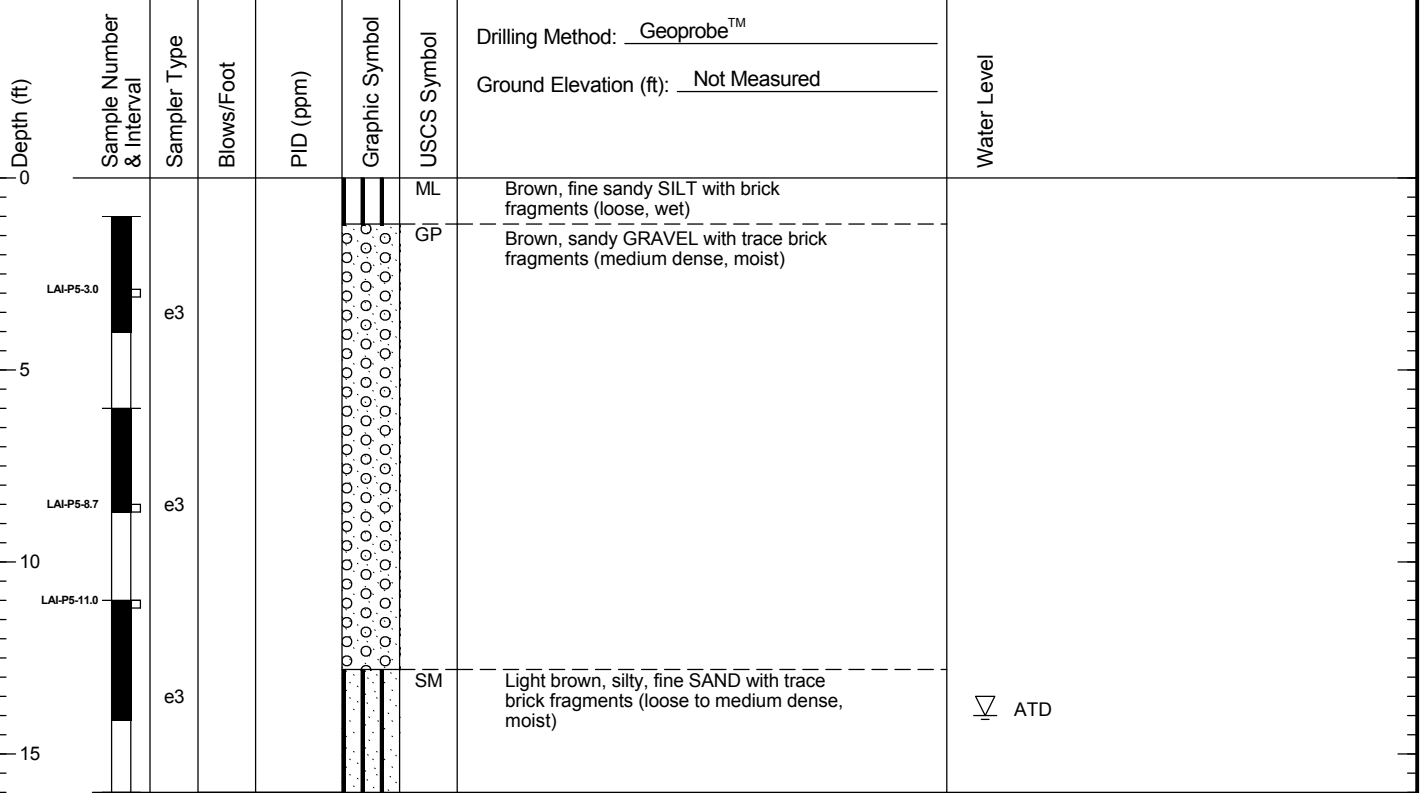
94048.01 4/28/09 Y:\094\048.01\10\094048.010.GPJ SOIL BORING LOG

LAI-P05

SAMPLE DATA

SOIL PROFILE

GROUNDWATER



Boring Completed 04/03/09
Total Depth of Boring = 16.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

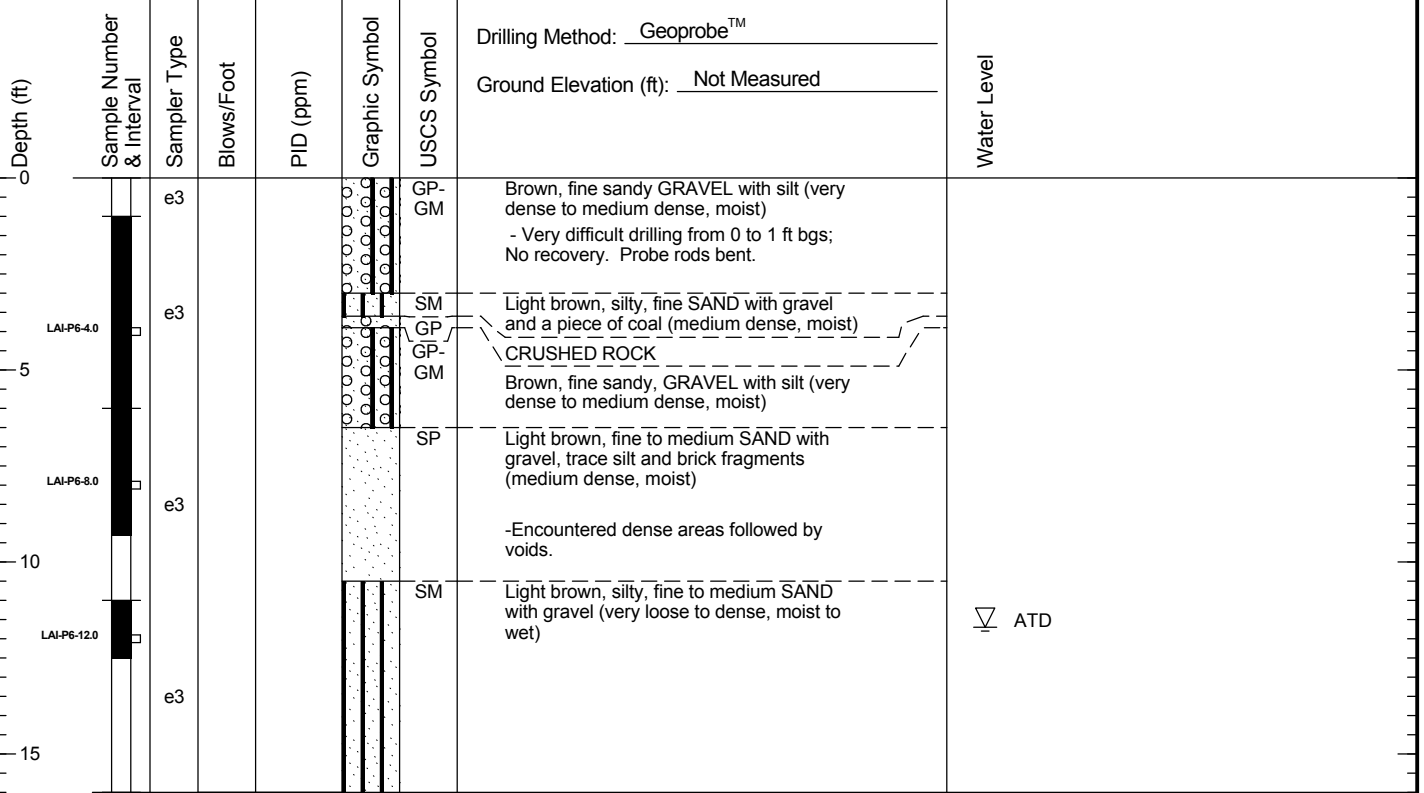
94048.01 4/28/09 Y:\0941048.01\10\094048.010.GPJ SOIL BORING LOG

LAI-P06

SAMPLE DATA

SOIL PROFILE

GROUNDWATER



Boring Completed 04/03/09
Total Depth of Boring = 16.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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LAI-P07

SAMPLE DATA

SOIL PROFILE

GROUNDWATER

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: <u>Geoprobe™</u> Ground Elevation (ft): <u>Not Measured</u>	Water Level
0				0		GP/SP	Brown to gray, very sandy, fine to coarse GRAVEL / very gravelly, fine to coarse SAND; no odor (loose, damp)	
0.2	LAI-P7-(3-4)	e3		0				
5				0				
	LAI-P7-(7.5-8.5)	e3		0				
10				0				
	LAI-P7-(11.5-12.5)	e3		0		SM	Light brown, silty, gravelly, fine to coarse SAND with brick fragments; no odor (medium dense, moist)	
15				0		SP	Gray, medium to coarse SAND; no odor (medium dense, moist)	▽ ATD
	LAI-P7-(15.5-16.5)	e3		0		SM	Dark gray, silty, medium to coarse SAND with abundant brick fragments; no odor (loose, wet)	

Boring Completed 04/06/09
Total Depth of Boring = 18.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

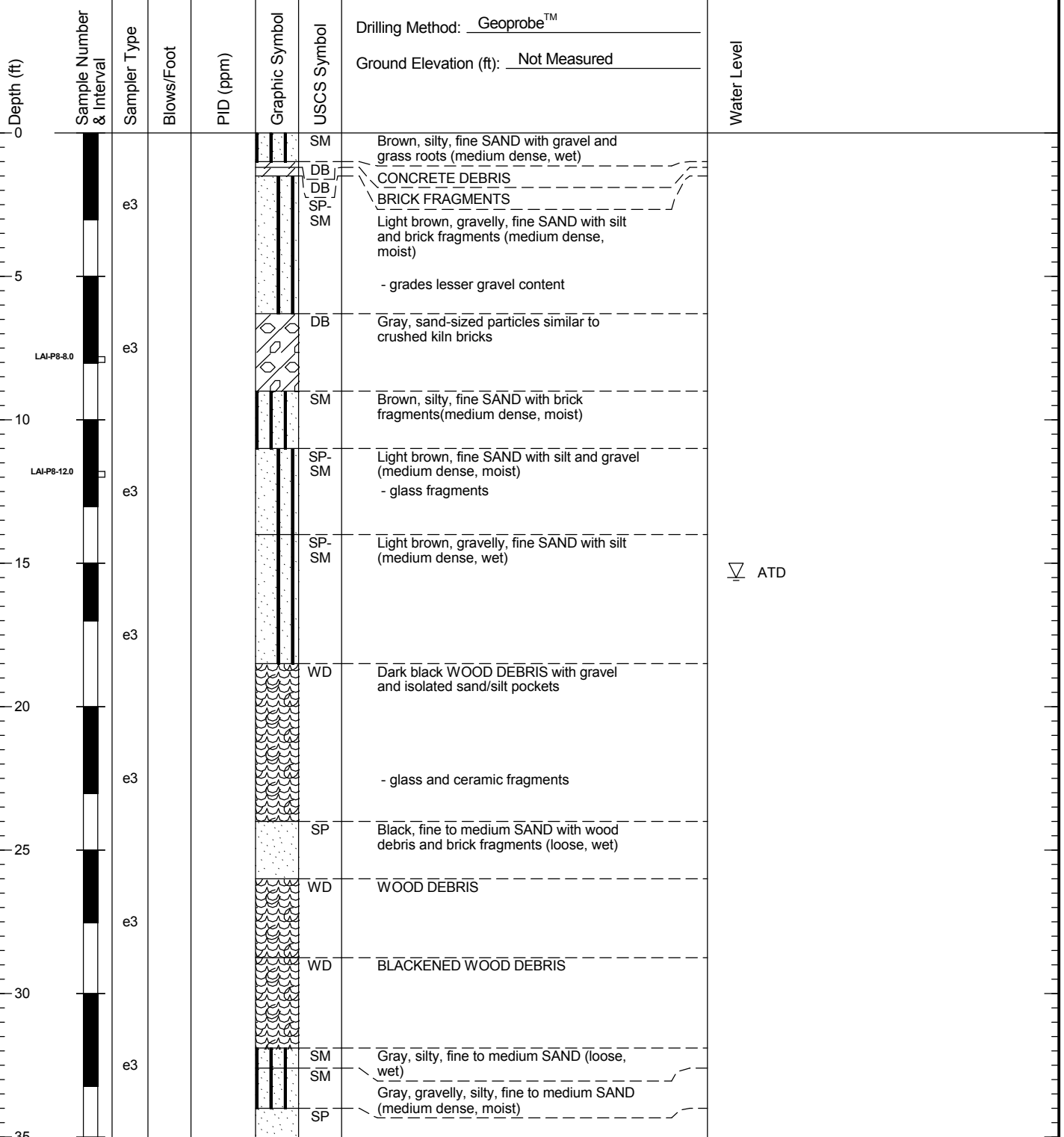
94048.01 4/28/09 Y:\0941048.01\10\094048.010.GPJ SOIL BORING LOG

LAI-P08

SAMPLE DATA

SOIL PROFILE

GROUNDWATER



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

▽ ATD

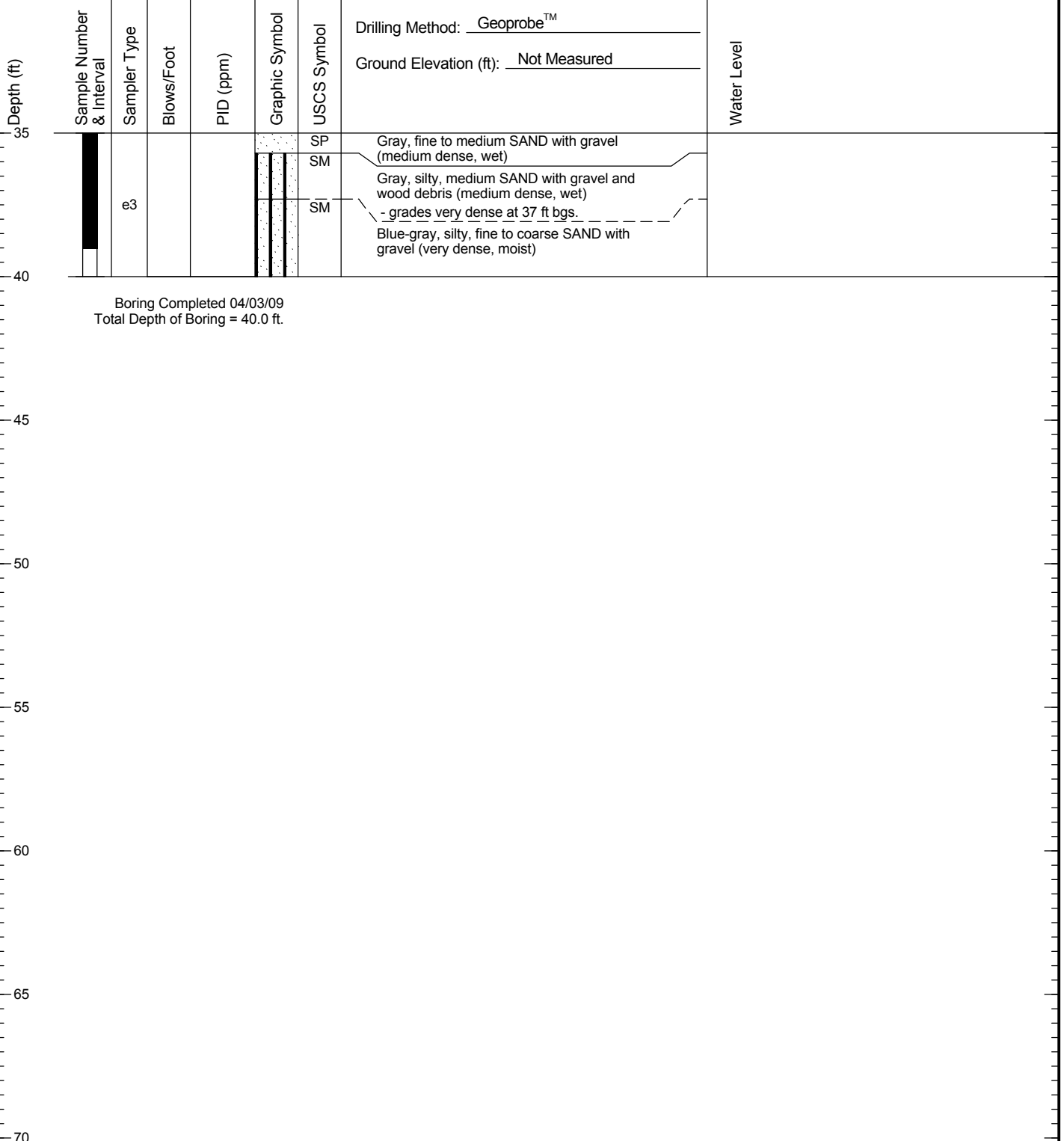
94048.01 4/28/09 Y:\094\048.01\T094048.010.GPJ SOIL BORING LOG

LAI-P08

SAMPLE DATA

SOIL PROFILE

GROUNDWATER



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

94048.01 4/28/09 Y:\0941048.01\10\094048.010.GPJ SOIL BORING LOG

LAI-P09

SAMPLE DATA

SOIL PROFILE

GROUNDWATER

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: <u>Geoprobe™</u>	Ground Elevation (ft): <u>Not Measured</u>	
0				0		SP	Brown, fine to medium SAND with gravel (loose, damp)		Groundwater not encountered.
		e3		0		SP	Brown, very gravelly, fine to coarse SAND with abundant brick fragments and trace glass fragments; no odor (loose to very loose, damp)		
				0					
				0					
5	LAI-P9- (5.5-6.5)	e3		0					
				0					
				0					
10	LAI-P9- (11-12)	e3		0			- grades very loose from 10 to 15 ft bgs		
				0					
15							Boring drilled less than 1 ft from Boring LAI-P09b. Log for Boring LAI-P09b contains data for 25 to 40 ft bgs.		

Boring Completed 04/06/09
Total Depth of Boring = 15.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

94048.01 4/28/09 Y:\0941048.01\10\094048.010.GPJ SOIL BORING LOG

LAI-P09b

SAMPLE DATA

SOIL PROFILE

GROUNDWATER

Depth (ft)

Sample Number
& Interval

Sampler Type

Blows/Foot

PID (ppm)

Graphic Symbol

USCS Symbol

Drilling Method: Geoprobe™

Ground Elevation (ft): Not Measured

Boring was not sampled from 0 to 25 ft bgs. See Boring LAI-P09 for lithology from 0 to 15 ft BGS. Boring was drilled less than 1 ft from Boring LAI-P09.

Groundwater not encountered.

Top of groundwater table was not recorded for this boring.

SM

Gray, very silty, gravelly, medium SAND (medium dense, wet)

WD

WOOD DEBRIS

ML

Gray, fine sandy SILT with gravel and wood debris (very soft, wet)

WD

WOOD DEBRIS

Notes:

1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

94048.01 4/28/09 Y:\094\048.01\10\094048.010.GPJ SOIL BORING LOG



**LANDAU
ASSOCIATES**

Sauro Property Environmental
Cleanup
Tacoma, Washington

Log of Boring LAI-P09b

Figure

A-12
(1 of 2)

LAI-P09b						
SAMPLE DATA				SOIL PROFILE		GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol
						Drilling Method: <u>Geoprobe™</u> Ground Elevation (ft): <u>Not Measured</u>
35						WOOD DEBRIS
						Dark gray, fine sandy SILT with gravel and wood debris (very soft, wet)
						Gray GRAVEL with silt and fine sand
40						Blue-gray, silty, fine to coarse SAND with gravel (very dense, moist)
Boring Completed 04/03/09 Total Depth of Boring = 40.0 ft.						
45						
50						
55						
60						
65						
70						

LANDAU

ASSOCIATES

Sauro Property Environmental Cleanup

Tacoma, Washington

Log of Boring LAI-P09b

Figure

A-12

(2 of 2)

94048.01 4/28/09 Y:\094\048.010\T\094048.010.GPJ SOIL BORING LOG



**LANDAU
ASSOCIATES**

Sauro Property Environmental
Cleanup
Tacoma, Washington

Log of Boring LAI-P09b

Figure

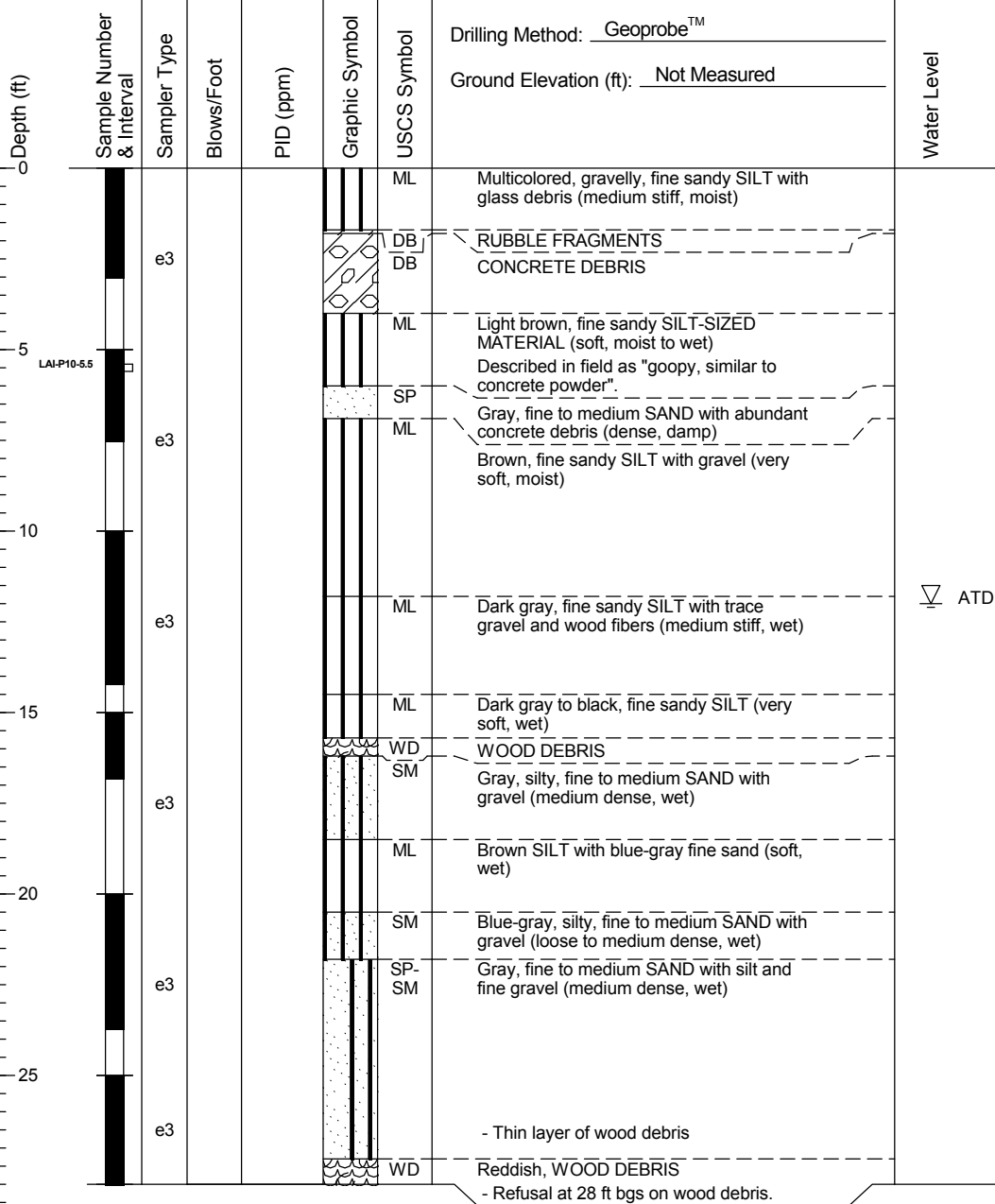
A-12
(2 of 2)

LAI-P10

SAMPLE DATA

SOIL PROFILE

GROUNDWATER



Boring Completed 04/03/09
Total Depth of Boring = 28.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

94048.01 4/28/09 Y:\094\048.01\T094048.010.GPJ SOIL BORING LOG

LAI-P10b

SAMPLE DATA

SOIL PROFILE

GROUNDWATER

Depth (ft)

Sample Number
& Interval

Sampler Type

Blows/Foot

PID (ppm)

Graphic Symbol

USCS Symbol

Drilling Method: Geoprobe™

Ground Elevation (ft): Not Measured

Boring was not sampled from 0 to 15 ft bgs. See Boring LAI-P10 for lithology from 0 to 15 ft BGS. Boring was drilled approximately 5 ft northeast of Boring LAI-P10.

Groundwater not encountered.

Top of groundwater table was not recorded for this boring (See Boring LAI-P10).

ML

WD

SM

Gray SILT with trace fine sand (soft, wet)

WOOD DEBRIS and silt

Gray, silty to very silty, fine to medium SAND with gravel (loose to medium dense, wet)

- grades very loose from 20 to 23.8 ft bgs

ML

SM/

ML

SM

Blue-gray SILT

Mixed silty SAND and blue-gray SILT (loose/very soft, wet)

Grayish-brown, silty, fine SAND with abundant wood debris (loose to medium dense, wet)

GP-

GM

GP

-Burned wood fragments at 27 ft bgs.

Brown, sandy GRAVEL with silt (loose, wet)

Gray, fine to coarse GRAVEL (loose, wet)

Boring Completed 04/03/09

Total Depth of Boring = 33.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

94048.01 4/28/09 Y:\094\048.01\010\094048.010.GPJ SOIL BORING LOG



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Log of Boring LAI-P10b

Figure
A-14

LAI-P11

SAMPLE DATA

SOIL PROFILE

GROUNDWATER

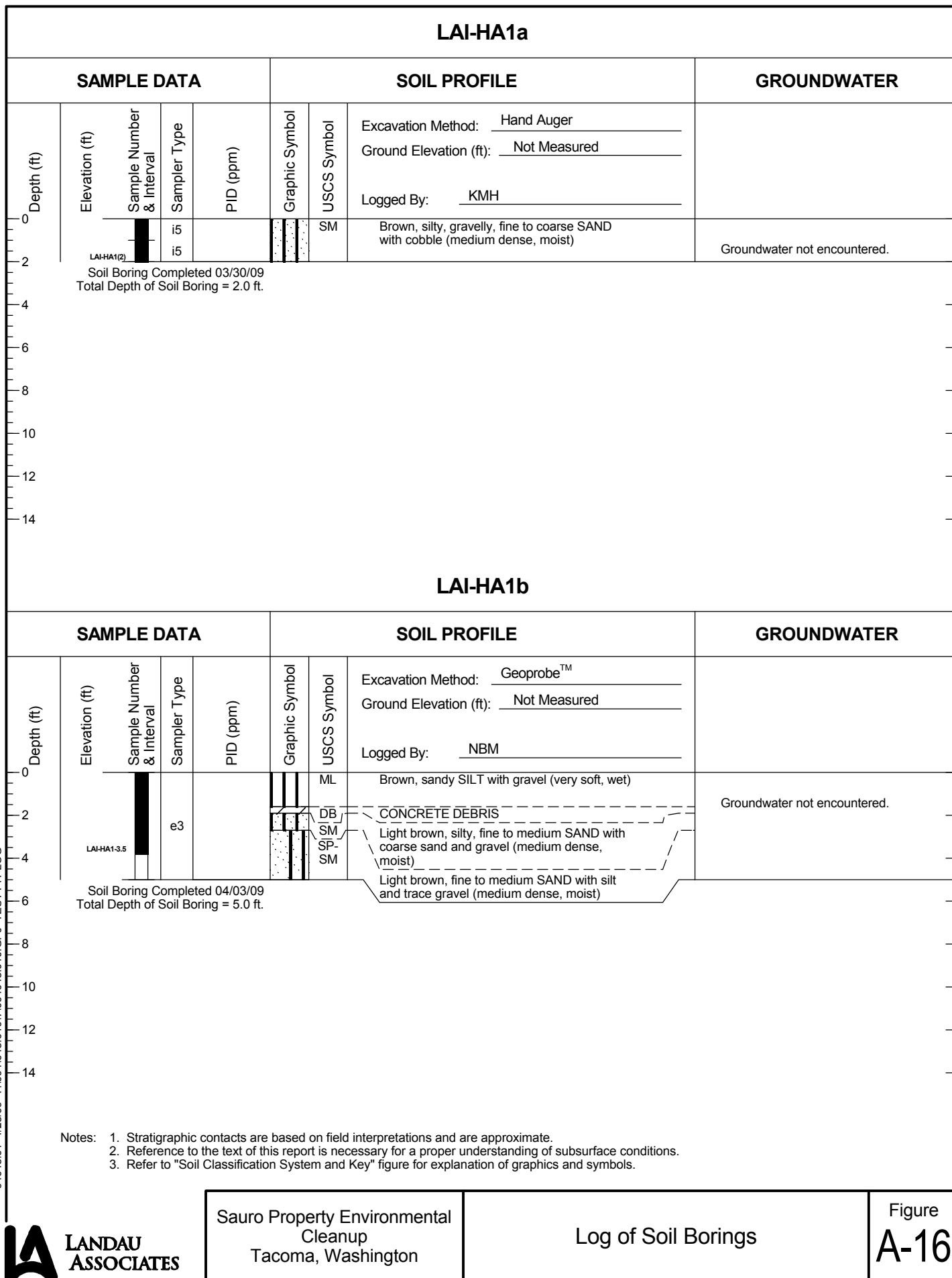
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Drilling Method: <u>Geoprobe™</u>	Ground Elevation (ft): <u>Not Measured</u>	
0				0		GP	Brown, very sandy, fine to coarse GRAVEL; no odor (loose, damp)		Groundwater not encountered.
		e3		0					
				0					
5	LAI-P11- (5-6)			0					
		e3		0					
				0		SM	Light brown, silty, gravelly, fine to coarse SAND with cobbles and brick fragments; no odor (loose, moist)		
10	LAI-P11- (9.5-10.5)			0					
		e3		0					
				0					
				0		ML	Light brown, very sandy, SILT; no odor (medium stiff, damp)		
15		e3							

Boring Completed 04/06/09
Total Depth of Boring = 17.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

94048.01 4/28/09 Y:\0941048.01\10\094048.010.GPJ SOIL BORING LOG

94048.01 4/28/09 Y:\094\048.01\10\094048.01\GPJ TEST PIT LOG



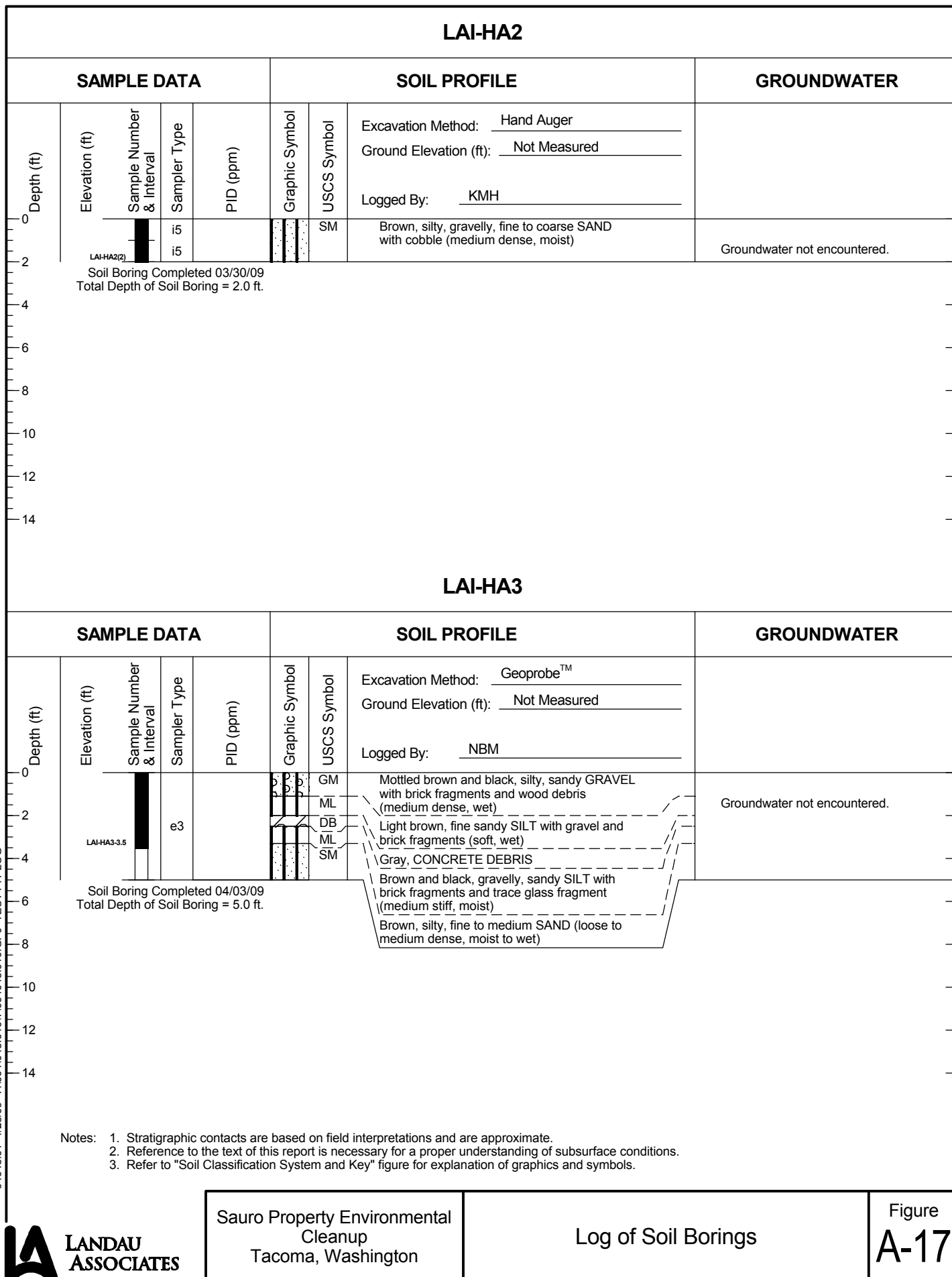
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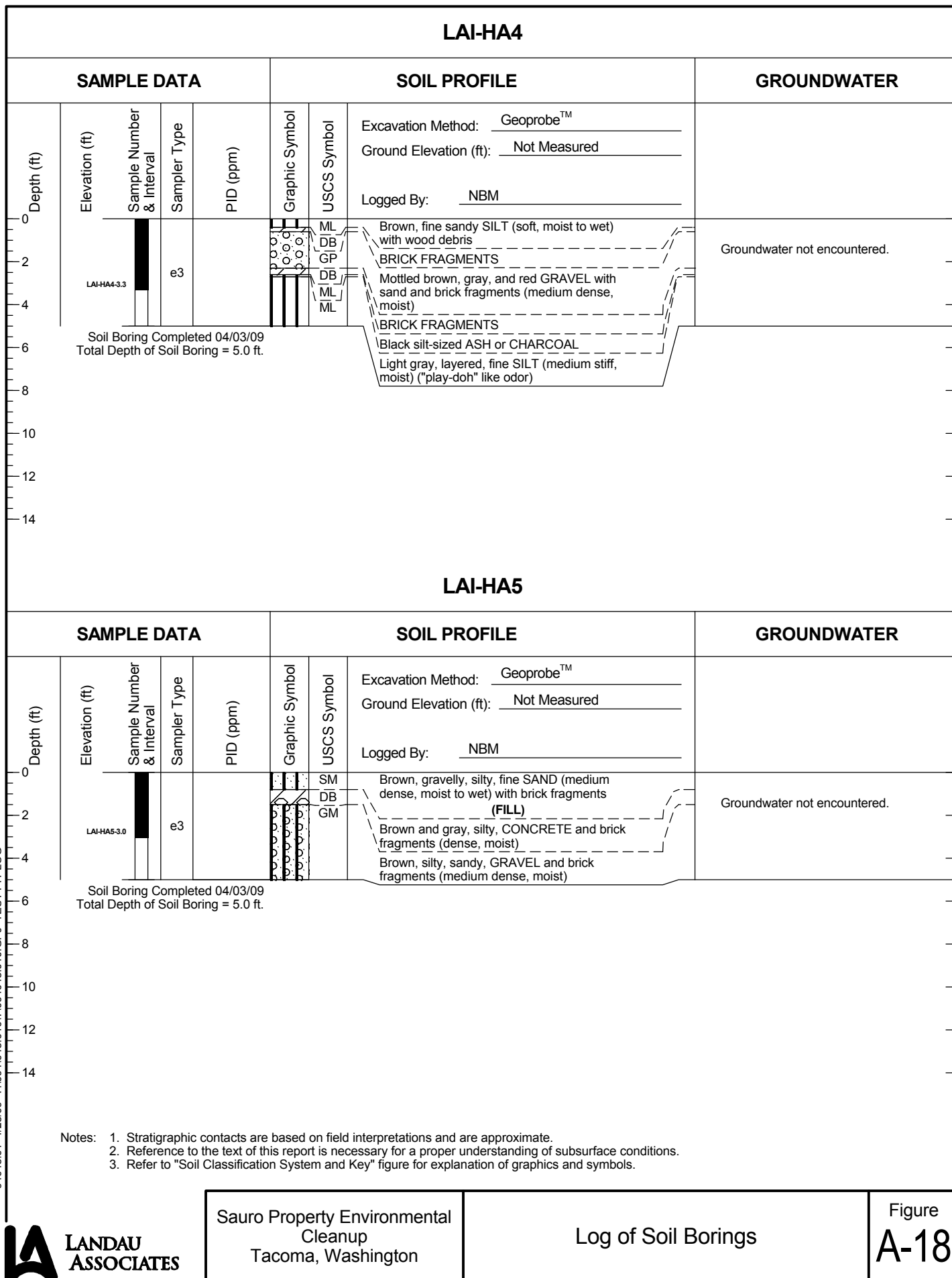
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Log of Soil Borings

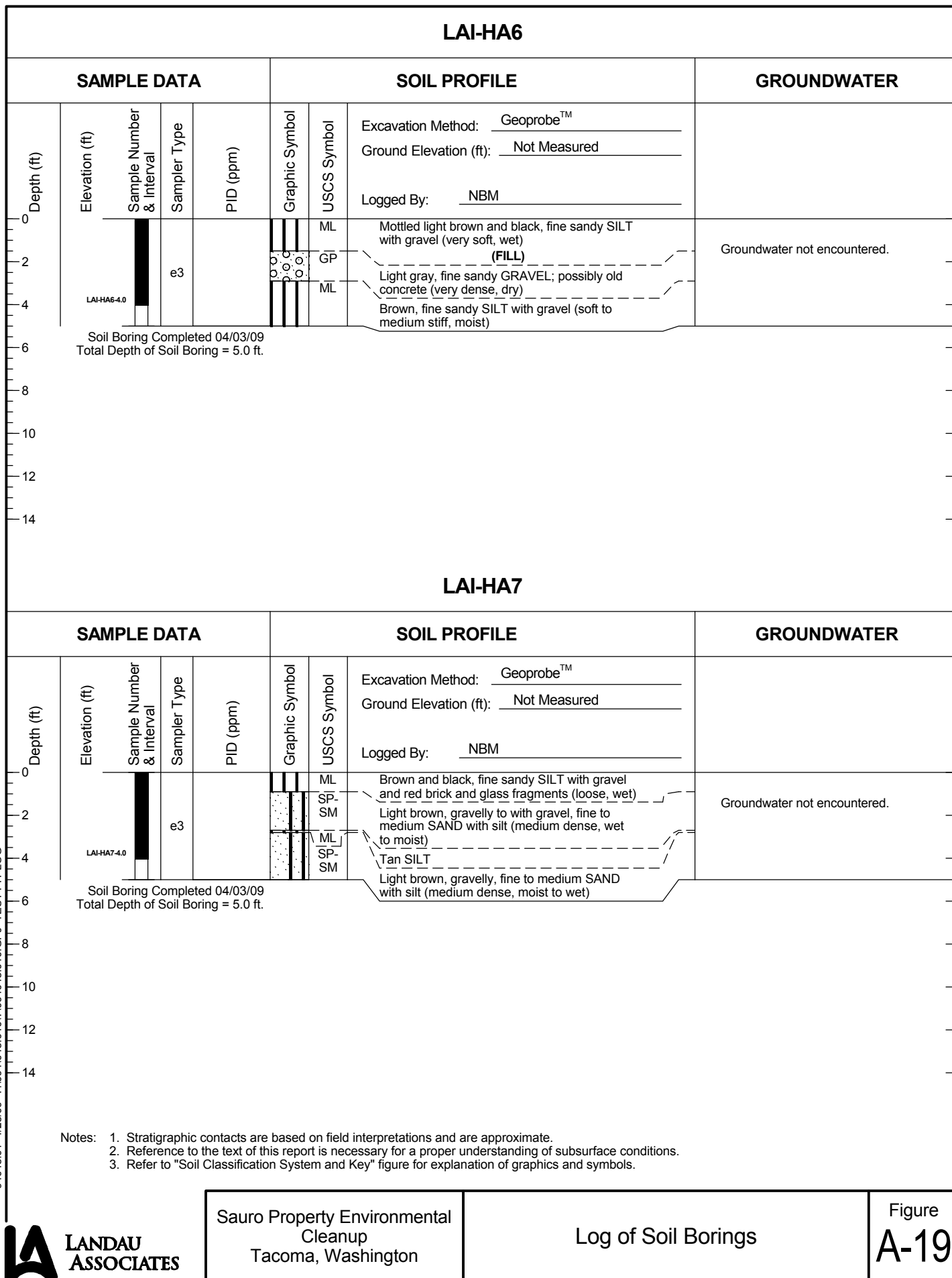
Figure
A-16

94048.01 4/28/09 Y:0941048.0101094048.010.GPJ TEST PIT LOG





94048.01 4/28/09 Y:\094\048.01\T094048.01\GPJ TEST PIT LOG



94048.01 4/28/09 Y:0941048.01101094048.010.GPJ TEST PIT LOG

TP-01							
SAMPLE DATA				SOIL PROFILE		GROUNDWATER	
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	
0							Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): <u>Not Measured</u> Logged By: <u>KMH</u>
2						SP	Brown, gravelly, fine to coarse SAND with concrete, brick and trace silt (medium dense, moist) - approximately 25% rubble
4							
6							
8							
10							
12							
14							
Test Pit Completed 04/06/09 Total Depth of Test Pit = 5.0 ft.							
TP-02							
SAMPLE DATA				SOIL PROFILE		GROUNDWATER	
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	
0							Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): <u>Not Measured</u> Logged By: <u>KMH</u>
2						SP	Brown, gravelly, fine to coarse SAND with concrete, brick and trace silt (medium dense, moist) - approximately 25% rubble
4							
6							
8							
10							
12							
14							
Test Pit Completed 04/06/09 Total Depth of Test Pit = 5.0 ft.							
Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate. 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions. 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.							



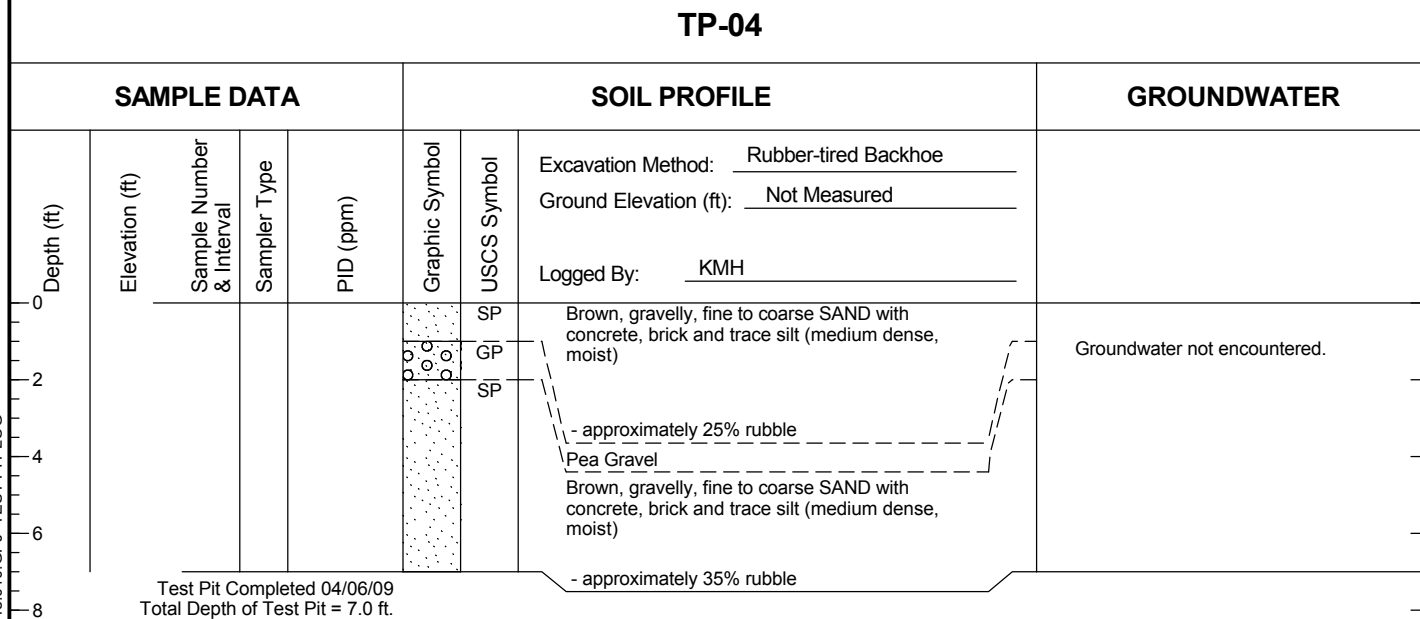
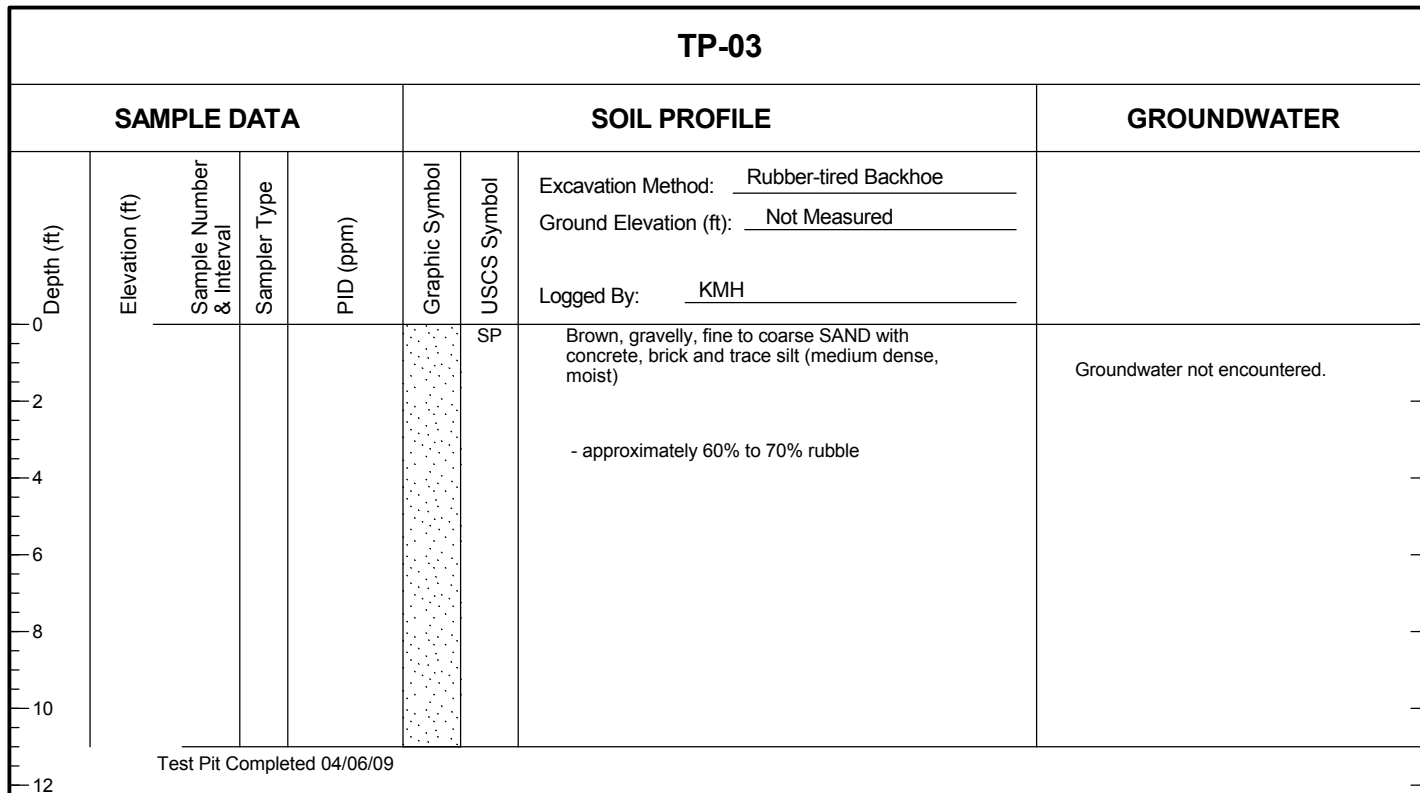
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Log of Test Pits

Figure
A-20

94048.01 4/28/09 Y:\094\048.01\T094048.010.GPJ TEST PIT LOG



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.



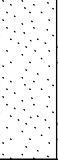
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Log of Test Pits

Figure
A-21

94048.01 4/28/09 Y:\094\048.01\10\094048.010.GPJ TEST PIT LOG

TP-05							
SAMPLE DATA				SOIL PROFILE		GROUNDWATER	
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	
0							Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): <u>Not Measured</u> Logged By: <u>KMH</u>
2						SP	Brown, gravelly, fine to coarse SAND with concrete, brick and trace silt (medium dense, moist) - approximately 10% rubble
4							
6							
8							
10							
12							
14							
Test Pit Completed 04/06/09 Total Depth of Test Pit = 5.0 ft.							
TP-06							
SAMPLE DATA				SOIL PROFILE		GROUNDWATER	
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	
0							Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): <u>Not Measured</u> Logged By: <u>KMH</u>
2						SP	Brown, gravelly, fine to coarse SAND with concrete, brick and trace silt (medium dense, moist)
4						SM	- approximately 10% rubble Brown, very silty, fine SAND (dense, moist)
6							
8							
10							
12							
14							
Test Pit Completed 04/06/09 Total Depth of Test Pit = 4.0 ft.							
Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate. 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions. 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.							



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Log of Test Pits

Figure
A-22

94048.01 4/28/09 Y:\094\048.01\T094048.010.GPJ TEST PIT LOG

TP-07							
SAMPLE DATA				SOIL PROFILE		GROUNDWATER	
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	
0							Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): <u>Not Measured</u> Logged By: <u>KMH</u>
2						SP	Brown, gravelly, fine to coarse SAND with concrete, brick and trace silt (medium dense, moist) - approximately 75% rubble
4							
6							
8							
10							
12							
14							

Test Pit Completed 04/06/09
Total Depth of Test Pit = 5.0 ft.

TP-08							
SAMPLE DATA				SOIL PROFILE		GROUNDWATER	
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	
0							Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): <u>Not Measured</u> Logged By: <u>KMH</u>
2						SP	Brown, gravelly, fine to coarse SAND with concrete, brick and trace silt (medium dense, moist) - approximately 75% rubble
4							
6							
8							
10							
12							

Test Pit Completed 04/06/09
Total Depth of Test Pit = 7.0 ft.

Notes: 1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.



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Log of Test Pits

Figure
A-23

94048.01 4/28/09 Y:\094\048.01\10\094048.010.GPJ TEST PIT LOG

TP-09						
SAMPLE DATA				SOIL PROFILE		GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol
0						
2						
4						
Test Pit Completed 04/06/09 Total Depth of Test Pit = 4.0 ft.				Excavation Method: Rubber-tired Backhoe Ground Elevation (ft): Not Measured Logged By: KMH Brown, gravelly, fine to coarse SAND with concrete, brick and trace silt (medium dense, moist) - approximately 5% rubble Brown, silty, fine SAND with gravel (dense, moist)		
						Groundwater not encountered.

TP-10						
SAMPLE DATA				SOIL PROFILE		GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol
0						
2						
4						
Test Pit Completed 04/06/09 Total Depth of Test Pit = 4.0 ft.				Excavation Method: Rubber-tired Backhoe Ground Elevation (ft): Not Measured Logged By: KMH Brown, gravelly, fine to coarse SAND with concrete, brick and trace silt (medium dense, moist) - approximately 10% rubble		
						Groundwater not encountered.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.



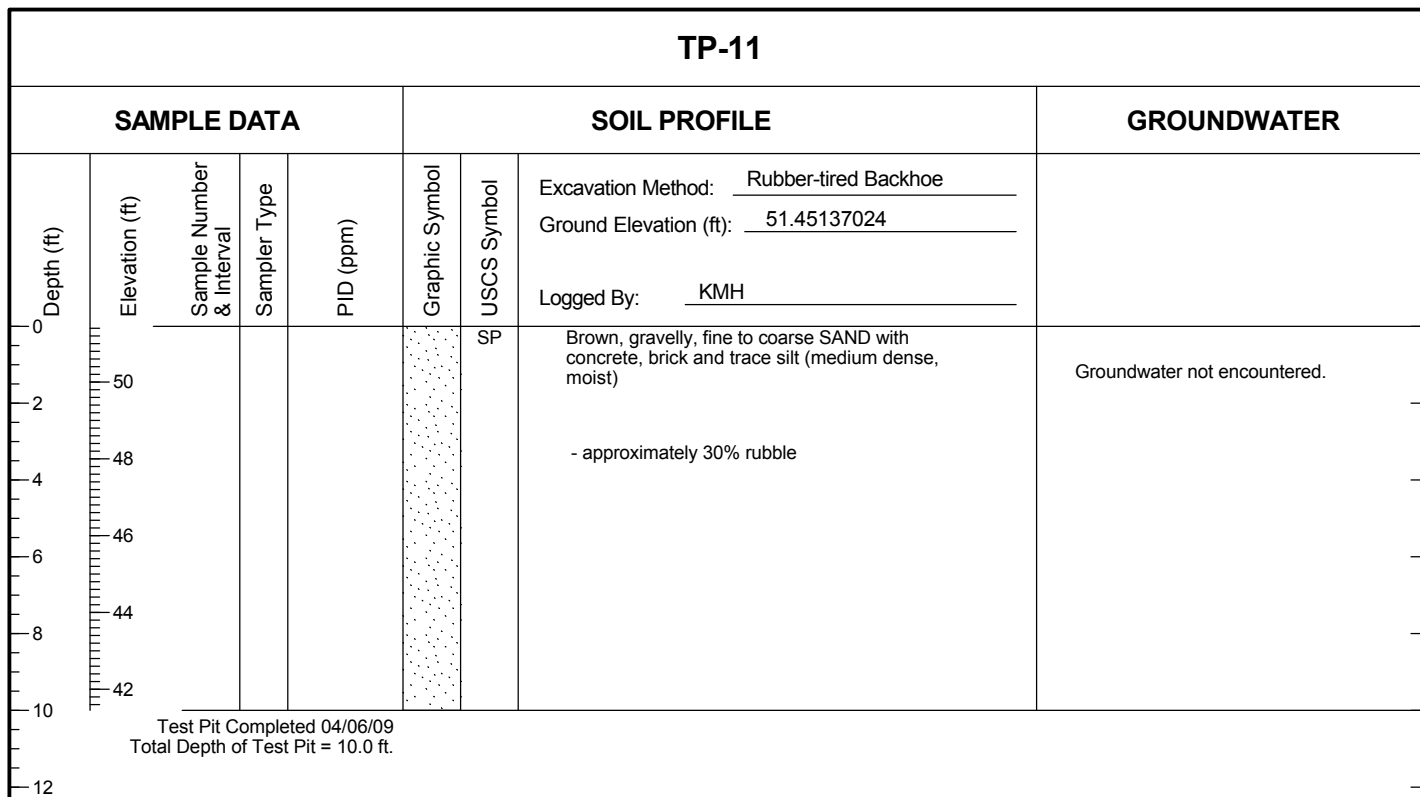
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Log of Test Pits

Figure
A-24

94048.01 4/28/09 Y:\094\048.01\T094048.010.GPJ TEST PIT LOG



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.



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Tacoma, Washington

Log of Test Pits

Figure
A-25

TP-13

SAMPLE DATA					SOIL PROFILE			GROUNDWATER
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: Rubber-tired Backhoe	
							Ground Elevation (ft): 50.69923401	
0							Logged By: KMH	Groundwater not encountered.
50						SM	Brown, gravelly, silty, fine to medium SAND with concrete and brick (medium dense, moist)	
2	48						- approximately 5% rubble	
4	46							
6	Test Pit Completed 04/06/09 Total Depth of Test Pit = 5.0 ft.							
8								
10								
12								
14								

Test Pit Completed 04/06/09
Total Depth of Test Pit = 5.0 ft.

TP-14

SAMPLE DATA				SOIL PROFILE			GROUNDWATER	
Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: Rubber-tired Backhoe Ground Elevation (ft): Not Measured Logged By: KMH	
						SP	Brown, gravelly, silty, fine to medium SAND with concrete and brick (medium dense, moist) - approximately 5% rubble	Groundwater not encountered.
0								
2								
4								
6								
8								
10								
12								
14								

Test Pit Completed 04/06/09
Total Depth of Test Pit = 3.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
 2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
 3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

94048.01 4/28/09 Y:\094\048.01\T094048.010.GPJ TEST PIT LOG



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Tacoma, Washington

Log of Test Pits

Figure
A-26

Health and Safety Plan



WORK LOCATION PERSONNEL PROTECTION AND SAFETY EVALUATION FORM

**Attach Pertinent Documents/Data
Fill in Blanks As Appropriate**

Job No.: <u>0094048.010</u>	
Prepared by: <u>Jennifer Wynkoop</u>	Reviewed by: <u>Christine Kimmel</u>
Date: <u>February 27, 2009</u>	Date: <u>February 24, 2009</u>

A. WORK LOCATION DESCRIPTION

1. **Project Name:** City of Tacoma, Sauro Property Cleanup
Remedial Investigation and Interim Action
2. **Location:** Tacoma, Washington
3. **Anticipated Activities:** Direct push drilling for soil sampling; groundwater sampling from monitoring wells, investigation of underground drain, soil excavation, and soil sampling
4. **Size:** Site includes all areas of contamination and is approximately 8 square blocks, Sauro property (property) where contamination originated is one square block
5. **Surrounding Population:** Commercial downtown
6. **Buildings/Homes/Industry:** Property is vacant, outside of the property are streets, surface parking lots, and office buildings
7. **Topography:** Property entrance is a dirt and gravel ramp down to the main site surface which is below street grade, the southern 1/3 of the site is about 10 ft below the main site surface and a relatively steep slope separates the two sections of the property.
8. **Anticipated Weather:** Sun or rain, 30 to 70 degrees Fahrenheit
9. **Unusual Features:** Investigation of subsurface utilities to be conducted inside one building.
10. **Site History:** Site was formerly a drycleaner. The drycleaner discharged drycleaning fluids to a sump in the basement of the building. Soil on the property is contaminated with chlorinated solvent compounds including tetrachloroethene (PCE) and it's breakdown products, trichloroethene (TCE), cis-1,2-dichloroethene (cis) and vinyl chloride. Groundwater throughout the site is contaminated with chlorinated solvent compounds. The site is located in a downtown area and many of the existing sampling points are within the right-of-way (ROW).

B. HAZARD DESCRIPTION

1. **Background Review:** ☒ Complete ☐ Partial

If partial, why?

2. **Hazardous Level:** ☐ B ☐ C ☒ D ☐ Unknown

Justification: Existing data regarding site conditions

3. **Types of Hazards:** (Attach additional sheets as necessary)

- A. ☒ Chemical ☒ Inhalation ☐ Explosive
☐ Biological ☒ Ingestion ☐ O2 Def. ☒ Skin Contact

Describe: constituents of concern are volatile organic compounds. Work will include handling soil and groundwater and working in an enclosed area.

- B. ☒ Physical ☐ Cold Stress ☒ Noise ☒ Heat Stress ☐ Other

Describe: noise and physical hazards associated with working around a drill rig and other heavy equipment at the site. Hazards associated with working in the ROW.

- C. ☐ Radiation

Describe:

4. **Nature of Hazards:**

- ☒ Air Describe: potential for volatile constituents to be released from contaminated soil or groundwater.
☒ Soil Describe: potential for contact with or ingestion of contaminated soil.
☐ Surface Water Describe:
☒ Groundwater Describe: potential for contact with or ingestion of contaminated groundwater.
☐ Other Describe:

5. Chemical Contaminants of Concern ☐ N/A The primary chemical contaminants of concern are VOCs. The table below lists information for these primary compounds and other potential contaminants.

Contaminant	PEL (ppm)	I.D.L.H./STEL (ppm)	Source/Quantity Characteristics	Route of Exposure	Symptoms of Acute Exposure	Instruments Used to Monitor Contaminant
Tetrachloroethene	100	500	Present in soil and groundwater	Inhalation, ingestion, dermal contact, ingestion, inhalation	Eye, skin, nose, throat irritation, nausea, flush face & neck, dizziness, incoordination, headache, drowsiness	PID
Trichloroethene	50	1,000	Present in groundwater	Inhalation, ingestion, dermal contact, ingestion, inhalation	Eye, nose, and throat irritation; headache, nausea	PID
Vinyl Chloride	1	Unknown (carcinogen)	Present in groundwater	Inhalation, ingestion, dermal contact	Weakness, abdominal pain	PID
cis-1,2-Dichloroethene	200	4,000	Present in groundwater	Inhalation, ingestion, dermal contact	Dizziness, nausea, dermatitis, irritation of mucous membranes	PID

Notes:

6. Physical Hazards of Concern ☐ N/A

Hazard	Description	Location	Procedures Used to Monitor Hazard
Moving parts of drill rig; falling and flying objects; steep slopes; slips, trips, and falls		Near drill rig	Alert observation of surroundings; minimize time spent near drill rig; no loose clothing; use of safety glasses, hard hat, and steel toed boots. Keep work area clear of obstructions.
Heavy equipment used at the site such as earth moving equipment, cranes, or trucks		On property during soil investigation and removal	Alert observation of surroundings, use of brightly colored safety vest, stay out of the path of heavy equipment that may slide or tip on steep slopes. Make eye contact with operator prior to advancing within work area/swing radius.
Traffic		Within ROW areas	Traffic control plan in place for all work within ROW. Park vehicle in a protective position while conducting sampling, use proper traffic control procedures. Follow Traffic Control Plan

7. Work Location Instrument Readings ☐ N/A

Location: _____

Percent O₂: _____

Percent LEL: _____

Radioactivity: _____

PID: _____

FID: _____

Other: _____

Other: _____

Other: _____

Other: _____

Other: _____

Location: _____

Percent O₂: _____

Percent LEL: _____

Radioactivity: _____

PID: _____

FID: _____

Other: _____

Other: _____

Other: _____

Other: _____

Other: _____

Location: _____

Percent O₂: _____

Percent LEL: _____

Radioactivity: _____

PID: _____

FID: _____

Other: _____

Other: _____

Other: _____

Other: _____

Other: _____

Location: _____

Percent O₂: _____

Percent LEL: _____

Radioactivity: _____

PID: _____

FID: _____

Other: _____

Other: _____

Other: _____

Other: _____

Other: _____

8. Hazards Expected In Preparation For Work Assignment ☒ N/A
Describe:

C. PERSONAL PROTECTIVE EQUIPMENT

1. Level of Protection

☐ A ☐ B ☐ C ☒ D

Location/Activity: All

☐ A ☐ B ☐ C ☐ D

Location/Activity:

2. Protective Equipment (specify probable quantity required)

Respirator ☐ N/A

- ☐ SCBA, Airline
- ☐ Full-Face Respirator
- ☒ Half-Face Respirator (Cart. organic vapor) (Only if upgrade to Level C)
- ☐ Escape mask
- ☐ None
- ☐ Other:
- ☐ Other:

Clothing ☐ N/A

- ☐ Fully Encapsulating Suit
- ☐ Chemically Resistant Splash Suit
- ☐ Apron, Specify:
- ☐ Tyvek Coverall
- ☐ Saranex Coverall
- ☐ Coverall, Specify
- ☒ Other: Dedicated field clothing

Head & Eye ☐ N/A

- ☒ Hard Hat
- ☐ Goggles
- ☐ Face Shield
- ☒ Safety Eyeglasses
- ☒ Other: Hearing protection

Hand Protection ☐ N/A

- ☐ Undergloves; Type:
- ☒ Gloves; Type: Nitrile
- ☐ Overgloves; Type:
- ☐ None
- ☐ Other:

Foot Protection ☐ N/A

- ☐ Neoprene Safety Boots with Steel Toe/Shank
- ☐ Disposable Overboots
- ☒ Other: Steel-toed work boots

3. Monitoring Equipment ☐ N/A☐ CGI☒ PID☐ O² Meter☐ FID☐ Rad Survey☐ Other☐ Detector Tubes (optional)Type:**D. PERSONNEL DECONTAMINATION (ATTACH DIAGRAM)**☐ Required☒ Not Required**EQUIPMENT DECONTAMINATION (ATTACH DIAGRAM)**☒ Required☐ Not Required***If required, describe and list equipment:***

Decontamination of soil sampling equipment with Alconox/tap water solution followed by tapwater rinse and deionized water rinse; Down hole drilling equipment must be washed or steam cleaned to adequately decontaminate the equipment between holes and sampling intervals.

E. PERSONNEL

	Name	Work Location Title/Task	Medical Current	Fit Test Current
1.	Kristin Hooper	Field Staff	☒	☒
2.	Jessica Stone	Field Staff	☒	☒
3.	Jennifer Wynkoop	Field Coordinator	☒	☒
4.			☐	☐
5.			☐	☐
6.			☐	☐
7.			☐	☐
8.			☐	☐
9.			☐	☐
10.			☐	☐

Site Safety Coordinator: Jennifer Wynkoop

F. ACTIVITIES COVERED UNDER THIS PLAN

Task No.	Description	Preliminary Schedule
1	Collection of soil and groundwater samples from borings and monitoring wells	2009
2	Soil excavation	2009
3	Investigation of Davita Drain	2009

G. SUBCONTRACTOR'S HEALTH AND SAFETY PROGRAM EVALUATION☐ N/A

Name and Address of Subcontractor: Not yet contracted, to be completed prior to starting work:
 Subcontractor:
 Address:

EVALUATION CRITERIA

Item	Adequate	Inadequate	Comments
Medical Surveillance Program	☐	☐	
Personal Protective Equipment Availability	☐	☐	
Onsite Monitoring Equipment Availability	☐	☐	
Safe Working Procedures Specification	☐	☐	
Training Protocols	☐	☐	
Ancillary Support Procedures (if any)	☐	☐	
Emergency Procedures	☐	☐	
Evacuation Procedures Contingency Plan	☐	☐	
Decontamination Procedures Equipment	☐	☐	
Decontamination Procedures Personnel	☐	☐	

GENERAL HEALTH AND SAFETY PROGRAM EVALUATION: ☐ Adequate ☐ Inadequate

Additional Comments:

Evaluation Conducted By: _____

Date: _____

EMERGENCY FACILITIES AND NUMBERS

Hospital: St. Josephs Hospital, 1717 South J Street

Directions: Attachment B

Telephone: 253-426-4101

Emergency Transportation Systems (Fire, Police, Ambulance) – 911

Emergency Routes – Map (Attachment B)

Emergency Contacts:

	Offsite	Onsite
Jennifer Wynkoop	253-926-2493 (office)	253-370-0058 (Cell)
Christine Kimmel	425-329-0254 (office)	206-786-3801 (Cell)
Calvin Taylor (City of Tacoma)	253-593-7711 (Office)	

In the event of an emergency, do the following:

1. Call for help as soon as possible. Call 911. Give the following information:
 - WHERE the emergency is – use cross streets or landmarks
 - PHONE NUMBER you are calling from
 - WHAT HAPPENED – type of injury
 - WHAT is being done for the victim(s)
 - YOU HANG UP LAST – let the person you called hang up first.
2. If the victim can be moved, paramedics will transport to the hospital. If the injury or exposure is not life threatening, decontaminate the individual first. If decontamination is not feasible, wrap the individual in a blanket or sheet of plastic prior to transport.

HEALTH AND SAFETY PLAN APPROVAL/SIGN OFF FORMAT

I have read, understood, and agreed with the information set forth in this Health and Safety Plan (and attachments) and discussed in the Personnel Health and Safety briefing.

_____ Name	_____ Signature	_____ Date
_____ Name	_____ Signature	_____ Date
_____ Name	_____ Signature	_____ Date
_____ Name	_____ Signature	_____ Date
_____ Name	_____ Signature	_____ Date
_____ Site Safety Coordinator	_____ Signature	_____ Date
Christine Kimmel Landau Health and Safety Manager	_____ Signature	February 24, 2009 Date
_____ Project Manager	_____ Signature	_____ Date

Personnel Health and Safety Briefing Conducted By:

_____ Name	_____ Signature	_____ Date
---------------	--------------------	---------------

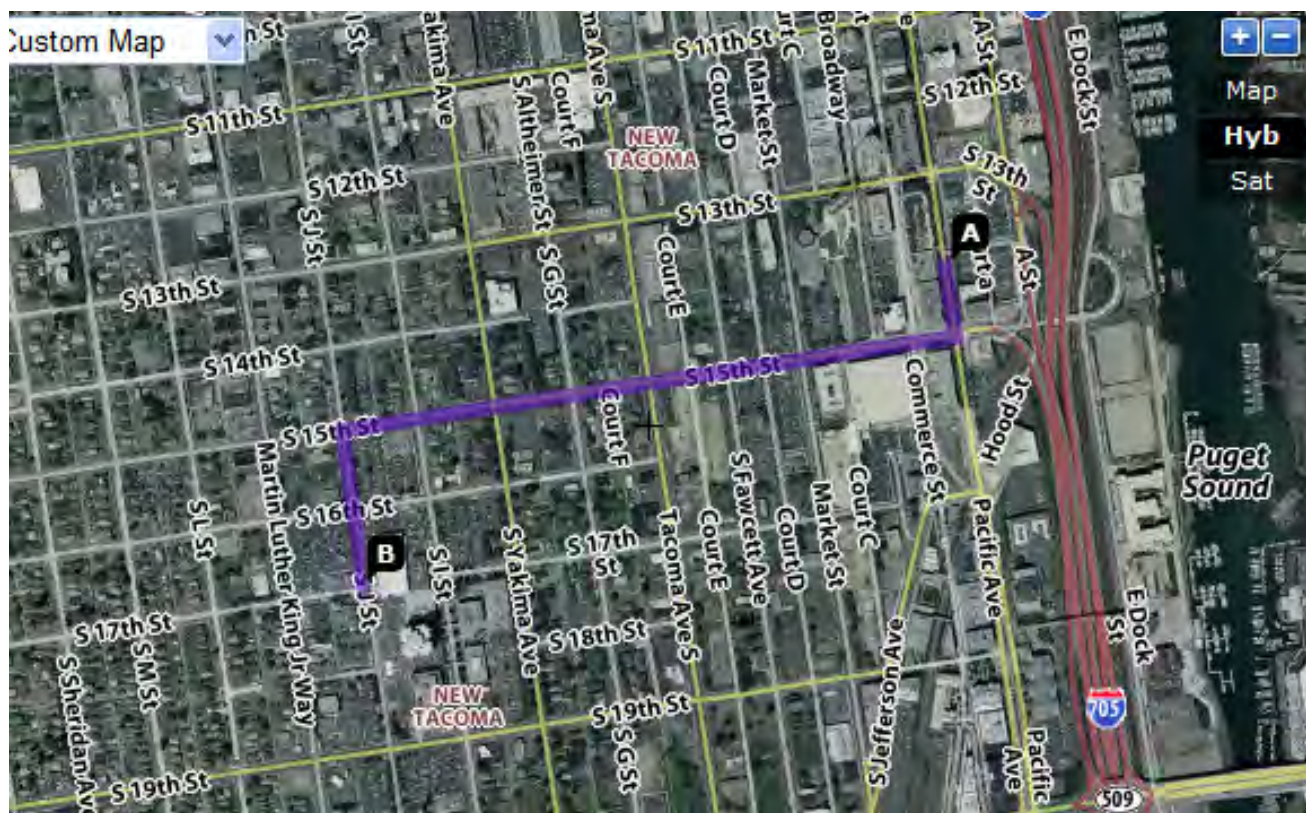
ATTACHMENT A

ACTION LEVELS FOR RESPIRATORY PROTECTION

Monitoring Parameter	Reading	Level of Protection
Organic Vapors (PCE, TCE, cis, vinyl chloride)	PID reading >15 ppm at point of operations for more than 1 minute	Establish 25 ft diameter exclusion zone around work area, monitor worker's breathing zone
	PID reading >15 ppm in worker's breathing zone for more than 1 minute	Evacuate area or upgrade to Level C-half face respirator with organic vapor/HEPA cartridge, establish contamination reduction zone with waste containers and decontamination fluids provided for personal decontamination
	PID reading >75 ppm in worker's breathing zone for more than 1 minute	Evacuate area and move upwind to allow vapors to dissipate, may resume work after vapors dissipate
	PID reading >100 ppm in worker's breathing zone for more than 1 minute OR >300 ppm instantaneous	Evacuate area and move upwind. If elevated levels persist, cover boring and cuttings and notify onsite contact and Landau Associates project manager

ATTACHMENT B

MAP AND DIRECTIONS TO ST JOSEPHS HOSPITAL



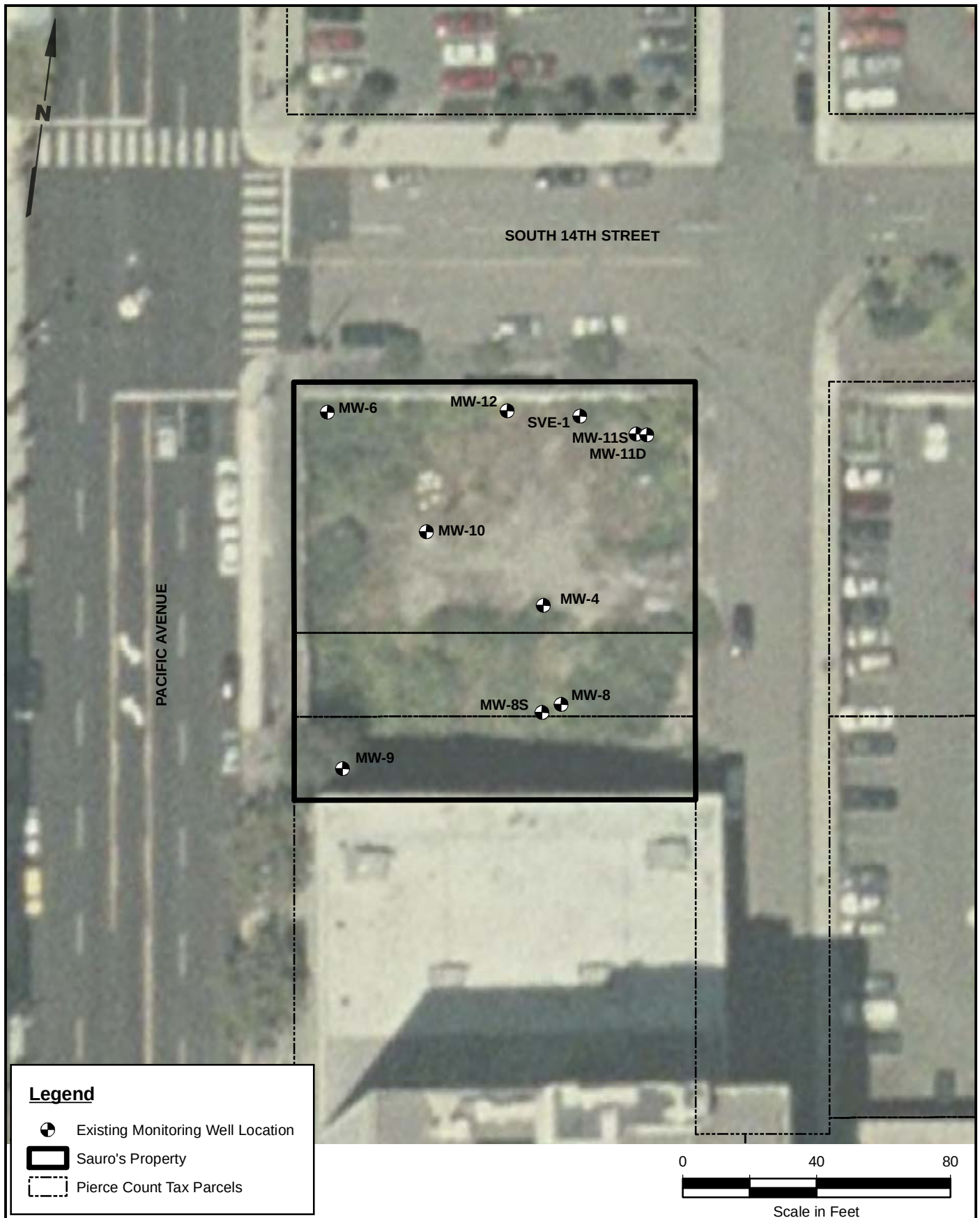
Distance

- | | | | |
|----------|---|------------|---|
| A | 1. Start at 1403 PACIFIC AVE, TACOMA going toward S 15TH ST | go 317 ft | ⌵ |
| | 2. Turn R on S 15TH ST | go 0.55 mi | ⌵ |
| | 3. Turn L on S J ST | go 0.14 mi | ⌵ |
| B | 4. Arrive at 1717 S J ST, TACOMA, on the L | | ⌵ |

Time: 4 mins, Distance: 0.76 miles

Well Logs

RNS-MW1 - Unable to locate well
MW-4
MW-5 - Unable to locate well
MW-6
MW-7 - Unable to locate well
MW-8
MW-8S
MW-9
MW-10
MW-11S
MW-11D
MW-12 - Well log not available

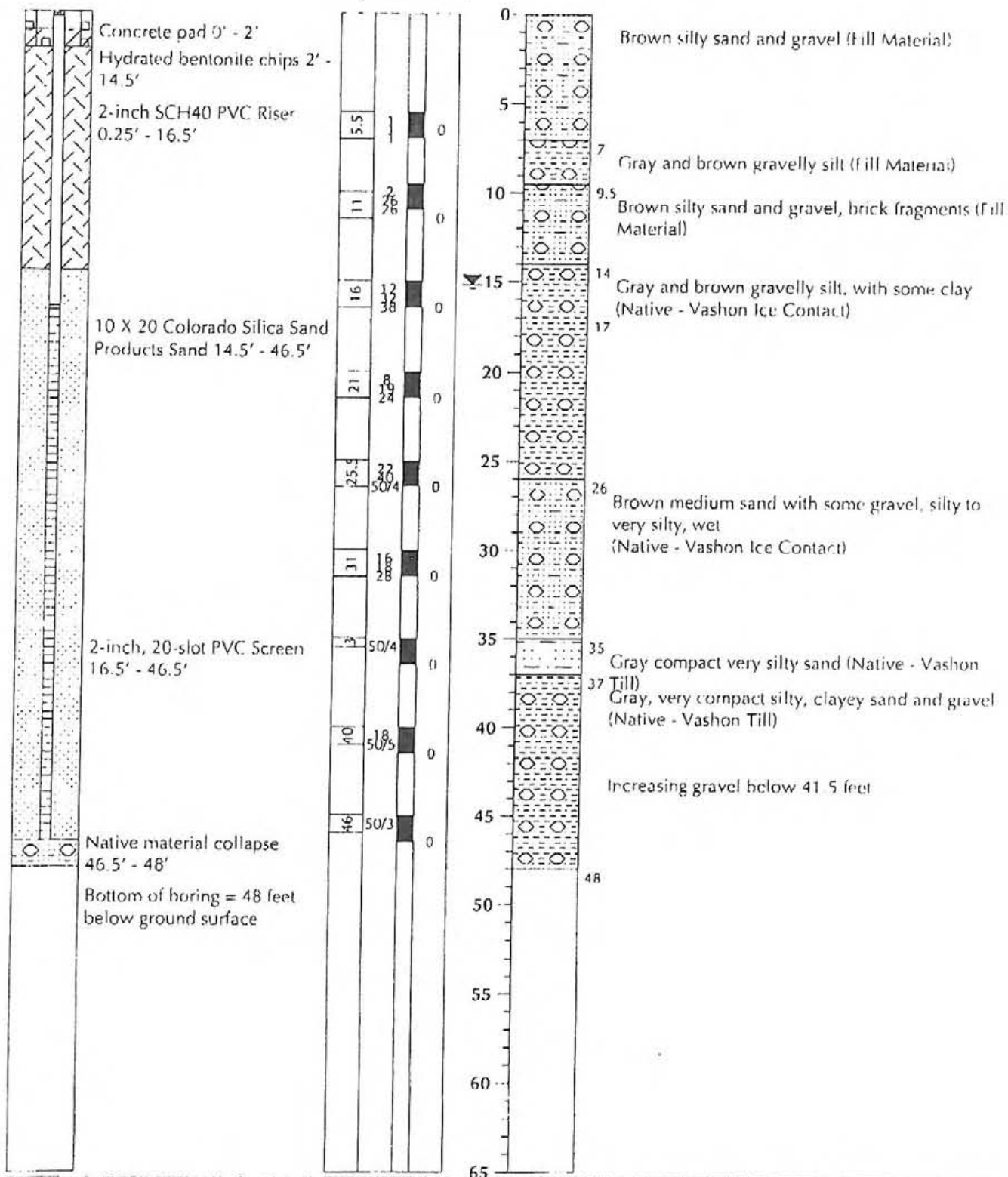


RNSMW1

CONSTRUCTION DETAILS

SAMPLE NO.
BLOW COUNTS
SAMPLE RECOVERY
PIU (ppm)

GEOLOGIC LOG



Project: Horizon: Sauro's Cleaners
Location: 14th & Pacific Tacoma, WA
Job Number: 2126-002B
Date: 6/14/2006
Drilling Info: Holt Drilling/Boat Langyear
Hollow Stem Auger
5 foot samples
Logged By: JELI

Total Depth: 48 ft.
Elevation: 48.45 ft.
Township/Range: 20 N 3 E
Section: 4

ROBINSON NOBLE
SALTWATER & ENVIRONMENTAL, INC.
GROUNDWATER & ENVIRONMENTAL, INC.



FARALLON CONSULTING
320 3rd Avenue NE
Issaquah, WA 98027

Log of Boring: MW-4

Page 1 of 1

Client: *Foranuk*
Project: Sauro's Cleanerama
Location: Tacoma, Washington

Farallon PN: 899-001

Logged By: GeoEngineers, Inc.

Date/Time Started: 01/25/01
Date/Time Completed: 01/25/01
Equipment: NA
Drilling Company: TEG
Drilling Foreman: NA
Drilling Method: Strata Probe
Sampler Type: Split-Barrel
Drive Hammer (lbs.): NA
Depth of Water ATD (ft bgs): 17
Total Boring Depth (ft bgs): NA
Total Well Depth (ft bgs): 25

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts B/B ₃	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
0		Asphalt.		AC						
		SAND with silt, trace gravel, fine to coarse sand, brown, medium dense, moist, fill.		SP-SM						Concrete
5										
										Bentonite
10		Silty SAND with gravel, fine to medium sand, brown, dense, moist, fill.		SM						
		Green-blue color.								
15										
20										Sand Pack
								SP-4-21	X	Screen
25										

Well Construction Information
Monument Type: Steel surface
Casing Diameter (Inches): 3/4" PVC
Screen Slot Size (Inches): "10 inch"
Screened Interval (ft bgs): 15 to 25

Filter Pack: 10-20 Colorado Sand
Surface Seal: Bentonite Chips
Annular Seal: Bentonite Chips

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): 49.42
Boring Abandonment: NA
Surveyed Location: X: NA Y: NA



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Log of Boring: MW-5

Page 1 of 1

Client: *FORNIA*
Project: Sauro's Cleanerama
Location: Tacoma, Washington

Farallon PN: 899-001

Logged By: GeoEngineers, Inc.

Date/Time Started: 01/26/01
Date/Time Completed: 01/26/01
Equipment: NA
Drilling Company: TEG
Drilling Foreman: NA
Drilling Method: Strata Probe
Sampler Type: Split-Barrel
Drive Hammer (lbs.): NA
Depth of Water ATD (ft bgs): 18
Total Boring Depth (ft bgs): NA
Total Well Depth (ft bgs): 25

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
0		Asphalt	AC							
		Silty SAND with gravel, fine to coarse sand, brown, dense, moist, trace debris, fill.	SM					1		Concrete
5										Bentonite
		SAND with silt, with gravel, fine to coarse sand, brown, dense, moist, fill.	SP-SM					2		
10								3		
								4		
15								5		
		SILT with sand, gray, stiff, wet.	ML					6		Sand Pack
20		GRAVEL with sand, fine to coarse gravel, dark gray, dense, wet.	GP					SP-5-19	X	Screen
								7		
		SILT with sand, trace gravel, gray, dense, moist.	ML					8		
25										

Monument Type: Steel surface

Casing Diameter (Inches): 3/4" PVC

Screen Slot Size (Inches): "10 inch"

Screened Interval (ft bgs): 15 to 25

Well Construction Information

Filter Pack: 10-20 Colorado Sand

Surface Seal: Concrete

Annular Seal: Bentonite Chips

Ground Surface Elevation (ft): NA

Top of Casing Elevation (ft): 49.80

Boring Abandonment: NA

Surveyed Location: X: NA Y: NA



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Log of Boring: MW-6

Page 1 of 1

Client: *former*
Project: Sauro's Cleanerama
Location: Tacoma, Washington

Farallon PN: 899-001

Logged By: GeoEngineers, Inc.

Date/Time Started: 07/11/03
Date/Time Completed: 07/11/03
Equipment: Strata Probe
Drilling Company: ESN Northwest
Drilling Foreman: NA
Drilling Method: Strata Probe

Sampler Type: SS Core Barrel
Drive Hammer (lbs.): NA
Depth of Water ATD (ft bgs): 13
Total Boring Depth (ft bgs): NA
Total Well Depth (ft bgs): 26

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
0		No recovery.			0	0				Concrete
5		SAND trace gravel, fine to coarse sand, gray, medium dense, dry, brick and concrete, fill. No recovery.	SP		75					Bentonite
10		No recovery.			0					
15		Silty SAND, fine to medium sand, black, loose, wet, trace wood. No recovery.	SM		75					
20		Silty SAND, fine to medium sand, black, loose, wet, trace wood. No recovery.	SM		100			MW-6-16	X	
25		SAND trace silt, trace gravel, fine to coarse sand, gray, loose, wet. No recovery.	SP		12			MW-6-24	X	
					75					Sand Pack
					0					Screen

Monument Type: Steel surface

Casing Diameter (Inches): 3/4" PVC

Screen Slot Size (Inches): 0.010

Screened Interval (ft bgs): 11 to 26

Well Construction Information

Filter Pack: 10-20 Sand

Surface Seal: Concrete

Annular Seal: Bentonite Chips

Ground Surface Elevation (ft): NA

Top of Casing Elevation (ft): 47.91

Boring Abandonment: NA

Surveyed Location: X: NA Y: NA



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Log of Boring: MW-7

Page 1 of 1

Client: *FORUM*
Project: Sauro's Cleanerama
Location: Tacoma, WA

Farallon PN: 899-001

Logged By: GeoEngineers, Inc.

Date/Time Started: 7/10/03
Date/Time Completed: 7/10/03
Equipment: Strata Probe
Drilling Company: ESN Northwest
Drilling Foreman: NA
Drilling Method: Direct Push

Sampler Type: SS Core Barrel
Drive Hammer (lbs.): NA
Depth of Water ATD (ft bgs): 20
Total Boring Depth (ft bgs): NA
Total Well Depth (ft bgs): 36

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts &/ft	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
0	X	GRAVEL with sand, fine to coarse gravel, gray, dense, dry, trace brick, fill. No recovery.	SP		100		0			Concrete
5	X	GRAVEL with sand, fine to coarse gravel, gray, dense, dry, trace brick, fill. No recovery.	SP		100					Bentonite
10	X	GRAVEL with sand, fine to coarse gravel, gray, dense, dry, trace brick, fill. No recovery.	SP		100					
15	X	GRAVEL with sand, fine to coarse gravel, gray, dense, dry, trace brick, fill. No recovery.	SP		100			MW-7-12	X	
20	X	SAND trace gravel, fine to coarse sand, black, loose, wet, fill. No recovery.	SM		100		0			
25	X	Silty SAND trace gravel, fine to medium sand, gray, loose, wet. No recovery.	SM		100			MW-7-20	X	Sand Pack
30	X	Silty SAND trace gravel, fine to medium sand, gray, loose, wet, grades with gravel. No recovery.	SM		100					Screen
35	X	GRAVEL with sand, trace silt, fine to coarse gravel, brown, dense, wet. No recovery.	GP		100		0			

Monument Type: Steel Flush Mount
Casing Diameter (Inches): 3/4" PVC
Screen Slot Size (Inches): 0.010
Screened Interval (ft bgs): 15-25

Well Construction Information

Filter Pack: 10/20 Sand
Surface Seal: Concrete
Annular Seal: Bentonite Chips

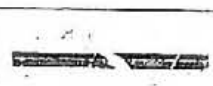
Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): 49.25
Boring Abandonment: NA
Surveyed Location: X: NA Y: NA

**FARALLON CONSULTING**320 3rd Avenue NE
Issaquah, WA 98027**Log of Boring: MW-8**

Page 1 of 2

Client:**Project:** Former Sauro's Cleanerama**Location:** Tacoma, WA**Farallon PN:** 899-001**Logged By:** Farallon/A. Morine**Date/Time Started:** 5/12/04 0900**Date/Time Completed:** 5/12/04 1430**Equipment:** CME 75**Drilling Company:** Cascade Drilling**Drilling Foreman:** Scott**Drilling Method:** Hollow Stem Auger**Sampler Type:** SS 18"x2"**Drive Hammer (lbs.):** 140**Depth of Water ATD (ft bgs):** 7**Total Boring Depth (ft bgs):** NA**Total Well Depth (ft bgs):** 32

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 2'/3'	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
0										
		FILL, silty gravel with sand, grey, loose, moist, no odor, gravel is concrete.	FILL		40	7/2/2		MW-8-3.5		Cement
5		FILL, silty sand with gravel, brown-black, loose, moist, no odor, pieces of brick.	FILL		30	2/3/3		MW-8-7.0		
		FILL, silty sand with gravel, brown, loose, wet, no odor. Switched to a D & M sampler.	FILL		100	5/6/3	7.5	MW-8-8.5		
		FILL, sand with silt, minor gravel, grey-brown, loose, wet, no odor.	FILL		10	4/5/6		MW-8-10.0		
10		FILL, silt with sand, with gravel, brown-grey, soft, wet, no odor.	FILL		100	1/1/3	6.6	MW-8-11.5		Bentonite
		FILL, silt with sand, with gravel, grey, loose, wet, slight weathered petroleum odor.	FILL		90	3/4/4	9.2	MW-8-13.0		
		FILL, silty gravel with sand, grey, loose, wet, no odor, minor wood debris.	FILL		100	3/4/4	7.1	MW-8-14.5		
15		FILL, silty gravel with sand, grey, loose, wet, no odor, minor wood debris.	FILL		100	4/5/5	8	MW-8-16.0		
Well Construction Information										
Monument Type: Steel Flush Mount			Filter Pack: #2/12 Medium Monterey Sand			Ground Surface Elevation (ft): NA				
Casing Diameter (Inches): 4" PVC			Surface Seal: Concrete			Top of Casing Elevation (ft): 38.20				
Screen Slot Size (Inches): 0.010			Annular Seal: Bentonite Chips			Boring Abandonment: Bentonite backfill.				
Screened Interval (ft bgs): 24.5 to 29.5			Surveyed Location: X: NA			Y: NA				



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Log of Boring: MW-8

Page 2 of 2

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
		FILL, silty sand to sandy silt with gravel, grey-brown, loose, wet, no odor.	FILL		50	5/6/6		MW-8-17.5		
		FILL, poorly graded silty sand with gravel, fine sand, grey, loose, wet, no odor.	FILL		100	4/4/5	5.4	MW-8-19.0		
		FILL, poorly graded silty sand, fine sand, dark-grey, loose, wet, no odor.	FILL		100	4/5/5	5.2	MW-8-20.5		
20		FILL, silty sand with gravel, dark-grey, loose, wet, no odor.	FILL		70	4/5/5		MW-8-22.0		
		FILL, silty sand to sandy silt with gravel, dark brown, loose, wet, no odor, fragments of wood.	FILL		100	3/3/3	5.2	MW-8-23.5		
		FILL, sandy silt minor gravel, grey, medium stiff, wet, no odor.	FILL		100	3/3/4	4.3	MW-8-25.0		
25		FILL, sandy silt with gravel, grey, very stiff, wet, no odor, trace roots.	FILL		70	4/8/12		MW-8-26.5		
		FILL, silty sand with gravel, angular gravel, grey, medium dense, wet, no odor.	FILL		20	4/8/8		MW-8-28.0		
		Silty GRAVEL with sand, rounded coarse gravel, fine to coarse sand, grey, dense, wet, no odor.	GM		90	48/50/50	4.5	MW-8-29.5		Sand Pack
30		Silty GRAVEL with sand, coarse gravel, grey, dense, wet, no odor.	GM		90	50/50/50	5.3	MW-8-31.0		Screen
		SAND with silt, with gravel, sand is medium to coarse, grey, very dense, wet, no odor.	SP-SM		100	0/5"-150"	15.5	MW-8-31.5		Bentonite

Well Construction Information			
Monument Type: Steel Flush Mount	Filter Pack: #2/12 Medium Monterey Sand	Ground Surface Elevation (ft):	NA
Casing Diameter (Inches): 4" PVC	Surface Seal: Concrete	Top of Casing Elevation (ft):	38.20
Screen Slot Size (Inches): 0.010	Annular Seal: Bentonite Chips	Boring Abandonment:	Bentonite backfill.
Screened Interval (ft bgs): 24.5 to 29.5	Surveyed Location: X: NA	Y: NA	



FARALLON CONSULTING
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Log of Boring: MW-8S

Page 1 of 1

Client:
Project: Former Sauro's Cleanerama
Location: Tacoma, WA

Farallon PN: 899-001

Logged By: Farallon/A. Morine

Date/Time Started: 5/13/04 1030
Date/Time Completed: 5/13/04 1200
Equipment: CME 75
Drilling Company: Cascade Drilling
Drilling Foreman: Scott
Drilling Method: Hollow Stem Auger

Sampler Type: D&M SS 18"x2"
Drive Hammer (lbs.): 140
Depth of Water ATD (ft bgs): 7
Total Boring Depth (ft bgs): 15.5
Total Well Depth (ft bgs): 15

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
0										Concrete
										Bentonite
5		FILL, gravelly silt and sand, brown, stiff, wet, no odor, contains fragments of brick and concrete.	FILL		70	4/6/4	0.0	MW-8S-6.5	X	
10		FILL, silty gravel with sand, rounded coarse gravel, grey-brown, loose, wet, no odor.	FILL		80	3/5/6	0.0	MW-8S-11.5		
										Sand Pack
										Screen
15		FILL, silty sand, fine to medium sand, grey-brown, loose, wet, no odor.	FILL		50	4/5/5	0.0	MW-8S-15.5		

Monument Type: Steel Flush Mount
Casing Diameter (Inches): 2" PVC
Screen Slot Size (Inches): 0.010
Screened Interval (ft bgs): 5 to 15

Well Construction Information

Filter Pack: #2/12 Medium Monterey Sand
Surface Seal: Concrete
Annular Seal: Bentonite Chips

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Boring Abandonment: Bentonite backfill.
Surveyed Location: X: NA Y: NA

 FARALLON CONSULTING 320 3rd Avenue NE Issaquah, WA 98027		Log of Boring: MW-9		Page 1 of 1
Client: Project: Former Sauro's Cleanerama Location: Tacoma, WA		Date/Time Started: 5/12/04 1450 Date/Time Completed: 5/13/04 1000 Equipment: CME 75 Drilling Company: Cascade Drilling Drilling Foreman: Scott Drilling Method: Hollow Stem Auger		Sampler Type: D&M SS, SPT Drive Hammer (lbs.): 140, Auto Ham Depth of Water ATD (ft bgs): 6 Total Boring Depth (ft bgs): NA Total Well Depth (ft bgs): 18
Farallon PN: 899-001				
Logged By: Farallon/A. Morine				

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
0										Concrete
		FILL, silty sand and gravel, brown, dense, moist, no odor, pieces of brick and concrete.	FILL		100	22/50-5	6.1	MW-9-3.0		
										Bentonite
5		No recovery, no sample collected.			0	50-0"				
		Silty SAND with gravel, fine to coarse sand, tan, very dense, wet, no odor.	SM		100	50-6"	6.4	MW-9-6.5		
		Silty SAND with gravel, fine to coarse sand, tan, very dense, wet, no odor. Sampled with the SPT and Auto Hammer.	SM		80	35/37/40	6.3	MW-9-9.5	X	
10		SAND with gravel and silt, medium sand, brown, very dense, wet, no odor. Sampled with the SPT and Auto Hammer.	SP-SM		95	37/40/45	5.8	MW-9-11.0		
		No recovery, broken sampler.			0					
		SAND with silt, trace gravel, medium sand, brown, very dense, wet, no odor. Sampled with the SPT and Auto Hammer.	SP-SM		70	19/25/32	5.2	MW-9-14.5		Sand Pack
										Screen
15		Silty SAND with gravel, angular gravel, brown, very dense, wet, no odor. Sampled with the SPT and Auto Hammer.	SM		100	37/80/100	10.1	MW-9-16.0		
		SAND with gravel, with silt, angular gravel, brown, very dense, wet, no odor. Sampled with the SPT and Auto Hammer.	SP-SM		80	30/62/70	12.1	MW-9-18.0		
		Silty SAND with gravel, fine sand, grey-brown, very dense, wet, no odor. Sampled with the SPT and Auto Hammer.	SM		100	19/27/32	14.2	MW-9-20.0		Bentonite
20		SAND with gravel, fine to coarse sand, brown, dense, wet, no odor. Sampled with the SPT and Auto Hammer.	SP		10	37/50/90	8.6	MW-9-22.0		

Well Construction Information			Ground Surface Elevation (ft):	NA
Monument Type: Steel Flush Mount	Filter Pack: #2/12 Medium Monterey Sand		Top of Casing Elevation (ft):	38.72
Casing Diameter (Inches): 2" PVC	Surface Seal: Concrete		Boring Abandonment:	NA
Screen Slot Size (Inches): 0.010	Annular Seal: Bentonite Chips	Surveyed Location: X: NA	Y: NA	
Screened Interval (ft bgs): 5 to 18				

FARALLON CONSULTING 320 3rd Avenue NE Issaquah, WA 98027				Log of Boring: MW-10				Page 1 of 2	
Client: Project: Former Sauro's Cleanerama Location: Tacoma, Washington				Date/Time Started: 5/13/04 1515 Date/Time Completed: 5/13/04 Equipment: CME 75 Drilling Company: Cascade Drilling Drilling Foreman: Scott Drilling Method: Hollow Stem Auger		Sampler Type: D&M SS 18"x2" Drive Hammer (lbs.): 140 Depth of Water ATD (ft bgs): 17 Total Boring Depth (ft bgs): 36.5 Total Well Depth (ft bgs): 23			
Farallon PN: 899-001									
Logged By: Farallon/A. Morine									

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
0		No recovery.			0	50-6"				Concrete
5		FILL, silty sand with gravel, fine to medium sand, brown, loose, brown, moist, no odor, brick pieces.	FILL		60	6/6/4	0.0	MW-10-6.5		Bentonite
		FILL, silty sand with gravel, fine to medium sand, brown, medium dense, moist, no odor, brick pieces, possible concrete.	FILL		100	10/7/6	0.0	MW-10-8.0		
		FILL, silty sand with gravel, fine to medium sand, brown, medium dense, moist, no odor, brick pieces.	FILL		40	6/7/7	0.0	MW-10-9.5		
10		FILL, silty sand with gravel, fine to medium sand, grey-brown, medium dense, moist, no odor.	FILL		50	8/9/10	0.0	MW-10-11.0		
		FILL, silty sand with gravel, fine to medium sand, light brown, medium dense, moist, no odor.	FILL		80	7/8/9	0.0	MW-10-12.5	X	
		FILL, silty sand with gravel, fine sand, rounded gravel, light brown, medium dense, moist, no odor.	FILL		100	6/7/7	0.0	MW-10-14.0		
		FILL, silty sand with gravel, fine sand, rounded gravel, light brown, medium dense, moist, no odor.	FILL		35	3/7/8	0.0	MW-10-15.5		
15		FILL, silty sand with gravel, fine sand, rounded gravel, light brown, medium dense, wet, no odor.	FILL		80	7/8/8	0.0	MW-10-17.0		
		FILL, silty sand with gravel, fine to coarse sand, well graded, black, loose, musty odor, wood pieces.	FILL		65	4/5/6	0.0	MW-10-18.5		SZ

Well Construction Information		
Monument Type: Steel flush mount Casing Diameter (Inches): 4" PVC Screen Slot Size (Inches): 0.010 Screened Interval (ft bgs): 13 to 23	Filter Pack: #2/12 Medium Monterey Sand Surface Seal: Concrete Annular Seal: Bentonite Chips	Ground Surface Elevation (ft): NA Top of Casing Elevation (ft): 49.35 Boring Abandonment: NA Surveyed Location: X: NA Y: NA



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Issaquah, WA 98027

Log of Boring: MW-10

Page 2 of 2

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
20		FILL, silty gravel with sand, grey-brown, loose, wet.	FILL		20	3/3/4		MW-10-20.0		Screen
		FILL, silty gravel with sand to silty sand with gravel, black, medium dense, wet, unidentifiable odor, wood fragments.	FILL		70	5/6/7	0.0	MW-10-21.5		Sand Pack
		FILL, silty gravel with sand to silty sand with gravel, black, medium dense, wet, no odor, wood fragments.	FILL		100	8/10/10	0.0	MW-10-23.0		
		FILL, sandy silt with gravel, coarse to fine sand, coarse to fine gravel, stiff, wet, no odor, wood fragments.	FILL		90	7/8/8	0.0	MW-10-24.5		
25		FILL, sandy silt with gravel, coarse to fine sand, coarse to fine gravel, stiff, wet, no odor, wood fragments.	FILL		5	4/5/5				
		FILL, silty gravel with sand, dark grey, dense, wet, no odor, wood fragments, brick pieces.	FILL		100	10/15/18	0.0	MW-10-27.5		
		FILL, silty sand with gravel, fine to coarse sand, dark grey, dense, wet, no odor, wood pieces.	FILL		25	16/22/9		MW-10-29.0		
		FILL, silty sand with gravel, fine to coarse sand, dark grey, loose, wet, no odor, wood pieces.	FILL		30	7/4/4		MW-10-30.5		
30		No recovery.			0	6/7/7				
		Poorly graded SAND with gravel, minor silt, fine to medium sand, angular to rounded gravel, grey, very dense, wet, no odor.	GP-GM		90	23/60/70	0.0	MW-10-33.5		
		Poorly graded SAND with gravel, minor silt, fine to medium sand, angular to rounded gravel, grey, very dense, wet, no odor.	GP-GM		100	50/70/80	0.0	MW-10-35.0		
35		Well graded SAND with silt, with gravel, grey, very dense, wet, no odor.	GM		50/90/100		0.0	MW-10-36.5		

Well Construction Information			
Monument Type: Steel flush mount	Filter Pack: #2/12 Medium Monterey Sand	Ground Surface Elevation (ft):	NA
Casing Diameter (inches): 4" PVC	Surface Seal: Concrete	Top of Casing Elevation (ft):	49.35
Screen Slot Size (inches): 0.010	Annular Seal: Bentonite Chips	Boring Abandonment:	NA
Screened Interval (ft bgs): 13 to 23	Surveyed Location: X: NA	Y: NA	

ant: Estate of Pete Sauro
 . . object: Former Sauro's Cleanerama
 Location: Tacoma, WA

Farallon PN: 899-001

Logged By: J. Cyr

Date/Time Started:	05/21/07 0920	Sampler Type:	D&M SS 18"x2"
Date/Time Completed:	05/21/07 1200	Drive Hammer (lbs.):	300
Equipment:	CME 75	Depth of Water ATD (ft bgs):	13
Drilling Company:	Cascade Drilling	Total Boring Depth (ft bgs):	25
Drilling Foreman:	James Gobel	Total Well Depth (ft bgs):	25
Drilling Method:	Hollow Stem Auger		

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (units)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0										Concrete
3 - 3.5		SAND, fine to medium, with fine coarse gravel and silt, brown, dense, moist, no odor. 3.5 - 4.5: SAND, fine to medium, with fine to coarse gravel, brown, dense, moist, no odor, trace organics	SP		100	31/25/26	0.9	MW11S-3		Casing
8 - 8.5		SAND, fine to medium, with fine to coarse gravel and silt, dark brownish-black, dense, moist, no odor. 8.5 - 9: SAND, fine, trace silt, light brown, dense, moist, no odor.	SP		100	37/50 for 6	0.5	MW11S-8		Bentonite
9 - 9.5		sandy GRAVEL, medium sand, fine to coarse gravel, trace silt, brown, moist, no odor.	GP							Screen
15		Sampler split in half, drilled to 20' to get past.								Sand
20		silty SAND, fine to medium, with gravel, fine to coarse, dark grey, dense, moist, no odor	SP		100	21/31/30	0.1	MW11S-21		Screen
25		Same as above, wet	SP		50	50 for 6	0.1	MW11S-24.5		Screen

Well Construction Information

Monument Type: Flush mount
Casing Diameter (Inches): 4
Screen Slot Size (inches): NA
Screened Interval (ft bgs): 10-25

Filter Pack: Sand
Surface Seal: Concrete
Annular Seal: Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Boring Abandonment: NA
Location: X: NA Y: NA

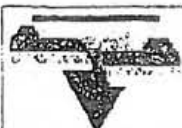
**FARALLON CONSULTING**975 5th Avenue Northwest
Issaquah, WA 98027**Log of Boring: MW11D****DRAFT**

Page 1 of 2

Client: Estate of Pete Sauro
Project: Former Sauro's Cleanorama
Location: Tacoma, WA**Farallon PN:** 899-001**Logged By:** J. Cyr**Date/Time Started:** 05/21/07 1230
Date/Time Completed: 05/21/07
Equipment: CME 75
Drilling Company: Cascade Drilling
Drilling Foreman: James Gobel
Drilling Method: Hollow Stem Auger
Sampler Type: D&M SS 18"x2"
Drive Hammer (lbs.): 300
Depth of Water ATD (ft bgs): NA
Total Boring Depth (ft bgs): 50
Total Well Depth (ft bgs): 50

Depth (feet bgs.)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (units)	Sample ID	Sample Analyzed	Boring/Well Construction Details
0		Same as MW-11S to 25 feet.								Concrete
										Casing
5										Bentonite
										Casing
10										Bentonite
										Casing
15										Bentonite
										Casing
20										Bentonite
										Casing

Well Construction Information**Monument Type:** Flush mount
Casing Diameter (Inches): 4
Screen Slot Size (Inches): NA
Screened Interval (ft bgs): 45-50**Filter Pack:** Sand
Surface Seal: Concrete
Annular Seal: Bentonite**Ground Surface Elevation (ft):** NA
Top of Casing Elevation (ft): NA
Boring Abandonment: NA
Surveyed Location: X: NA Y: NA



Depth (feet)	Sample Interval	Lithologic Description	USCS	USGS Graphic	% Recovery	Blow Counts 8/8/8	PID (ppm)	Sample ID	Sample Analyzed	Well Construction Details
25	X	silty SAND, fine, minor fine to coarse gravel, dark grey, dense, no odor	SP		100	37/50 for 6	0.1	MW11-25		Bentonite
										Casing
30	X	SAND, fine to medium, trace silt, grey, dense, wet, no odor	SP		60	32/50 for 6	0.4	MW11-30		Bentonite
										Casing
35	X	GRAVEL, fine, trace silt, greyish-brown, wet, no odor. 1" pocket of medium sand, brown, at bottom of sampler	GM		40	50 for 6	0.1	MW11-35		Bentonite
										Casing
40	X	GRAVEL, fine to coarse, with medium sand, brown, wet, no odor	GP		80	31/50 for 6	0.2	MW11-40		Casing
		SAND, medium to coarse, trace silt, brown, dense, wet, no odor. Lower 1-2": SILT, trace fine sand, dark grey, very stiff, moist, no odor	SP							
45	X	GRAVEL, fine to coarse, with fine to medium sand, minor silt, grey, wet, no odor	GP		75	21/20/26	0.1	MW11-45		Sand
										Screen
50	X	Sampler filled due to heave. Upper 6": sandy GRAVEL, fine to coarse, medium to coarse sand, trace silt, grey, wet, no odor. lower 12": GRAVEL, fine to coarse, with sand, medium to coarse, trace silt, grey, wet, no odor.	GP		100	50 for 6	0.1	MW11-49.5		Sand

Monument Type: Flush mount
Casing Diameter (Inches): 4
Screen Slot Size (Inches): NA
Screened Interval (ft bgs): 45-50

Well Construction Information

Filter Pack: Sand
Surface Seal: Concrete
Annular Seal: Bentonite

Ground Surface Elevation (ft): NA
Top of Casing Elevation (ft): NA
Boring Abandonment: NA
Surveyed Location: X: NA Y: NA

Debris Laboratory Analytical Results



Analytical Resources, Incorporated

Analytical Chemists and Consultants

May 18, 2009

Jennifer Wynkoop
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project No: 094048.010.013
Project Name: Sauro's Cleanarama
ARI Job No: OZ15

Dear Jennifer:

Please find enclosed copies of the chain of custodies (COC) and the final results from the project referenced above. Analytical Resources, Inc. accepted three solid samples in good condition on May 14, 2009.

The samples were analyzed for VOCs, as requested on the COC.

In cases where samples required additional diluted runs in order to quantify flagged values, both runs have been reported, for your information.

There were no anomalies associated with the analysis.

A copy of these reports and all corresponding raw data will remain on file electronically with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Kelly Bottem
Client Services Manager
(206) 695-6211
kellyb@arilabs.com

Enclosures



Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landon

Project Name: Sawro's Cleanarama

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 0815

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES ☒ NO ☐

Were custody papers included with the cooler? YES ☒ NO ☐

Were custody papers properly filled out (ink, signed, etc.) YES ☒ NO ☐

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 3.2

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 101886

Cooler Accepted by: [Signature]

Date: 5/14/09

Time: 1510

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES ☐ NO ☒

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES ☒ NO ☐

Were all bottles sealed in individual plastic bags? YES ☒ NO ☐

Did all bottles arrive in good condition (unbroken)? YES ☒ NO ☐

Were all bottle labels complete and legible? YES ☒ NO ☐

Did the number of containers listed on COC match with the number of containers received? YES ☒ NO ☐

Did all bottle labels and tags agree with custody papers? YES ☒ NO ☐

Were all bottles used correct for the requested analyses? YES ☒ NO ☐

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES ☐ NO ☒

Were all VOC vials free of air bubbles? NA YES ☒ NO ☐

Was sufficient amount of sample sent in each bottle? YES ☒ NO ☐

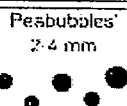
Samples Logged by: [Signature] Date: 5/14/09 Time: 1528

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: Debris-SE
SAMPLE

Page 1 of 1

Lab Sample ID: OZ15A

LIMS ID: 09-11419

Matrix: Concrete

Data Release Authorized: 

Reported: 05/15/09

QC Report No: OZ15-Landau Associates, Inc.

Project: Sauro's Cleanarama

0094048.010.013

Date Sampled: 05/14/09

Date Received: 05/14/09

Instrument/Analyst: FINN5/PAB

Date Analyzed: 05/15/09 15:01

Sample Amount: 5.11 g-dry-wt

Purge Volume: 5.0 mL

Moisture: 7.5%

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U

Reported in $\mu\text{g/kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	101%
Bromofluorobenzene	97.2%
d4-1,2-Dichlorobenzene	100%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 1 of 1

Sample ID: Debris-STKPL
SAMPLE

Lab Sample ID: OZ15B

LIMS ID: 09-11420

Matrix: BRICK

Data Release Authorized: 

Reported: 05/15/09

QC Report No: OZ15-Landau Associates, Inc.

Project: Sauro's Cleanarama

0094048.010.013

Date Sampled: 05/14/09

Date Received: 05/14/09

Instrument/Analyst: FINN5/PAB

Date Analyzed: 05/15/09 15:25

Sample Amount: 4.92 g-dry-wt

Purge Volume: 5.0 mL

Moisture: 13.5%

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U

Reported in $\mu\text{g/kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	116%
d8-Toluene	102%
Bromofluorobenzene	98.3%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 1 of 1

Sample ID: Debris-NE

SAMPLE

Lab Sample ID: OZ15C

LIMS ID: 09-11421

Matrix: Concrete

Data Release Authorized: 

Reported: 05/15/09

QC Report No: OZ15-Landau Associates, Inc.

Project: Sauro's Cleanarama

0094048.010.013

Date Sampled: 05/14/09

Date Received: 05/14/09

Instrument/Analyst: FINN5/PAB

Date Analyzed: 05/15/09 15:55

Sample Amount: 5.21 g-dry-wt

Purge Volume: 5.0 mL

Moisture: 3.0%

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U

Reported in $\mu\text{g/kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	101%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	100%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 1 of 1

Sample ID: MB-051509

METHOD BLANK

Lab Sample ID: MB-051509

LIMS ID: 09-11419

Matrix: Concrete

Data Release Authorized: 

Reported: 05/15/09

QC Report No: OZ15-Landau Associates, Inc.

Project: Sauro's Cleanarama

0094048.010.013

Date Sampled: NA

Date Received: NA

Instrument/Analyst: FINN5/PAB

Date Analyzed: 05/15/09 11:33

Sample Amount: 5.00 g-dry-wt

Purge Volume: 5.0 mL

Moisture: NA

CAS Number	Analyte	RL	Result	Q
75-01-4	Vinyl Chloride	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U

Reported in $\mu\text{g/kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	101%
Bromofluorobenzene	95.6%
d4-1,2-Dichlorobenzene	98.3%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Concrete

QC Report No: OZ15-Landau Associates, Inc.
Project: Sauro's Cleanarama
0094048.010.013

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-051509	Method Blank	Low	103%	101%	95.6%	98.3%	0
LCS-051509	Lab Control	Low	103%	98.2%	98.0%	101%	0
LCSD-051509	Lab Control Dup	Low	103%	99.5%	99.1%	101%	0
OZ15A	Debris-SE	Low	110%	101%	97.2%	100%	0
OZ15B	Debris-STKPL	Low	116%	102%	98.3%	101%	0
OZ15C	Debris-NE	Low	110%	101%	97.8%	100%	0

SW8260B	LCS/MB LIMITS		QC LIMITS	
	Low	Med	Low	Med
(DCE) = d4-1,2-Dichloroethane	75-120	76-120	72-134	69-120
(TOL) = d8-Toluene	80-122	80-120	78-124	80-120
(BFB) = Bromofluorobenzene	79-120	80-120	66-120	76-128
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	79-120	80-120

Log Number Range: 09-11419 to 09-11421

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 1 of 1

Sample ID: LCS-051509

LAB CONTROL SAMPLE

Lab Sample ID: LCS-051509

LIMS ID: 09-11419

Matrix: Concrete

Data Release Authorized: *AS*

Reported: 05/15/09

QC Report No: OZ15-Landau Associates, Inc.

Project: Sauro's Cleanarama

0094048.010.013

Date Sampled: NA

Date Received: NA

Instrument/Analyst LCS: FINN5/PAB

LCSD: FINN5/PAB

Date Analyzed LCS: 05/15/09 10:32

LCSD: 05/15/09 13:19

Sample Amount LCS: 5.00 g-dry-wt

LCSD: 5.00 g-dry-wt

Purge Volume LCS: 5.0 mL

LCSD: 5.0 mL

Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Vinyl Chloride	64.0	50.0	128%	62.6	50.0	125%	2.2%
Trichloroethene	48.2	50.0	96.4%	47.6	50.0	95.2%	1.3%
Tetrachloroethene	49.7	50.0	99.4%	47.1	50.0	94.2%	5.4%

Reported in $\mu\text{g/kg}$ (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	103%	103%
d8-Toluene	98.2%	99.5%
Bromofluorobenzene	98.0%	99.1%
d4-1,2-Dichlorobenzene	101%	101%



Analytical Resources, Incorporated
Analytical Chemists and Consultants

April 27, 2009

Jennifer Wynkoop,
Landau Associates, Inc.
950 Pacific Ave # 515
Tacoma, WA 98402

RE: Project No: 094048.010
Project Name: Sauro's
ARI Job No: OW10

Dear Jennifer:

Please find enclosed copies of the chain of custodies (COC) and the final results from the project referenced above. Analytical Resources, Inc. accepted one soil sample in good condition on April 20, 2009.

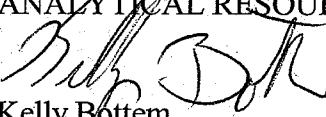
The sample was analyzed for VOCs, as requested on the COC.

There were no anomalies associated with the sample.

A copy of these reports and all corresponding raw data will remain on file electronically with ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.



Kelly Bottem

Client Services Manager
(206) 695-6211
kellyb@arilabs.com

Enclosures

- ☐ Seattle (Edmonds) (425) 778-0907
☒ Tacoma (253) 926-2493
☐ Spokane (509) 327-9737
☐ Portland (Tigard) (503) 443-6010



Chain-of-Custody Record

Project Name SARGO'S Project No. 094048.010
 Project Location/Event TACOMA / SOIL BORINGS
 Sampler's Name JJB
 Project Contact JENNIFER WYNNKOOP
 Send Results To JENNIFER WYNNKOOP 4 ANNIE KALVOZAN

Sample I.D. B8-WD-041709 Date 4/17/09 Time 13:45 Matrix SOIL No. of Containers 2

Testing Parameters

Turnaround Time

- ☒ Standard
☐ Accelerated
☐ _____

Observations/Comments

Allow water samples to settle, collect aliquot from clear portion

NWTPH-Dx:

- ☐ run acid wash/silica gel cleanup
☐ run samples standardized to _____ product

Analyze for EPH if no specific product identified

VOC/BTEX/VPH (sol):

- ☐ non-preserved
☐ preserved w/methanol
☐ preserved w/sodium bisulfate
☐ Freeze upon receipt

Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by

Signature [Signature]
 Printed Name Jonathan Brown
 Company _____
 Date 4/20/09 Time _____

Received by

Signature [Signature]
 Printed Name Rich Hudson
 Company ARI
 Date 9/20/09 Time 1135

Relinquished by

Signature _____
 Printed Name _____
 Company _____
 Date _____ Time _____

Received by

Signature _____
 Printed Name _____
 Company _____
 Date _____ Time _____



Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Landau

COC No(s): _____ (NA)

Assigned ARI Job No: OW10

Project Name: Sauvo's

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? _____

Were custody papers included with the cooler? _____

Were custody papers properly filled out (ink, signed, etc.) _____

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... _____

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 101886

Cooler Accepted by: RC Date: 4/20/09 Time: 1330

Complete custody forms and attach all shipping documents

YES NO
YES NO
YES NO
2.2

Log-In Phase:

Was a temperature blank included in the cooler? _____ YES (NO)

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? _____ NA YES NO

Were all bottles sealed in individual plastic bags? _____ YES NO

Did all bottles arrive in good condition (unbroken)? _____ YES NO

Were all bottle labels complete and legible? _____ YES NO

Did the number of containers listed on COC match with the number of containers received? _____ YES NO

Did all bottle labels and tags agree with custody papers? _____ YES NO

Were all bottles used correct for the requested analyses? _____ YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... (NA) YES NO

Were all VOC vials free of air bubbles? _____ (NA) YES NO

Was sufficient amount of sample sent in each bottle? _____ YES NO

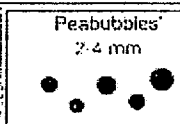
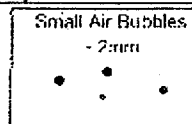
Samples Logged by: AV Date: 4/20/09 Time: 1403

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Small → "sm"
Peabubbles → "pb"
Large → "lg"
Headspace → "hs"

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: B8-WD-041709

Page 1 of 2

SAMPLE

Lab Sample ID: OW10A

QC Report No: OW10-Landau Associates, Inc.

LIMS ID: 09-9642

Project: SAURO'S

Matrix: Soil

094048.010

Data Release Authorized: 

Date Sampled: 04/17/09

Reported: 04/27/09

Date Received: 04/20/09

Instrument/Analyst: NT9/PAB

Sample Amount: 4.21 g-dry-wt

Date Analyzed: 04/23/09 18:34

Purge Volume: 5.0 mL

Moisture: 17.3%

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.2	< 1.2	U
74-83-9	Bromomethane	1.2	< 1.2	U
75-01-4	Vinyl Chloride	1.2	< 1.2	U
75-00-3	Chloroethane	1.2	< 1.2	U
75-09-2	Methylene Chloride	2.4	2.6	
67-64-1	Acetone	5.9	99	
75-15-0	Carbon Disulfide	1.2	< 1.2	U
75-35-4	1,1-Dichloroethene	1.2	< 1.2	U
75-34-3	1,1-Dichloroethane	1.2	< 1.2	U
156-60-5	trans-1,2-Dichloroethene	1.2	< 1.2	U
156-59-2	cis-1,2-Dichloroethene	1.2	< 1.2	U
67-66-3	Chloroform	1.2	< 1.2	U
107-06-2	1,2-Dichloroethane	1.2	< 1.2	U
78-93-3	2-Butanone	5.9	15	
71-55-6	1,1,1-Trichloroethane	1.2	< 1.2	U
56-23-5	Carbon Tetrachloride	1.2	< 1.2	U
108-05-4	Vinyl Acetate	5.9	< 5.9	U
75-27-4	Bromodichloromethane	1.2	< 1.2	U
78-87-5	1,2-Dichloropropane	1.2	< 1.2	U
10061-01-5	cis-1,3-Dichloropropene	1.2	< 1.2	U
79-01-6	Trichloroethene	1.2	< 1.2	U
124-48-1	Dibromochloromethane	1.2	< 1.2	U
79-00-5	1,1,2-Trichloroethane	1.2	< 1.2	U
71-43-2	Benzene	1.2	< 1.2	U
10061-02-6	trans-1,3-Dichloropropene	1.2	< 1.2	U
110-75-8	2-Chloroethylvinylether	5.9	< 5.9	U
75-25-2	Bromoform	1.2	< 1.2	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.9	< 5.9	U
591-78-6	2-Hexanone	5.9	7.3	
127-18-4	Tetrachloroethene	1.2	< 1.2	U
79-34-5	1,1,2,2-Tetrachloroethane	1.2	< 1.2	U
108-88-3	Toluene	1.2	3.7	
108-90-7	Chlorobenzene	1.2	< 1.2	U
100-41-4	Ethylbenzene	1.2	< 1.2	U
100-42-5	Styrene	1.2	< 1.2	U
75-69-4	Trichlorofluoromethane	1.2	< 1.2	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.4	< 2.4	U
179601-23-1	m,p-Xylene	1.2	< 1.2	U
95-47-6	o-Xylene	1.2	< 1.2	U
95-50-1	1,2-Dichlorobenzene	1.2	< 1.2	U
541-73-1	1,3-Dichlorobenzene	1.2	< 1.2	U
106-46-7	1,4-Dichlorobenzene	1.2	< 1.2	U
107-02-8	Acrolein	59	< 59	U
74-88-4	Methyl Iodide	1.2	< 1.2	U
74-96-4	Bromoethane	2.4	< 2.4	U
107-13-1	Acrylonitrile	5.9	< 5.9	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Sample ID: B8-WD-041709

Page 2 of 2

SAMPLE

Lab Sample ID: OW10A

QC Report No: OW10-Landau Associates, Inc.

LIMS ID: 09-9642

Project: SAURO'S

Matrix: Soil

094048.010

Date Analyzed: 04/23/09 18:34

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.2	< 1.2	U
74-95-3	Dibromomethane	1.2	< 1.2	U
630-20-6	1,1,1,2-Tetrachloroethane	1.2	< 1.2	U
96-12-8	1,2-Dibromo-3-chloropropane	5.9	< 5.9	U
96-18-4	1,2,3-Trichloropropane	2.4	< 2.4	U
110-57-6	trans-1,4-Dichloro-2-butene	5.9	< 5.9	U
108-67-8	1,3,5-Trimethylbenzene	1.2	< 1.2	U
95-63-6	1,2,4-Trimethylbenzene	1.2	< 1.2	U
87-68-3	Hexachlorobutadiene	5.9	< 5.9	U
106-93-4	Ethylene Dibromide	1.2	< 1.2	U
74-97-5	Bromochloromethane	1.2	< 1.2	U
594-20-7	2,2-Dichloropropane	1.2	< 1.2	U
142-28-9	1,3-Dichloropropane	1.2	< 1.2	U
98-82-8	Isopropylbenzene	1.2	< 1.2	U
103-65-1	n-Propylbenzene	1.2	< 1.2	U
108-86-1	Bromobenzene	1.2	< 1.2	U
95-49-8	2-Chlorotoluene	1.2	< 1.2	U
106-43-4	4-Chlorotoluene	1.2	< 1.2	U
98-06-6	tert-Butylbenzene	1.2	< 1.2	U
135-98-8	sec-Butylbenzene	1.2	< 1.2	U
99-87-6	4-Isopropyltoluene	1.2	89	
104-51-8	n-Butylbenzene	1.2	< 1.2	U
120-82-1	1,2,4-Trichlorobenzene	5.9	< 5.9	U
91-20-3	Naphthalene	5.9	< 5.9	U
87-61-6	1,2,3-Trichlorobenzene	5.9	< 5.9	U

Reported in µg/kg (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	91.5%
d8-Toluene	96.9%
Bromofluorobenzene	91.1%
d4-1,2-Dichlorobenzene	95.0%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 1 of 2

Sample ID: MB-042309
METHOD BLANK

Lab Sample ID: MB-042309

LIMS ID: 09-9642

Matrix: Soil

Data Release Authorized: *AB*

Reported: 04/27/09

QC Report No: OW10-Landau Associates, Inc.

Project: SAURO'S

094048.010

Date Sampled: NA

Date Received: NA

Instrument/Analyst: NT9/PAB

Date Analyzed: 04/23/09 13:42

Sample Amount: 5.00 g-dry-wt

Purge Volume: 5.0 mL

Moisture: NA

CAS Number	Analyte	RL	Result	Q
74-87-3	Chloromethane	1.0	< 1.0	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	1.0	< 1.0	U
75-00-3	Chloroethane	1.0	< 1.0	U
75-09-2	Methylene Chloride	2.0	< 2.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	1.0	< 1.0	U
75-35-4	1,1-Dichloroethene	1.0	< 1.0	U
75-34-3	1,1-Dichloroethane	1.0	< 1.0	U
156-60-5	trans-1,2-Dichloroethene	1.0	< 1.0	U
156-59-2	cis-1,2-Dichloroethene	1.0	< 1.0	U
67-66-3	Chloroform	1.0	< 1.0	U
107-06-2	1,2-Dichloroethane	1.0	< 1.0	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	1.0	< 1.0	U
56-23-5	Carbon Tetrachloride	1.0	< 1.0	U
108-05-4	Vinyl Acetate	5.0	< 5.0	U
75-27-4	Bromodichloromethane	1.0	< 1.0	U
78-87-5	1,2-Dichloropropane	1.0	< 1.0	U
10061-01-5	cis-1,3-Dichloropropene	1.0	< 1.0	U
79-01-6	Trichloroethene	1.0	< 1.0	U
124-48-1	Dibromochloromethane	1.0	< 1.0	U
79-00-5	1,1,2-Trichloroethane	1.0	< 1.0	U
71-43-2	Benzene	1.0	< 1.0	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	5.0	< 5.0	U
75-25-2	Bromoform	1.0	< 1.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	1.0	< 1.0	U
79-34-5	1,1,2,2-Tetrachloroethane	1.0	< 1.0	U
108-88-3	Toluene	1.0	< 1.0	U
108-90-7	Chlorobenzene	1.0	< 1.0	U
100-41-4	Ethylbenzene	1.0	< 1.0	U
100-42-5	Styrene	1.0	< 1.0	U
75-69-4	Trichlorofluoromethane	1.0	< 1.0	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	< 2.0	U
179601-23-1	m,p-Xylene	1.0	< 1.0	U
95-47-6	o-Xylene	1.0	< 1.0	U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0	U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0	U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0	U
107-02-8	Acrolein	50	< 50	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	2.0	< 2.0	U
107-13-1	Acrylonitrile	5.0	< 5.0	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B
Page 2 of 2Sample ID: MB-042309
METHOD BLANKLab Sample ID: MB-042309
LIMS ID: 09-9642
Matrix: Soil
Date Analyzed: 04/23/09 13:42QC Report No: OW10-Landau Associates, Inc.
Project: SAURO'S
094048.010

CAS Number	Analyte	RL	Result	Q
563-58-6	1,1-Dichloropropene	1.0	< 1.0	U
74-95-3	Dibromomethane	1.0	< 1.0	U
630-20-6	1,1,1,2-Tetrachloroethane	1.0	< 1.0	U
96-12-8	1,2-Dibromo-3-chloropropane	5.0	< 5.0	U
96-18-4	1,2,3-Trichloropropane	2.0	< 2.0	U
110-57-6	trans-1,4-Dichloro-2-butene	5.0	< 5.0	U
108-67-8	1,3,5-Trimethylbenzene	1.0	< 1.0	U
95-63-6	1,2,4-Trimethylbenzene	1.0	< 1.0	U
87-68-3	Hexachlorobutadiene	5.0	< 5.0	U
106-93-4	Ethylene Dibromide	1.0	< 1.0	U
74-97-5	Bromochloromethane	1.0	< 1.0	U
594-20-7	2,2-Dichloropropane	1.0	< 1.0	U
142-28-9	1,3-Dichloropropane	1.0	< 1.0	U
98-82-8	Isopropylbenzene	1.0	< 1.0	U
103-65-1	n-Propylbenzene	1.0	< 1.0	U
108-86-1	Bromobenzene	1.0	< 1.0	U
95-49-8	2-Chlorotoluene	1.0	< 1.0	U
106-43-4	4-Chlorotoluene	1.0	< 1.0	U
98-06-6	tert-Butylbenzene	1.0	< 1.0	U
135-98-8	sec-Butylbenzene	1.0	< 1.0	U
99-87-6	4-Isopropyltoluene	1.0	< 1.0	U
104-51-8	n-Butylbenzene	1.0	< 1.0	U
120-82-1	1,2,4-Trichlorobenzene	5.0	< 5.0	U
91-20-3	Naphthalene	5.0	< 5.0	U
87-61-6	1,2,3-Trichlorobenzene	5.0	< 5.0	U

Reported in $\mu\text{g/kg}$ (ppb)

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	88.8%
d8-Toluene	97.6%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	99.7%

VOA SURROGATE RECOVERY SUMMARY



Matrix: Soil

QC Report No: OW10-Landau Associates, Inc.
Project: SAURO'S
094048.010

ARI ID	Client ID	Level	DCE	TOL	BFB	DCB	TOT OUT
MB-042309	Method Blank	Low	88.8%	97.6%	101%	99.7%	0
LCS-042309	Lab Control	Low	94.8%	98.2%	103%	101%	0
LCSD-042309	Lab Control Dup	Low	93.1%	99.4%	103%	99.4%	0
OW10A	B8-WD-041709	Low	91.5%	96.9%	91.1%	95.0%	0

	LCS/MB LIMITS		QC LIMITS	
	Low	Med	Low	Med
(DCE) = d4-1,2-Dichloroethane	75-120	76-120	72-134	69-120
(TOL) = d8-Toluene	80-122	80-120	78-124	80-120
(BFB) = Bromofluorobenzene	79-120	80-120	66-120	76-128
(DCB) = d4-1,2-Dichlorobenzene	80-120	80-120	79-120	80-120

Log Number Range: 09-9642 to 09-9642

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 1 of 2

Sample ID: LCS-042309

LAB CONTROL SAMPLE

Lab Sample ID: LCS-042309

LIMS ID: 09-9642

Matrix: Soil

Data Release Authorized: *[Signature]*

Reported: 04/27/09

QC Report No: OW10-Landau Associates, Inc.

Project: SAURO'S

094048.010

Date Sampled: NA

Date Received: NA

Instrument/Analyst LCS: NT9/PAB

LCSD: NT9/PAB

Date Analyzed LCS: 04/23/09 11:03

LCSD: 04/23/09 13:04

Sample Amount LCS: 5.00 g-dry-wt

LCSD: 5.00 g-dry-wt

Purge Volume LCS: 5.0 mL

LCSD: 5.0 mL

Moisture: NA

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	32.3	50.0	64.6%	32.4	50.0	64.8%	0.3%
Bromomethane	42.1	50.0	84.2%	41.3	50.0	82.6%	1.9%
Vinyl Chloride	35.2	50.0	70.4%	35.4	50.0	70.8%	0.6%
Chloroethane	40.2	50.0	80.4%	38.8	50.0	77.6%	3.5%
Methylene Chloride	42.0	50.0	84.0%	41.8	50.0	83.6%	0.5%
Acetone	228	250	91.2%	199	250	79.6%	13.6%
Carbon Disulfide	42.8	50.0	85.6%	42.1	50.0	84.2%	1.6%
1,1-Dichloroethene	46.9	50.0	93.8%	45.8	50.0	91.6%	2.4%
1,1-Dichloroethane	43.3	50.0	86.6%	43.1	50.0	86.2%	0.5%
trans-1,2-Dichloroethene	45.8	50.0	91.6%	45.0	50.0	90.0%	1.8%
cis-1,2-Dichloroethene	45.5	50.0	91.0%	45.5	50.0	91.0%	0.0%
Chloroform	43.2	50.0	86.4%	44.1	50.0	88.2%	2.1%
1,2-Dichloroethane	45.0	50.0	90.0%	44.4	50.0	88.8%	1.3%
2-Butanone	238	250	95.2%	211	250	84.4%	12.0%
1,1,1-Trichloroethane	46.3	50.0	92.6%	46.1	50.0	92.2%	0.4%
Carbon Tetrachloride	47.0	50.0	94.0%	47.7	50.0	95.4%	1.5%
Vinyl Acetate	42.4	50.0	84.8%	39.2	50.0	78.4%	7.8%
Bromodichloromethane	46.3	50.0	92.6%	46.0	50.0	92.0%	0.7%
1,2-Dichloropropane	44.0	50.0	88.0%	44.3	50.0	88.6%	0.7%
cis-1,3-Dichloropropene	45.4	50.0	90.8%	44.8	50.0	89.6%	1.3%
Trichloroethene	45.1	50.0	90.2%	44.4	50.0	88.8%	1.6%
Dibromochloromethane	50.1	50.0	100%	48.3	50.0	96.6%	3.7%
1,1,2-Trichloroethane	46.7	50.0	93.4%	45.7	50.0	91.4%	2.2%
Benzene	43.7	50.0	87.4%	43.8	50.0	87.6%	0.2%
trans-1,3-Dichloropropene	46.5	50.0	93.0%	45.8	50.0	91.6%	1.5%
2-Chloroethylvinylether	34.2	50.0	68.4%	29.0	50.0	58.0%	16.5%
Bromoform	52.6	50.0	105%	49.6	50.0	99.2%	5.9%
4-Methyl-2-Pentanone (MIBK)	248	250	99.2%	217	250	86.8%	13.3%
2-Hexanone	217	250	86.8%	172	250	68.8%	23.1%
Tetrachloroethene	48.7	50.0	97.4%	47.2	50.0	94.4%	3.1%
1,1,2,2-Tetrachloroethane	44.6	50.0	89.2%	40.6	50.0	81.2%	9.4%
Toluene	44.7	50.0	89.4%	44.6	50.0	89.2%	0.2%
Chlorobenzene	45.0	50.0	90.0%	43.9	50.0	87.8%	2.5%
Ethylbenzene	44.1	50.0	88.2%	42.1	50.0	84.2%	4.6%
Styrene	48.0	50.0	96.0%	46.8	50.0	93.6%	2.5%
Trichlorofluoromethane	42.9	50.0	85.8%	41.8	50.0	83.6%	2.6%
1,1,2-Trichloro-1,2,2-trifluoroethane	51.9	50.0	104%	50.1	50.0	100%	3.5%
m,p-Xylene	91.1	100	91.1%	89.0	100	89.0%	2.3%
o-Xylene	45.2	50.0	90.4%	44.9	50.0	89.8%	0.7%
1,2-Dichlorobenzene	45.2	50.0	90.4%	44.1	50.0	88.2%	2.5%
1,3-Dichlorobenzene	46.4	50.0	92.8%	44.4	50.0	88.8%	4.4%
1,4-Dichlorobenzene	46.2	50.0	92.4%	44.4	50.0	88.8%	4.0%
Acrolein	232	250	92.8%	194	250	77.6%	17.8%
Methyl Iodide	48.6	50.0	97.2%	48.6	50.0	97.2%	0.0%
Bromoethane	48.0	50.0	96.0%	48.1	50.0	96.2%	0.2%
Acrylonitrile	45.8	50.0	91.6%	42.9	50.0	85.8%	6.5%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260B

Page 2 of 2

Sample ID: LCS-042309

LAB CONTROL SAMPLE

Lab Sample ID: LCS-042309

LIMS ID: 09-9642

Matrix: Soil

QC Report No: OW10-Landau Associates, Inc.

Project: SAURO'S

094048.010

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1-Dichloropropene	45.1	50.0	90.2%	45.0	50.0	90.0%	0.2%
Dibromomethane	47.5	50.0	95.0%	47.1	50.0	94.2%	0.8%
1,1,1,2-Tetrachloroethane	50.4	50.0	101%	49.6	50.0	99.2%	1.6%
1,2-Dibromo-3-chloropropane	44.7	50.0	89.4%	39.9	50.0	79.8%	11.3%
1,2,3-Trichloropropane	46.9	50.0	93.8%	42.2	50.0	84.4%	10.5%
trans-1,4-Dichloro-2-butene	48.4	50.0	96.8%	43.4	50.0	86.8%	10.9%
1,3,5-Trimethylbenzene	45.3	50.0	90.6%	43.9	50.0	87.8%	3.1%
1,2,4-Trimethylbenzene	45.8	50.0	91.6%	44.3	50.0	88.6%	3.3%
Hexachlorobutadiene	48.6	50.0	97.2%	50.4	50.0	101%	3.6%
Ethylene Dibromide	47.6	50.0	95.2%	46.5	50.0	93.0%	2.3%
Bromochloromethane	49.1	50.0	98.2%	48.2	50.0	96.4%	1.8%
2,2-Dichloropropane	46.0	50.0	92.0%	45.5	50.0	91.0%	1.1%
1,3-Dichloropropane	44.5	50.0	89.0%	42.5	50.0	85.0%	4.6%
Isopropylbenzene	46.7	50.0	93.4%	45.0	50.0	90.0%	3.7%
n-Propylbenzene	46.9	50.0	93.8%	45.0	50.0	90.0%	4.1%
Bromobenzene	48.7	50.0	97.4%	46.3	50.0	92.6%	5.1%
2-Chlorotoluene	46.6	50.0	93.2%	44.2	50.0	88.4%	5.3%
4-Chlorotoluene	47.6	50.0	95.2%	45.7	50.0	91.4%	4.1%
tert-Butylbenzene	45.1	50.0	90.2%	44.5	50.0	89.0%	1.3%
sec-Butylbenzene	44.8	50.0	89.6%	44.2	50.0	88.4%	1.3%
4-Isopropyltoluene	46.3	50.0	92.6%	45.4	50.0	90.8%	2.0%
n-Butylbenzene	45.9	50.0	91.8%	44.4	50.0	88.8%	3.3%
1,2,4-Trichlorobenzene	48.0	50.0	96.0%	46.0	50.0	92.0%	4.3%
Naphthalene	43.2	50.0	86.4%	39.3	50.0	78.6%	9.5%
1,2,3-Trichlorobenzene	45.5	50.0	91.0%	44.4	50.0	88.8%	2.4%

Reported in $\mu\text{g/kg}$ (ppb)

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	94.8%	93.1%
d8-Toluene	98.2%	99.4%
Bromofluorobenzene	103%	103%
d4-1,2-Dichlorobenzene	101%	99.4%