# Remedial Action Construction Report

318 State Avenue
Olympia, Washington

*for*
**City of Olympia**

January 5, 2010

GeoEngineers
Earth Science + Technology

# Remedial Action Construction Report

## 318 State Avenue
## Olympia, Washington

**File No. 0415-049-05**

**January 5, 2010**

Prepared for:

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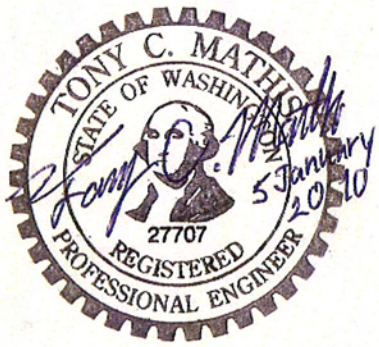


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## 1.0 INTRODUCTION

This Remedial Action Construction Report (RACR) documents the remedial action performed at the 318 State Avenue property (Property) located in Olympia, Washington (Figure 1). The remediation was performed as part of an independent remedial action by the City of Olympia (City) at the Property. The remedial action consisted of the excavation and disposal of contaminated soil from the Property and backfilling the excavation with clean soil.

Construction activities were performed by Cowlitz Clean Sweep (CCS) who was selected as the prime contractor (Contractor) to perform the cleanup. GeoEngineers provided construction observation and documentation for the City. Construction activities associated with remedial excavation of the Property were performed between September 7 and October 22, 2009 and included the following:

- Mobilization,
- Removal of contaminated soil and debris,
- Treatment and disposal of water generated during construction,
- Confirmation soil sampling, and
- Backfilling and Property restoration.

The following sections provide the background for the Property and remedial activities and summarize the construction activities.

## 2.0 BACKGROUND

The Property is approximately 1.1 acres in size and is located within the City of Olympia, Thurston County, Washington. The Property is situated between the southern end of the East and West Bays of Budd Inlet (Figure 1) and is bounded on the south by State Avenue NE, on the east by Adams Street NE and on the west by Franklin Street NE (Figure 2). The Property is bounded on the north by several commercial buildings and Olympia Avenue NE. The Property is generally flat and the ground surface of the Property is at approximately Elevation 11 feet National Geodetic Vertical Datum (NGVD). All elevations described in this report use the NGVD datum.

The Property was undeveloped until at least 1888. The western portion of the Property was part of the shoreline of Budd Inlet and the eastern portion of the Property was part of the submerged marine or intertidal area of Budd Inlet. The Property and surrounding area were filled with material dredged from the Port of Olympia area beginning in the late 1800s. After filling, various Property users occupied the eastern half of the Property, including Olympia Foundry and Machinery Company, Pioneer Iron Works and Capital City Iron Works.

The Property was purchased by the State of Washington Highway Commission (the precursor to the Washington State Department of Transportation or WSDOT) in March 1923 for use as a soils testing and materials laboratory. Various automotive/truck sheds, machine/automotive shops and a materials testing laboratory were located at the Property.

A fire burned and damaged buildings and equipment at the Property in 1936. The WSDOT building was rebuilt and the automotive/truck sheds were replaced with a smaller automotive service facility and an office and testing laboratory. An addition was constructed at the WSDOT building in 1950. In 1968, the automotive facility structures and operations were removed and the office and testing laboratory building was renovated to accommodate a traffic data collections and analysis office. The office was demolished and removed from the Property in 2007.

Multiple environmental investigations have been performed at the Property between 2005 and 2009. Results of investigations are summarized in the Final Draft Remedial Investigation, 318 State Avenue NE Property (RI) (GeoEngineers, 2009). The RI identifies chemicals that were detected in soil and groundwater at the Property at concentrations greater than Model Toxics Control Act (MTCA) criteria for unrestricted land use. The RI identifies metals, solvents and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) that were detected in soil and arsenic and vinyl chloride were detected in groundwater at concentrations greater than MTCA cleanup criteria.

The RI identified Contaminated Soil Zones 1 and 2 (CSZ 1 and CSZ 2) as the two areas of the Property requiring excavation. The deepest portion of the remedial excavation was anticipated to be approximately 9 feet below ground surface (bgs) (i.e., Elevation 2 feet) in CSZ 1. Groundwater at the Property is typically between 4 and 5 feet bgs (i.e., Elevations 6 feet to 7 feet). Therefore, groundwater extraction and treatment was identified as necessary for excavation of contaminated soil in CSZ 1.

Plans and specifications were prepared that outlined the requirements for implementing the remedial action at the Property. The plans and specifications were used for bid solicitations from prospective contractors and as guidance during implementation of the remedial action. These plans and specifications and the record drawings prepared after construction was completed are provided in Appendix A.

## 3.0 REMEDIAL ACTION CONSTRUCTION

Cowlitz Clean Sweep was selected as the prime Contractor to perform the remedial action at the Property, and the remedial action was performed between September 7 and October 22, 2009. The following sections summarize the activities performed at the Property for this remedial action.

### 3.1 Mobilization

Mobilization activities for construction were performed between September 7 and 11, 2009 and included the following:

- Transport of a Caterpillar 345 B trackhoe and a Caterpillar 320 D trackhoe to the Property.
- Installing temporary fencing, signage, traffic control, worker facilities, erosion and sediment controls (TESC) and stormwater pollution prevention plan (SWPPP) controls.
- Cutting, demolishing and/or removing portions of asphalt pavement, sidewalks and other obstructions (i.e., abandoned utilities, etc.) (Figure 2).
- Plugging stormwater catch basins to prevent stormwater from leaving the Property.
- Contracting a licensed driller to decommission five groundwater monitoring wells and to cut off a portion of a former artesian well casing at the Property (Drawings C-1 and C-3 in Appendix A).

- Transport and setup of a water treatment system.

Five groundwater monitoring wells (i.e., MW-2, MW-5 through MW-7 and MW-15) were located within the remedial excavation areas (CSZs 1 and 2) that required decommissioning prior to excavation. The groundwater monitoring wells were decommissioned in accordance with Washington Administrative Code (WAC) 173-160 by backfilling the well casings with bentonite chips and placing concrete in the well monuments. The monitoring well decommissioning reports for MW-2, MW-5 through MW-7 and MW-15 are presented in Appendix B.

The well casing for a former artesian well was present at the Property extending above the ground surface. The artesian well had previously been decommissioned by a licensed driller in 2008. A variance request and decommissioning report for the artesian well prepared in 2008 are provided in Appendix B. As part of the construction activities, the portion of the well casing extending above the ground surface was cut off. An excavator was used to remove soil from around the artesian well to expose the well casing. Then the casing was cut off at approximately two feet below the final grade under the supervision of a licensed well driller. The decommissioning report for cutting off of the former artesian well present at the Property is included in Appendix B.

Material generated as part of the demolition and removal of asphalt pavement and concrete sidewalks as well as other obstructions present in CSZs 1 and 2 were stockpiled on site for subsequent disposal or recycling. Approximately 48 tons of concrete resulting from the demolition of sidewalks at CSZ 1 was recycled at Concrete Recyclers in Tumwater, Washington. The concrete recycling receipts are provided in Appendix C. The small quantity of asphalt pavement and other debris generated during construction mobilization activities was stockpiled on site at CSZ 1 and transported and disposed of with soil and fill material removed from the Property as discussed in the following section.

## 3.2 Excavation, Loading, Transport and Disposal of Soil, Fill Material and Debris

Excavation, loading, transport and disposal of soil, fill material and debris from the Property was performed between September 14 and October 1, 2009.

The Caterpillar trackhoes were used to excavate and load approximately 6,800 tons of material from the Property for transport to a landfill for disposal. The excavated material was predominantly comprised of soil but also included fill material consisting of metal debris, wood debris and general construction debris such as asphalt, brick and concrete material. The excavated material was transported to the Riverbend Landfill in McMinnville, Oregon, a subtitle D landfill permitted to accept the material.

An underground storage tank (UST) and asbestos-insulated piping were encountered in CSZ 1 during remedial excavation. The UST and asbestos piping had not previously been identified to be present on the Property prior to construction. The UST and asbestos piping were also removed from the Property during construction as discussed in Sections 3.2.1 and 3.2.2, respectively.

Excavation of CSZ 1 generally progressed from the southeast to the northwest. During excavation of CSZ 1, excavated material was stockpiled on the northwest side of CSZ 1 and then loaded into dump trucks with trailers (i.e., truck-and-pups) for transport to the landfill. During excavation of CSZ 2, material from CSZ 2 was loaded directly into the truck-and-pups. The loads on the trucks were covered before leaving the Property. The Contractor tracked each loaded truck leaving the Property by recording information for each truck (i.e., trucking company, truck number, license plate number, approximate weight and time of departure) prior to

departure and correlating the truck departure information with the disposal tickets received from the landfill. Excavated material tracking tables, quantity summaries and landfill disposal tickets are provide in Appendix C.

A representative of GeoEngineers collected confirmation samples during excavation of CSZs 1 and 2 to confirm that material with chemicals at concentrations greater than the cleanup levels had been removed at the boundaries of the excavations (Figure 2). The cleanup levels established for the site were MTCA cleanup levels for unrestricted land use. If the confirmation sample analytical results indicated sidewall material with contaminant concentrations greater than cleanup levels, the Contractor was directed to overexcavate the area where the confirmation sample(s) exceeded cleanup levels. Following the overexcavation of a given area, additional confirmation samples were collected and analyzed and the results compared to the cleanup levels. The confirmation sampling and analysis process was repeated until confirmation sample results from the limits of the excavation were less than the cleanup levels. The results of confirmation sampling and analysis are discussed further in Section 3.4. The limits of excavation in CSZs 1 and 2 are presented in Figure 2.

Single wood piling were observed intermittently at the limits of the excavation at CSZ 1 (Figure 2). The piling present in the excavation at CSZ 1 were not observed to be treated. The piling appeared to be untreated cedar logs ranging from approximately 6 inches to 12 inches in diameter.

#### *3.2.1 Underground Storage Tank Removal*

A UST and associated piping were discovered north of the decommissioned artesian well on September 14, 2009 during excavation of CSZ 1 (Figure 2). The UST was a single-wall metal tank approximately 6 feet in diameter and 12 feet long with an estimated capacity of approximately 2,500 gallons. The top of the UST was located at approximately 4 feet bgs (i.e., at an approximate Elevation 7 feet). The UST was filled to capacity with a petroleum-based product. Approximately 20 feet of piping was connected to the UST. The piping was located approximately 1 foot bgs. A field report providing additional information concerning the UST is provided in Appendix D.

Eugene Radcliffe, the Washington State Department of Ecology (Ecology) Site Manager for the Property, was notified of the presence of the on September 15, 2009. Additionally, Brett Manning and Dean Phillips of the Ecology UST Program were also notified as requested by Mr. Radcliffe. Dean Phillips indicated that Eugene Radcliffe should be the Ecology contact for work related to the UST. Eugene Radcliffe visited the site on September 16, 2009 to observe the UST prior to removal.

Samples of the product contained within the tank were collected on September 14, 2009 and September 17, 2009 and sent to Analytical Resources Inc. (ARI) in Tukwila, Washington and Spectra Laboratories of Tacoma, Washington. The product sample was analyzed for total petroleum hydrocarbons (NWTPH-Gx and NWTPH-Dx), metals (RCRA 8 metals), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and total organic halogens. The results of the analyses identified that the product was a mixture of gasoline, diesel and heavy oil. The analytical results for the product samples are provided in Appendix D.

After providing appropriate notice and obtaining permits, the UST and approximately 20 feet of piping were decommissioned by complete removal on September 19, 2009. A certified UST decommissioner and UST site assessor oversaw the decommissioning.

Product was removed from the UST using a vactor truck. Based on the analytical results, the product in the tank was designated as non-regulated waste oil and disposed of at PRS in Tacoma, Washington. The UST was triple rinsed, removed and temporarily stored at the Property, until it was disposed of at the Riverbend Landfill on September 27, 2009.

The decommissioning notice, permits, UST decommissioner and site assessor certifications, product disposal profile information and disposal ticket, and tank disposal receipt are provided in Appendix D.

Petroleum hydrocarbon-impacted soil and groundwater were observed in the depression that the UST was removed from. The petroleum-impacted soil was excavated and stockpiled on site in a lined, bermed and covered stockpile. Samples of the stockpiled material were collected and submitted to ARI for petroleum hydrocarbon analyses to include NWTPH-Gx and NWTPH-Dx. These analytical results were submitted to the Riverbend Landfill in support of a request to dispose of this material with other materials being excavated at the Property. The landfill approved this request, for disposal of the material around the UST, with confirmation being provided in an email from Kristin Castner of the Riverbend Landfill (Appendix D). Petroleum-impacted groundwater was removed from the excavation during the UST decommissioning and disposed of at PRS in Tacoma with water resulting from the rinsing of the UST.

Additional confirmation sample analyses required by Washington State UST regulations were performed in the former location of the UST. The UST confirmation sample analyses were performed in accordance with Table 830-1 in MTCA (WAC 173-340), Required Testing for Petroleum Releases, and in consultation with Mr. Radcliffe. The selected additional analyses that were performed on samples collected from the area of the UST were identified in an email from Iain Wingard, GeoEngineers, to Eugene Radcliffe dated September 23, 2009 for review and approval (Appendix D). Additionally, Mr. Radcliffe visited the Property on September 24, 2009 to observe the progress of the overall cleanup, the cleanup related to the UST and the UST confirmation sampling locations.

The locations of samples used to confirm removal of soil potentially impacted by the UST were identified in the field with Mr. Radcliffe based on the former location of the UST and extent of excavation that was performed as part of the original cleanup project. Confirmation samples were selected to evaluate soil in the sidewall and the bottom adjacent to the former UST. One confirmation soil sample (T-B-100109) was collected from beneath the former UST (Figure 2 and Table 1). One confirmation soil sample (C-13-092409-1-6-6.5) was also collected from the only sidewall that remained at the former location of the UST. The sidewall sample was collected north of the former UST location at the approximate water table elevation. No other sidewalls remained nearby the former UST as the excavation for the overall cleanup had removed all other soil in the west, south and east directions to more than 50 feet from the former UST location (Figure 2). Based on the location of the UST and the extent of the remedial excavation, Mr. Radcliffe approved the sample location from beneath the former UST and from the north sidewall of the excavation for confirmation sampling and analysis associated with removal of the UST.

Confirmation samples from the former UST area were submitted for analysis of NWTPH-Gx, NWTPH-Dx, benzene, ethylbenzene, toluene, xylenes, ethylene dibromide, meth-tert-butyl-ether arsenic, lead, VOCs solvents and carcinogenic polycyclic aromatic hydrocarbons (cPAHs). Chemicals were either not detected, or were detected at concentrations less than MTCA Method A cleanup levels. The results for the confirmation samples associated with decommissioning of the UST are presented in Table 1 (samples T-B-100109 and C-13-092409-1-6-6.5).

### *3.2.2 Asbestos-Insulated Pipe*

An unanticipated asbestos-insulated pipe was discovered in the west side of CSZ 1 during excavation on September 22, 2009 (Figure 2). The pipe was a 2-inch-diameter metal pipe wrapped with asbestos insulation. The asbestos-insulated metal pipe was located within a 12-inch-diameter concrete pipe. The insulated metal pipe was located at an approximate Elevation of 9.6 feet in the west sidewall of the remedial excavation.

The Contractor utilized Associated Environmental Group, a subcontractor, to collect three samples of the insulation wrapped around the pipe for analysis. The analytical results for the samples confirmed that the pipe insulation contained asbestos. After obtaining the proper permit, Advanced Environmental, Inc., a subcontractor, abated, removed and properly disposed of approximately 20 feet of pipe and asbestos insulation from CSZ 1 on September 22.

On October 7, 2009, Advanced Environmental, Inc. returned to the Property and the Contractor and subcontractor removed a remaining 8 linear feet of asbestos-insulated pipe from the west sidewall of CSZ 1. The Contractor initially removed asphalt and soil covering the pipe, after which the asbestos abatement subcontractor abated, removed and properly disposed of the asbestos-insulated pipe. No other asbestos wrapped pipe was identified at the Property during the course of the remedial action.

The analytical results, asbestos permit, and disposal record for the asbestos pipe are provided in Appendix E.

## 3.3 Water Management

The Contractor collected and treated stormwater, decontamination water and groundwater pumped from CSZ 1 during remedial activities at the Property. The treatment process consisted of sedimentation, followed by physical filtration, and then polishing the treated water with activated carbon. A copy of the water treatment system schematic is provided in Appendix F.

The Contractor pumped groundwater from CSZ 1 to the sedimentation tank of the treatment system using one or two electric submersible sump pumps. The Contractor also used a trash pump when necessary to pump stormwater from catch basins to the sedimentation tank. The catch basin outlets had been plugged during mobilization activities so that stormwater would not enter the stormwater system during the remedial action. Decontamination water was transferred directly to the sedimentation tank for treatment.

Treated water was discharged to the City of Olympia's wastewater system operated by LOTT Alliance. A copy of the discharge authorization letter is provided in Appendix F. Samples of treated water were collected during two separate events in accordance with the discharge authorization. One sample was collected on September 15, 2009 prior to discharge to the LOTT Alliance wastewater system and analyzed for VOCs by Environmental Protection Agency (EPA) 624, SVOCs by EPA 625 and total lead and arsenic by EPA 200.8. The second sample was collected on September 29, after two weeks of treatment system operation and was analyzed for VOCs and SVOCs. Chemicals of concern were not detected in either of the treated water samples, and these results were forwarded to LOTT Alliance after receipt and review of the chemical analysis reports. A summary of the analytical data, as well as responses from LOTT Alliance regarding the analytical data are included in Appendix F. Appendix F also includes a copy of the disposal record for solids removed from the settling tank when the water treatment system was decommissioned at the end of the project.

A total of 321,570 gallons of treated water were discharged to the wastewater system between September 17 and October 2, 2009 as part of remedial activities at the Property.

## 3.4 Confirmation Soil Sampling

Confirmation soil samples were collected and analyzed for the chemicals of concern for each excavation to confirm that soil with chemical concentrations greater than the cleanup levels was removed from CSZs 1 and 2. The confirmation samples were collected as excavation was completed in CSZs 1 and 2. The confirmation samples were collected and analyzed in accordance with the confirmation Sampling and Analysis Plan (SAP). The confirmation SAP is provided in Appendix G.

As previously identified, excavation activities proceeded from southeast to northwest in CSZ 1. As excavation proceeded in CSZ 1, samples were collected when portions of the excavation had reached the limits of excavation identified on the Plans. Overexcavation was performed where analytical results for confirmation soil samples indicated that contamination remained at concentrations greater than the cleanup levels. Following overexcavation, confirmation samples were collected and the process was repeated until the confirmation soil samples indicated that chemical concentrations were less than the cleanup levels at the completed excavation surface and to the limits of the excavation. A total of 19 confirmation samples were collected from sample locations in CSZ 1 (Figure 2). The samples were analyzed for metals including arsenic and lead, solvents, and cPAHs in accordance with the SAP. The results for confirmation samples collected at the limits of the excavation that indicate that soil concentrations at the excavation limits are less than the cleanup levels are presented in Table 1.

At CSZ 2, confirmation samples were collected at the limits of excavation identified on the Plans. Overexcavation was not required at CSZ 2 as chemicals of concern were less than the cleanup levels in confirmation samples collected from limits of the excavation. A total of five confirmation samples were collected from sample locations in CSZ 2 (Figure 2). The confirmation samples were analyzed for lead and benzene in accordance with the SAP. The results for confirmation samples collected at the limits of the excavation that indicate that soil concentrations at the excavation limits are less than the cleanup levels are presented in Table 1.

A data quality review was performed on the confirmation results for samples collected at the limits of the excavations in CSZs 1 and 2. Quality control samples were collected in general accordance with the Sampling and Analysis Plan. The data was found to be acceptable for use. The results of the data quality review are provided in Appendix H. Additionally, the laboratory analytical reports for the confirmation samples are provided in Appendix H.

## 3.5 Surveying

Final excavation limits at CSZ 1 and CSZ 2 were identified after chemical analytical results had been received for confirmation samples collected at the limits of the excavation that indicated soil concentrations at the excavation limits were less than the cleanup levels. These final excavation limits were surveyed by the City of Olympia. Other features that were surveyed in and around the excavation included confirmation soil sample locations, the location of utilities remaining at the excavation limits, and the location of approximately 20 wood piling remaining in the bottom of the excavation (Figure 2). A stamped copy of the survey is included in Appendix I.

## 3.6 Pipe and Utility Abandonment

The Contractor abandoned 10 pipes and utilities present around the perimeter of CSZ 1 upon completion of the remedial excavation. The pipes and utilities were plugged by the Contractor by filling the exposed ends of the pipes with concrete in accordance with project plans and specifications. The location and type of pipes and utilities that were abandoned are presented in Figure 2.

## 3.7 Backfilling

Backfill materials were delivered to the Property in truck-and-pups from the following quarries, operated by Quality Rock Products:

- Quarry spalls were from the K and M Site, Olympia, Washington.
- Ballast/gravel base and top course were from the Little Rock Site, Olympia, Washington.
- Base course was from the Rochester Site, Rochester, Washington.

One sample was collected of the ballast/gravel base and one sample was collected of the top course for chemical analysis on September 3, 2009 to evaluate potential chemical contamination of the backfill material before backfill was brought onto the Property. A summary of the analytes and analytical results for backfill materials is presented in Appendix J. Chemical analytical results for these analytes indentified in Appendix J were either not detected or detected at concentrations less than MTCA Method A and/or B soil criteria.

Prior to backfilling the excavation at CSZ 1, the Contractor placed geotextile fabric along the eastern and southern perimeter of the excavation, which was the approximate boundary of the Property. The Contractor then placed approximately 2 feet of quarry spalls on the bottom of the excavation, which is illustrated as the approximate area outlined by the Elevation 3 feet contour on Figure 2. The Contractor mobilized a John Deere 650 J dozer and a Vibromax VM 75 vibratory drum roller to the Property on September 28, 2009 to use during backfilling at the Property. The Contractor used trackhoes previously mobilized to the Property, the dozer and vibratory roller to place and compact ballast and gravel base backfill in approximately 1-foot thick lifts until the excavation was backfilled to approximately 1 foot below final grade. Removal of groundwater within the excavation at CSZ 1 continued to be performed until backfill had reached an approximate elevation of 7 feet, which is the approximate elevation of the water table.

The Contractor also placed and compacted ballast/gravel base in CSZ 2 to approximately 1 foot below final grade. The excavation at CSZ 2 was backfilled with gravel base backfill, compacted in approximate 1-foot lifts using a walk-behind vibratory plate compactor. Quarry spalls were not placed in the bottom CSZ 2.

The lateral and vertical extents of backfill materials used to bring CSZs 1 and 2 to final grade (i.e., quarry spalls, base course and top course) are shown in the record drawings provided in Appendix A. The delivery tickets for backfill materials are included as Appendix K.

Backfill placement activities in CSZ 1 and CSZ 2 were observed by a qualified representative of the Engineer, and in-place moisture/density tests were performed as necessary using a nuclear density gauge. The in-place moisture/density tests indicated compaction of backfill was in general accordance with project plans and specifications. In our opinion, backfilling was performed in general accordance with project plans and specifications.

### 3.8 Property Restoration

Property restoration was performed between October 12 through 14, 2009. Property restoration consisted of the following:

- Replacing asphalt paving and concrete sidewalks removed during site remediation
- Installing four parking meters that were previously removed
- Removing TESC/SWPPP controls including the water treatment system
- Removing temporary fencing, ecology blocks, signs and other site controls installed during mobilization
- Disposing of debris resulting from Property restoration activities

Figure 3 shows features at the Property after completion of restoration activities.

Everson Asphalt Paving Inc. was on site on October 8 to place two 4-inch- thick lifts of asphalt in the areas shown on Figure 3. Approximately 90 tons of asphalt was placed at the Property. Weight tickets for the asphalt are provided in Appendix K. Asphalt placement activities in CSZ 1 and CSZ 2 were monitored, and density tests were performed as necessary using a nuclear density gauge. The results of our observations and in-place density testing indicated asphalt had been placed and compacted in general accordance with project plans and specifications.

Wilson Concrete was on site October 13th to replace concrete sidewalks where sidewalks were demolished in the areas shown on Figure 2. Mark Lang with the City of Olympia was also on site on October 13th to observe re-installation of the parking meters, and at this time, Mark indicated the parking meters appeared to have been placed correctly.

Debris remaining upon completion of restoration activities was removed from the Property and disposed of on October 15th. The ticket for disposal of debris resulting from restoration activities is provided in Appendix C.

## 4.0 CLOSURE

Remediation activities were performed at the 318 State Avenue Property in Olympia, Washington during September and October, 2009. The purpose of the remediation was to remove contaminated soil and debris identified during the RI from the Property. Contaminated soil and debris contained chemicals of concern, which included arsenic, lead, chlorinated solvents, benzene and cPAHs at concentrations greater than MTCA cleanup levels. Approximately 6,800 tons of contaminated soil and debris was excavated from the Property and disposed of at the Riverbend Landfill in McMinnville, Oregon. Additionally, a previously unidentified UST was decommissioned by complete removal and previously unidentified asbestos-containing material was properly abated and disposed of offsite. Confirmation soil samples collected at the limits of the excavations indicate that concentrations of chemicals of concern at the excavation limits were below the MTCA cleanup levels. Following remediation and backfill activities, the ground surface and hard-surfaced areas at the Property was restored to the approximate surface elevation that existed before remediation.

It is our opinion that the remediation activities at the Property were performed in general accordance with the plans and specifications prepared for remediation of the Property.

## 5.0 LIMITATIONS

This Remedial Action Construction report has been prepared for use by City of Olympia. GeoEngineers has performed this Remedial Action of the 318 State Avenue property, Olympia Washington in general accordance with the scope and limitations of our proposal.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with the generally accepted environmental science practices for Remedial Action Construction reports in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

Please refer to Appendix L titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

TABLES

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TABLE 1
SUMMARY OF ANALYTICAL RESULTS FOR CONFIRMATION SOIL SAMPLES COLLECTED AT THE LIMITS OF EXCAVATION
318 STATE AVENUE
OLYMPIA, WASHINGTON

| Analyte | MTCA Method A Cleanup Level | MTCA Method B Cleanup Level | C-1[1] C-01-091509-1-4-4.5 4-4.5 9/15/2009 | C-2 C-02-092109-2-10-10.5 10-10.5 9/21/2009 | C-3 C-03-092909-4-10-10.5 10-10.5 9/29/2009 | C-4 C-04-092109-2-9-9.5 9-9.5 9/21/2009 | C-5 C-05-091509-1-6-6.5 6-6.5 9/15/2009 | C-6 C-06-0901809-1-4-4.5 4-4.5 9/18/2009 | C-7 C-07-092909-3-10-10.5 10-10.5 9/29/2009 | C-8 C-08-0901809-1-2-2.5 2-2.5 9/18/2009 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Metals (mg/kg)** | | | | | | | | | | |
| Arsenic[4] | 20 | 0.67 | 3.1 U | **8.1** | **4.7**[2] | **16** | 3.1 U | 3.2 U | **4.8** | 2.9 U |
| Lead | 250 | NE | 1.5 U | 1.7 U | 1.8 U | 1.8 U | 1.6 U | **11 J** | 1.8 U | 1.5 U |
| **Chlorinated Solvents and Benzene (µg/kg)** | | | | | | | | | | |
| Benzene | 30 | 18,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| 1,1,1-Trichloroethane | 2,000 | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| 1,1,2,2-Tetrachloroethane | NE | 5,000 | 2.1 U | 1.7 U | 2.3 U | 1.9 U | 2.1 U | 1.6 U | 2.1 U | 2 U |
| 1,1,2-Trichloroethane | NE | 18,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| 1,1-Dichloroethane | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| 1,1-Dichloroethene | NE | NE | 5.2 U | 4.3 U | 5.8 U | 4.6 U | 5.3 U | 4.1 U | 5.2 U | 5 U |
| 1,2-Dichlorobenzene | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| 1,2-Dichloroethane | NE | 11,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| 1,2-Dichloropropane | NE | 15,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| 1,3-Dichlorobenzene | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| 1,4-Dichlorobenzene | NE | 42,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Bromoform | NE | 130,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Bromomethane | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Carbon Tetrachloride | NE | 7,700 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Chlorobenzene | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Chloroethane | NE | 350,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Chloroform | NE | 160,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Chloromethane | NE | 77,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Cis-1,2-Dichloroethene | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Cis-1,3-Dichloropropene | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Dibromochloromethane | NE | 12,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Dichlorobromomethane | NE | 16,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Methylene Chloride | 20 | 130,000 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Tetrachloroethene | 50 | 1,900 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Trans-1,2-Dichloroethene | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Trans-1,3-Dichloropropene | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Trichloroethene | 30 | 2,500 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Trichlorofluoromethane (CFC-11) | NE | NE | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| Vinyl Chloride | NE | 670 | 1 U | 0.86 U | 1.2 U | 0.93 U | 1.1 U | 0.82 U | 1 U | 1 U |
| **Additional UST Confirmation Analytes (µg/kg)** | | | | | | | | | | |
| Ethylbenzene | 6,000 | 8,300,000 | -- | -- | -- | -- | -- | -- | -- | -- |
| Toluene | 7,000 | 6,400,000 | -- | -- | -- | -- | -- | -- | -- | -- |
| Xylenes | 9,000 | 16,000,000 | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylene Dibromide | 5 | 12 | -- | -- | -- | -- | -- | -- | -- | -- |
| Methyl t-butyl ether | 100 | 560,000 | -- | -- | -- | -- | -- | -- | -- | -- |
| **Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg)** | | | | | | | | | | |
| Benzo(a)pyrene | 100 | 140 | 5.2 U | 5.4 U | 6.2 U | 5.7 U | **14** | 5.7 U | 6.1 U | 5 U |
| Benzo(a)anthracene | NE | NE | 5.2 U | 5.4 U | 6.2 U | 5.7 U | **8** | 5.7 U | 6.1 U | 5 U |
| Benzo(b)fluoranthene | NE | NE | 5.2 U | 5.4 U | 6.2 U | 5.7 U | **11** | 5.7 U | 6.1 U | 5 U |
| Benzo(k)fluoranthene | NE | NE | 5.2 U | 5.4 U | 6.2 U | 5.7 U | 5.1 U | 5.7 U | 6.1 U | 5 U |
| Dibenzo(a,h)anthracene | NE | NE | 5.2 U | 5.4 U | 6.2 U | 5.7 U | 5.1 U | 5.7 U | 6.1 U | 5 U |
| Indeno(1,2,3-cd)pyrene | NE | NE | 5.2 U | 5.4 U | 6.2 U | 5.7 U | **9.2** | 5.7 U | 6.1 U | 5 U |
| Chrysene | NE | NE | 5.2 U | 5.4 U | 6.2 U | 5.7 U | **7.9** | 5.7 U | 6.1 U | 5 U |
| cPAH Toxic Equivalency[5] | 100 | NE | 5.2 U | 5.4 U | 6.2 U | 5.7 U | **25.2** | 5.7 U | 6.1 U | 6 U |

TABLE 1
SUMMARY OF ANALYTICAL RESULTS FOR CONFIRMATION SOIL SAMPLES COLLECTED AT THE LIMITS OF EXCAVATION
318 STATE AVENUE
OLYMPIA, WASHINGTON

| Analyte | MTCA Method A Cleanup Level | MTCA Method B Cleanup Level | C-9 C-09-0901809-1-4-4.5 4-4.5 9/18/2009 | C-10 C-10-092309-1-8-8.5 8-8.5 9/23/2009 | C-10 DUP-02-092309 8-8.5 9/23/09 | C-11 C-11-092209-1-3-3.5 3-3.5 9/22/2009 | C-12 C-12-092309-1-5-5.5 5-5.5 9/23/2009 | C-13 C-13-092409-1-6-6.5 6-6.5 9/24/2009 | C-14 C-14-092409-1-4-4.5 4-4.5 9/24/2009 | C-15 C-15-092409-1-7-7.5 7-7.5 9/24/2009 | C-16 C-16-092409-1-9-9.5 9-9.5 9/24/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals (mg/kg)** | | | | | | | | | | | |
| Arsenic[4] | 20 | 0.67 | 3.3 U | 3.5 U | 3.6 U | 3.1 U | 3.2 U | 3.7 U | 3.1 U | **17** | **10** |
| Lead | 250 | NE | 1.7 U | 1.7 U | 1.8 U | **3.5** | 1.6 U | 1.8 U | 1.6 U | **28** | **4.6** |
| **Chlorinated Solvents and Benzene (µg/kg)** | | | | | | | | | | | |
| Benzene | 30 | 18,000 | 1 U | **1.2** | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| 1,1,1-Trichloroethane | 2,000 | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| 1,1,2,2-Tetrachloroethane | NE | 5,000 | 2.1 U | 2.2 U | 2.2 U | 2.4 U | 2.1 U | 2.1 U | 2.3 U | 2.6 U | 1.9 U |
| 1,1,2-Trichloroethane | NE | 18,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| 1,1-Dichloroethane | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| 1,1-Dichloroethene | NE | NE | 5.2 U | 5.4 U | 5.6 U | 6 U | 5.3 U | 5.3 U | 5.7 U | 6.4 U | 4.7 U |
| 1,2-Dichlorobenzene | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| 1,2-Dichloroethane | NE | 11,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| 1,2-Dichloropropane | NE | 15,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| 1,3-Dichlorobenzene | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| 1,4-Dichlorobenzene | NE | 42,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Bromoform | NE | 130,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Bromomethane | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Carbon Tetrachloride | NE | 7,700 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Chlorobenzene | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Chloroethane | NE | 350,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Chloroform | NE | 160,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Chloromethane | NE | 77,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Cis-1,2-Dichloroethene | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | **1.2** | 1.1 U | 1.3 U | 0.94 U |
| Cis-1,3-Dichloropropene | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Dibromochloromethane | NE | 12,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Dichlorobromomethane | NE | 16,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Methylene Chloride | 20 | 130,000 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Tetrachloroethene | 50 | 1,900 | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Trans-1,2-Dichloroethene | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Trans-1,3-Dichloropropene | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Trichloroethene | 30 | 2,500 | **1.1** | 1.1 U | **1.6** | **6.4** | **1.3** | 1.1 U | 1.1 U | **3.5** | 0.94 U |
| Trichlorofluoromethane (CFC-11) | NE | NE | 1 U | 1.1 U | 1.1 U | 1.2 U | 1.1 U | 1.1 U | 1.1 U | 1.3 U | 0.94 U |
| Vinyl Chloride | NE | 670 | 1 U | **1.7** | **2.7** | 1.2 U | 1.1 U | **3.5** | 1.1 U | 1.3 U | 0.94 U |
| **Additional UST Confirmation Analytes (µg/kg)** | | | | | | | | | | | |
| Ethylbenzene | 6,000 | 8,300,000 | -- | -- | -- | -- | -- | 1.1 U | -- | -- | -- |
| Toluene | 7,000 | 6,400,000 | -- | -- | -- | -- | -- | 1.1 U | -- | -- | -- |
| Xylenes | 9,000 | 16,000,000 | -- | -- | -- | -- | -- | 2.1 U | -- | -- | -- |
| Ethylene Dibromide | 5 | 12 | -- | -- | -- | -- | -- | 1.1 U | -- | -- | -- |
| Methyl t-butyl ether | 100 | 560,000 | -- | -- | -- | -- | -- | 1.1 U | -- | -- | -- |
| **Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg)** | | | | | | | | | | | |
| Benzo(a)pyrene | 100 | 140 | 5.9 U | 6 U | 6 U | 5.4 U | **36** | 6.1 U | 5.3 U | **27** | 7.2 U |
| Benzo(a)anthracene | NE | NE | 5.9 U | 6 U | 6 U | 5.4 U | **33** | 6.1 U | 5.3 U | **22** | 7.2 U |
| Benzo(b)fluoranthene | NE | NE | 5.9 U | 6 U | **6.7** | 5.4 U | **54** | 6.1 U | 5.3 U | **35** | 7.2 U |
| Benzo(k)fluoranthene | NE | NE | 5.9 U | 6 U | 6 U | 5.4 U | **15** | 6.1 U | 5.3 U | **16** | 7.2 U |
| Dibenzo(a,h)anthracene | NE | NE | 5.9 U | 6 U | 6 U | 5.4 U | **6.9** | 6.1 U | 5.3 U | 7.9 U | 7.2 U |
| Indeno(1,2,3-cd)pyrene | NE | NE | 5.9 U | 6 U | 6 U | 5.4 U | **22** | 6.1 U | 5.3 U | **16** | 7.2 U |
| Chrysene | NE | NE | 5.9 U | 6 U | **8.5** | 5.4 U | **42** | 6.1 U | 5.3 U | **32** | 7.2 U |
| cPAH Toxic Equivalency[5] | 100 | NE | 5.9 U | 6 U | **0.76** | 5.4 U | **55.7** | 6.1 U | 5.3 U | **36.2** | 7.2 U |

TABLE 1
SUMMARY OF ANALYTICAL RESULTS FOR CONFIRMATION SOIL SAMPLES COLLECTED AT THE LIMITS OF EXCAVATION
318 STATE AVENUE
OLYMPIA, WASHINGTON

| Analyte | MTCA Method A Cleanup Level | MTCA Method B Cleanup Level | C-17 C-17-092409-1-9-9.5 9-9.5 9/24/2009 | C-18 C-18-092409-1-7-7.5 7-7.5 9/24/2009 | T-B T-B-092909 10-10.5 9/29/2009 | C-19 C-19-092409-1-3-3.5 3-3.5 9/24/2009 | C-20 C-20-092409-1-3-3.5 3-3.5 9/24/2009 | C-21 C-21-092409-1-3-3.5 3-3.5 9/24/2009 | C-22 C-22-092409-1-3-3.5 3-3.5 9/24/2009 | C-23 C-23-092409-1-5-5.5 5-5.5 9/24/2009 | C-23 DUP-03-092409-1-6-6.5 6-6.5 9/24/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Metals (mg/kg)** | | | | | | | | | | | |
| Arsenic[4] | 20 | 0.67 | **18** | **4.2** | 3.3 U[3] | -- | -- | -- | -- | -- | -- |
| Lead | 250 | NE | **7.5** | **26** | 1.9 U | 1.5 U | 1.4 U | 1.5 U | 1.4 U | **13 J** | **66 J** |
| **Chlorinated Solvents and Benzene (µg/kg)** | | | | | | | | | | | |
| Benzene | 30 | 18,000 | 1.6 U | 1.1 U | 1.2 U | 1.1 U | 1 U | 1.1 U | 0.89 U | 0.99 U | 1.1 U |
| 1,1,1-Trichloroethane | 2,000 | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| 1,1,2,2-Tetrachloroethane | NE | 5,000 | 3.2 U | 2.2 U | 2.4 U | -- | -- | -- | -- | -- | -- |
| 1,1,2-Trichloroethane | NE | 18,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| 1,1-Dichloroethane | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| 1,1-Dichloroethene | NE | NE | 8 U | 5.4 U | 5.9 U | -- | -- | -- | -- | -- | -- |
| 1,2-Dichlorobenzene | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| 1,2-Dichloroethane | NE | 11,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| 1,2-Dichloropropane | NE | 15,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| 1,3-Dichlorobenzene | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| 1,4-Dichlorobenzene | NE | 42,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Bromoform | NE | 130,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Bromomethane | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Carbon Tetrachloride | NE | 7,700 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Chlorobenzene | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Chloroethane | NE | 350,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Chloroform | NE | 160,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Chloromethane | NE | 77,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Cis-1,2-Dichloroethene | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Cis-1,3-Dichloropropene | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Dibromochloromethane | NE | 12,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Dichlorobromomethane | NE | 16,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Methylene Chloride | 20 | 130,000 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Tetrachloroethene | 50 | 1,900 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Trans-1,2-Dichloroethene | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Trans-1,3-Dichloropropene | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Trichloroethene | 30 | 2,500 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Trichlorofluoromethane (CFC-11) | NE | NE | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| Vinyl Chloride | NE | 670 | 1.6 U | 1.1 U | 1.2 U | -- | -- | -- | -- | -- | -- |
| **Additional UST Confirmation Analytes (µg/kg)** | | | | | | | | | | | |
| Ethylbenzene | 6,000 | 8,300,000 | -- | -- | 1.2 U | -- | -- | -- | -- | -- | -- |
| Toluene | 7,000 | 6,400,000 | -- | -- | **1.2** | -- | -- | -- | -- | -- | -- |
| Xylenes | 9,000 | 16,000,000 | -- | -- | **5.4** | -- | -- | -- | -- | -- | -- |
| Ethylene Dibromide | 5 | 12 | -- | -- | 0.91 U | -- | -- | -- | -- | -- | -- |
| Methyl t-butyl ether | 100 | 560,000 | -- | -- | 1.2 U | -- | -- | -- | -- | -- | -- |
| **Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg)** | | | | | | | | | | | |
| Benzo(a)pyrene | 100 | 140 | 8.2 U | **6.5** | 6.3 U | -- | -- | -- | -- | -- | -- |
| Benzo(a)anthracene | NE | NE | 8.2 U | 5.4 U | 6.3 U | -- | -- | -- | -- | -- | -- |
| Benzo(b)fluoranthene | NE | NE | 8.2 U | **8.3** | 6.3 U | -- | -- | -- | -- | -- | -- |
| Benzo(k)fluoranthene | NE | NE | 8.2 U | 5.4 U | 6.3 U | -- | -- | -- | -- | -- | -- |
| Dibenzo(a,h)anthracene | NE | NE | 8.2 U | 5.4 U | 6.3 U | -- | -- | -- | -- | -- | -- |
| Indeno(1,2,3-cd)pyrene | NE | NE | 8.2 U | 5.4 U | 6.3 U | -- | -- | -- | -- | -- | -- |
| Chrysene | NE | NE | 8.2 U | **9.2** | 6.3 U | -- | -- | -- | -- | -- | -- |
| cPAH Toxic Equivalency[5] | 100 | NE | 8.2 U | 7.4 | 6.3 U | -- | -- | -- | -- | -- | -- |

# TABLE 1
# SUMMARY OF ANALYTICAL DATA IN SOIL
## 318 STATE AVENUE
## OLYMPIA, WASHINGTON

Notes:

[1] The information provided for each sample above the analytical results are the Station name, sample name, sample depth (feet bgs) and date of collection.

[2] The arsenic result shown is for sample C-03-100109-5-11-11.5, which was collected after an approximate 1-foot overexcavation of the general area of station C-03 and T-B. The area was overexcavated because the arsenic results were greater than MTCA Method A cleanup levels in sample C-03-092909-4-10-10.5. However, other chemicals of concern were either not detected or were detected at concentrations less than MTCA Method A Cleanup levels in sample C-03-092909-4-10-10.5.

[3] The arsenic result shown is for sample T-B-100109 which was collected after an approximate 1-foot overexcavation of the general area of station C-03 and T-B. The area was overexcavated because arsenic results were greater than MTCA Method A cleanup levels in Sample T-B-092909. However, other chemicals of concern were either not detected or were detected at concentrations less than MTCA Method A Cleanup levels in sample T-B-092909.

[4] Arsenic concentrations are compared to the Method A cleanup level, which is the background arsenic concentration for soil in the State of Washington.

[5] Total Toxicity Equivalency Concentration (TEC) based on WAC 173-340-900 Table 708-2.

mg/kg = milligram per kilogram

ug/kg = microgram per kilogram

NE = Not Established

-- = Analysis not performed as the analytes identified were specifically performed for evaluation of soil in the former underground storage area.

U = Not detected at the indicated reporting limit

J = The reported concentration is an estimate

**Bolding** indicates the analyte was detected

FIGURES

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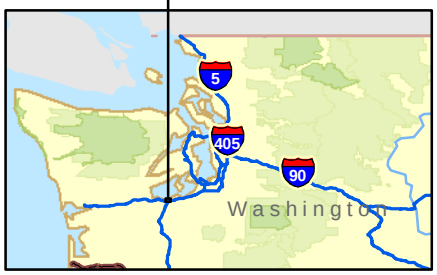



N
W E
S

2,000 0 2,000
Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: 2008 Shaded Relief from ESRI, 2008 Topographic Maps from National Geographic Society
Projection: NAD_1983_StatePlane_Washington_North_FIPS_4601_Feet
Datum: D_North_American_1983

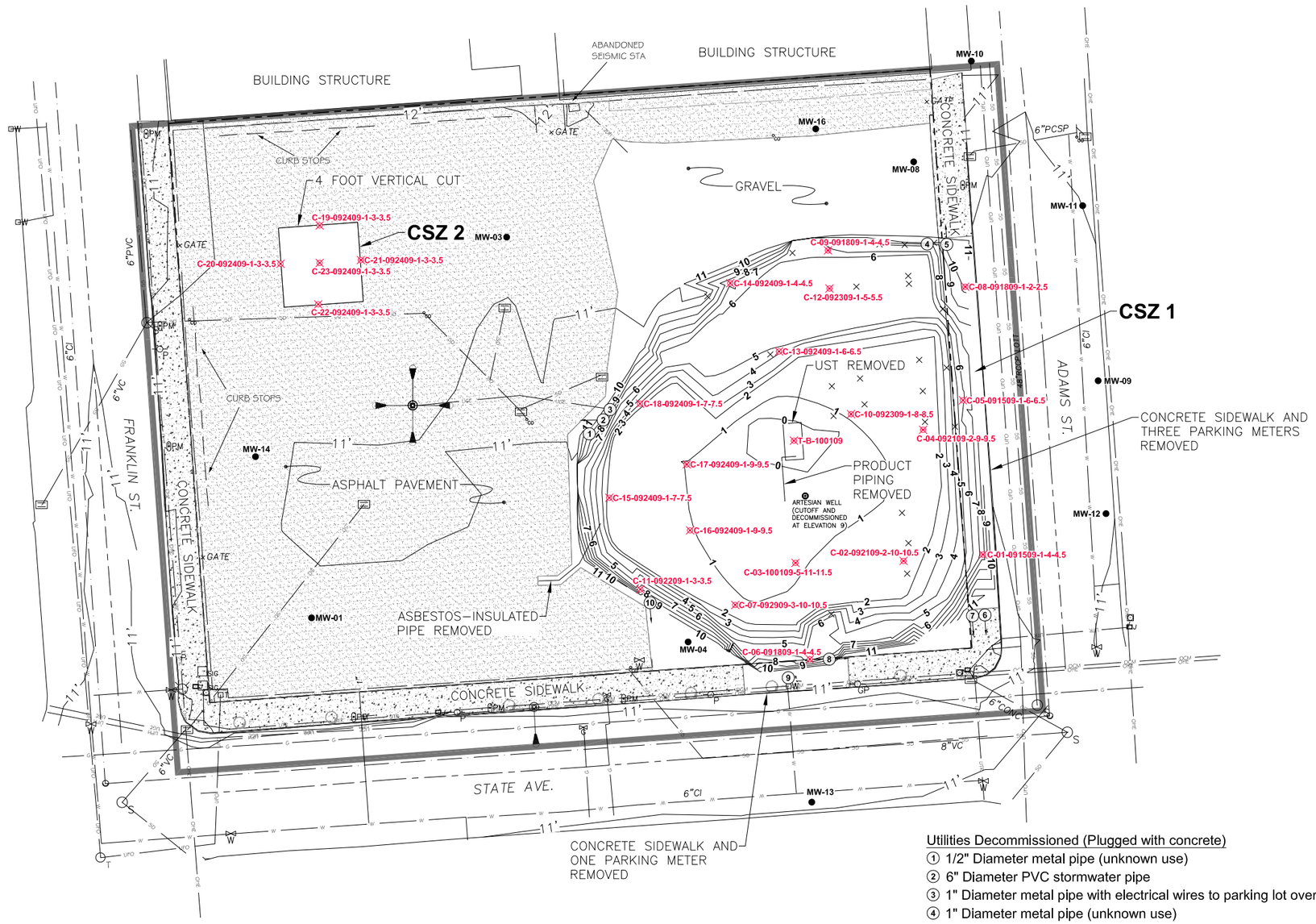
# Vicinity Map

318 State Avenue NE
Olympia, Washington

GeoEngineers

**Figure 1**

Office: TAC Path: \P:\0\0415049\GIS\MXDs\0415049 05_Figure1_VicinityMap.mxd KKS Map Revised: November 5, 2009




## Legend

- C-01-091509-1-4-4.5 — Remedial Excavation Confirmation Soil Sample Location
- Wood Piling
- MW-01 — Monitoring Well Location and Designation
- 11' — Topographic Elevation Contour
- Water Meter
- Water Valve
- Existing Decommissioned Artesian Well Casing
- Sanitary Sewer Manhole
- Sanitary Sewer Clean Out
- Storm Drain Manhole
- Catch Basin
- Tree
- Overhead Light
- Parking Meter
- J-Box
- Power Pole
- Banner Pole
- Fire Hydrant
- Underground Traffic Control
- Overhead Communications
- Overhead Electrical
- Waterline
- Sanitary Sewer
- Underground Fiber Optic
- Storm Line
- Underground Phone
- Underground Electrical
- Underground Gas
- Chainlink Fence
- Survey Monument and Monument Line
- Street Striping Line
- Property Line
- Limits of Work
- Existing Concrete Sidewalk
- Existing Asphalt Pavement

SITE PLAN NOTE:
1. LIMITS OF WORK SHOWN ARE APPROXIMATE.

Utilities Decommissioned (Plugged with concrete)
1. 1/2" Diameter metal pipe (unknown use)
2. 6" Diameter PVC stormwater pipe
3. 1" Diameter metal pipe with electrical wires to parking lot overhead light
4. 1" Diameter metal pipe (unknown use)
5. 4 1/2" Diameter concrete sewer pipe
6. 1/2" Diameter metal pipe (unknown use)
7. 2" Diameter PVC fiber optic conduit
8. 4 1/2" Diameter concrete sewer pipe
9. 2" Diameter metal water pipe
10. 2" Diameter metal pipe (unknown use)

N W E S

0 20 40
Scale in Feet

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. Horizontal Datum = NAD83 Washington State Planes, South Zone, US Foot. Vertical Datum = NGVD 29 MSL.

Reference: Drawing provided by City of Olympia.

| Revision | Description | Date | By | Chk | Rev |
|---|---|---|---|---|---|
| | | | | | |

DESIGNED: GRL
DRAWN: SCY
CHECKED: NER
DATE: 11/20/09
SCALE: AS NOTED

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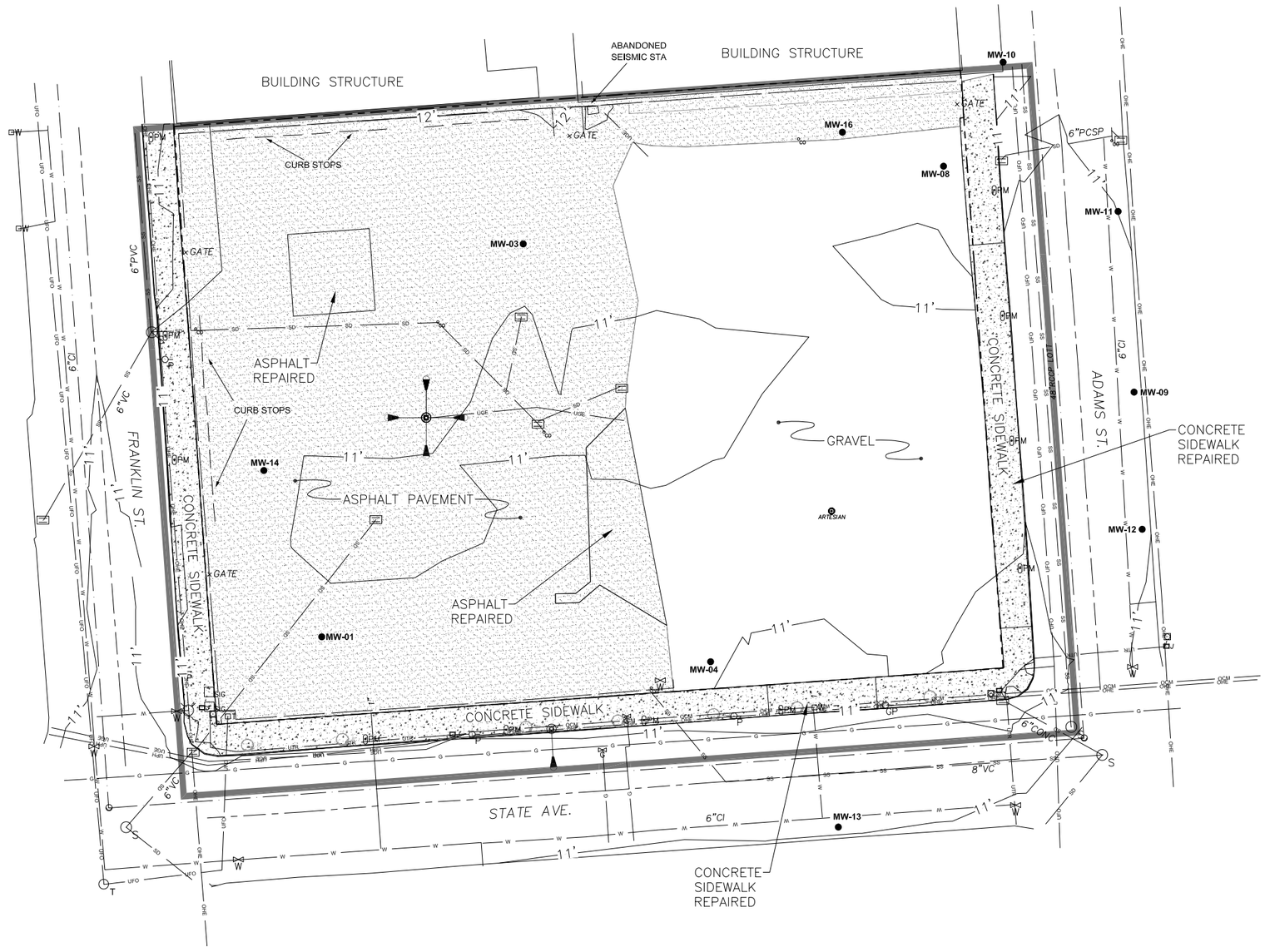
318 State Avenue NE
Olympia, Washington

Limits of Remedial Excavations and Confirmation Sample Locations

Project No. 0415-049-05
Drawing No. Figure 2




SITE PLAN NOTE:
1. LIMITS OF WORK SHOWN ARE APPROXIMATE.

## Legend

- MW-01 ● Monitoring Well Location and Designation
- 11' Topographic Elevation Contour
- W Water Meter
- W Water Valve
- ARTESIAN Existing Decommissioned Artesian Well Casing
- S Sanitary Sewer Manhole
- CO Sanitary Sewer Clean Out
- D Storm Drain Manhole
- Catch Basin
- Tree
- Overhead Light
- PM Parking Meter
- J J-Box
- P Power Pole
- GP Banner Pole
- Fire Hydrant
- UTR Underground Traffic Control
- OCM Overhead Communications
- OHE Overhead Electrical
- W Waterline
- SS Sanitary Sewer
- UFO Underground Fiber Optic
- SD Storm Line
- UPH Underground Phone
- UGE Underground Electrical
- G Underground Gas
- Chainlink Fence
- Survey Monument and Monument Line
- Street Striping Line
- Property Line
- Limits of Work
- Existing Concrete Sidewalk
- Existing Asphalt Pavement

N W E S

0 20 40
Scale in Feet

Notes:
1. The locations of all features shown are approximate.
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3. Horizontal Datum = NAD83 Washington State Planes, South Zone, US Foot. Vertical Datum = NGVD 29 MSL.

Reference: Drawing provided by City of Olympia.

| Revision | Description | Date | By | Chk | Rev |
|---|---|---|---|---|---|
| | | | | | |

DESIGNED: GRL
DRAWN: SCY
CHECKED: NER
DATE: 11/20/09
SCALE: AS NOTED

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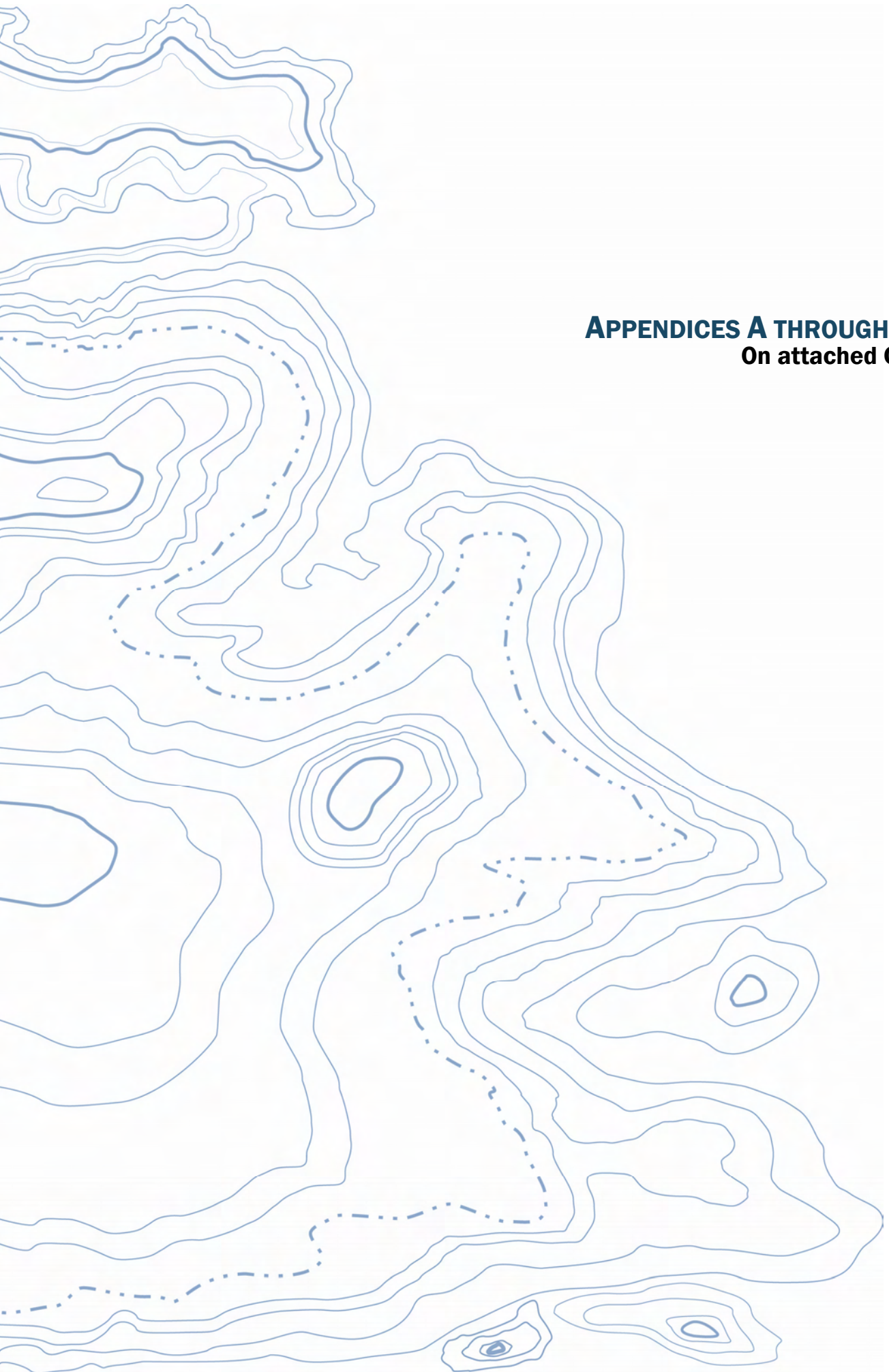
Olympia, Washington

Restored Property Plan

Project No. 0415-049-05
Drawing No. Figure 3

APPENDICES

GeoEngineers



# APPENDICES A THROUGH K

**On attached CD**

# APPENDIX L
## Report Limitations and Guidelines for Use

# APPENDIX L
# REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

## Environmental Services are Performed for Specific Purposes, Persons And Projects

GeoEngineers has performed this Remedial Action Construction report in general accordance with the scope and limitations of our proposal. This report has been prepared for use by the City of Olympia. This report may be made available to others for review. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and project site. No one except the City of Olympia should rely on this environmental report without first conferring with GeoEngineers. This report should not be applied for any purpose or project except the one originally contemplated.

## This Environmental Report s Based on a Unique Set of Project-Specific Factors

This report has been prepared for the City of Olympia. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made to the project or site after the date of this report, GeoEngineers should be retained to review our interpretations and recommendations and to provide written modifications or confirmation, as appropriate.

## Reliance Conditions For Third Parties

If a lending agency or other parties intend to place legal reliance on the product of our services, we require that those parties indicate in writing their acknowledgement that the scope of services provided, and the general conditions under which the services were rendered including the limitation of professional liability, are understood and accepted by them. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions.

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[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

## Historical Information Provided by Others

GeoEngineers makes no warranties or guarantees regarding the accuracy or completeness of information provided or compiled by others. The information presented in this report is based on the above-described research and a recent site visit. GeoEngineers has relied upon information provided by others in our description of historical conditions and in our review of regulatory databases and files. The available data do not provide definitive information with regard to all past uses, operations or incidents at the site or adjacent properties.

## Environmental Regulations are Always Evolving

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substance, change or if more stringent environmental standards are developed in the future.

## Site Conditions Can Change

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time (for example, a Phase I ESA report is typically applicable for 180 days), by events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, slope instability or ground water fluctuations. Always contact GeoEngineers before applying this report so that GeoEngineers may evaluate reliability of the report to changed conditions.

## Topsoil

For the purposes of this report, we consider topsoil to consist of generally fine-grained soil with an appreciable amount of organic matter based on visual examination, and to be unsuitable for direct support of the proposed improvements. However, the organic content and other mineralogical and gradational characteristics used to evaluate the suitability of soil for use in landscaping and agricultural purposes was not determined, nor considered in our analyses. Therefore, the information and recommendations in this report, and our logs and descriptions should not be used as a basis for estimating the volume of topsoil available for such purposes.

## Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

## Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or

recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

## Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention, or assessment of the presence of Biological Pollutants in or around any structure. Accordingly, this report includes no interpretations, recommendations, findings, or conclusions for the purpose of detecting, preventing, assessing, or abating Biological Pollutants. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.