FINAL
INTERIM ACTION WORK PLAN
Former Chevron Service Station No. 90129

4700 Brooklyn Avenue NE, Seattle, WA

Prepared for:
FH Brooklyn LLC & Chevron Environmental Management Company

Project No. 160092 • March 8, 2018 Final

Aspect CONSULTING

earth + water

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Aspect Consulting, LLC

Adam Griffin, PE
Senior Remediation Engineer
agriffin@aspectconsulting.com

Dave Heffner, PE
Associate Remediation Engineer
dheffner@aspectconsulting.com

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1 Introduction

Aspect Consulting, LLC (Aspect) presents this Interim Action Work Plan (Work Plan) for the former Chevron Service Station No. 90129 located at 4700 Brooklyn Avenue NE in Seattle, Washington (Site; Figure 1). The purpose of the interim action is to remove soils and groundwater impacted by petroleum hydrocarbons allowing for redevelopment of the property. These activities have been designed and will be conducted in full accordance with the Model Toxics Control Act (MTCA) implementing regulation found in Washington Administrative Code (WAC) 173-340 which "establishes administrative processes and standards to identify, investigate, and clean up facilities where hazardous substances have come to be located."

FH Brooklyn, LLC (FH Brooklyn) and Chevron Environmental Management Company (CEMC) are signatories to an Agreed Order (No. DE 13815, effective January 11, 2017) with the Washington State Department of Ecology (Ecology). The Agreed Order requires FH Brooklyn and CEMC to complete a remedial investigation (RI) and Feasibility Study (FS), and to complete a draft cleanup action plan (DCAP) for the Site. Under WAC-173-340-430, Ecology also permits implementation of interim actions when warranted. The Agreed Order requires FH Brooklyn and CEMC to complete a contaminated soil removal interim action.

Per the Agreed Order, the interim action is subject to:

- A draft work plan that outlines the proposed scope of work and schedule.
- Public review and comment.
- Ecology approval of the final work plan.

An Agency Review Draft Interim Action Work Plan was submitted to Ecology on August 18, 2017, and subsequently, a Public Review Draft Interim Action Work Plan was submitted to Ecology on October 16, 2017, addressing Ecology's comments. The public comment period for the IAWP and State Environmental Policy Act (SEPA) Determination of Non-Significance (DNS) was held from December 22, 2017, to January 22, 2018. Aspect formally requested a 15-day extension of the AO schedule for the Final IAWP in a February 21, 2018, letter (Aspect, 2018).

The first RI activities under the Agreed Order were completed in November 2016 by Aspect and documented in the On-Property Remedial Investigation Data Report dated January 17, 2017 (Aspect, 2017a). These RI activities were completed in accordance with the Ecology-approved Preliminary Draft Remedial Investigation Work Plan (Aspect, 2016) and consisted of investigations on the property necessary to design the interim action, specifically to establish the extent of petroleum-contaminated soil that exceeds MTCA Method A cleanup levels (CULs). The results are a design basis in this Work Plan and will also be incorporated into the Agreed Order-deliverable Remedial Investigation Report. For the purpose of this Work Plan, the Property refers to the 4700 Brooklyn

Avenue NE tax parcel, and the Site is defined as wherever contamination has come to be located from releases on the Property.

A Final Remedial Investigation Work Plan (RIWP) was submitted on May 26, 2017, by Leidos on behalf of CEMC and in accordance with the requirements of the Agreed Order (Leidos, 2017). Ecology approved the Final RIWP on July 24, 2017. The objectives of this investigation are to address data gaps regarding the nature and extent of petroleum contamination in soil, groundwater, and soil vapor at the Site, and to comply with the requirements of Agreed Order No. DE 13815. The investigations proposed in the Final RIWP are off-Property and the results will be used to determine the full extent of the Site, as defined by WAC 173-340-200, and reported in the RI Report.

1.1 Work Plan Organization

This Work Plan is organized as follows:

- Section 2—Site Description and Subsurface Conditions
- Section 3—Interim Action Summary
- Section 4—Interim Action Elements
- Section 5—Compliance Monitoring
- Section 6—Permits and Approvals
- Section 7—Reporting
- Section 8—Schedule
- Section 9—References
- Section 10—Limitations

2 Site Description and Subsurface Conditions

2.1 Site Location and Description

The Site is located at 4700 Brooklyn Ave NE in the University District neighborhood in Seattle, Washington, and consists of King County Tax Parcel No. 8816400985 totaling approximately 0.38 acre (Figure 2). The Property and surrounding neighborhood is zoned for commercial/mixed use (Seattle Mixed U-District [SM-U 75-240]). Site topography is relatively flat, with ground surface ranging in elevation of approximately 214 to 217 feet above mean sea level (NAVD 88 vertical datum).

The Property is currently vacant. The former convenience store and fuel canopy remain at the Property pending demolition during the interim action. Gasoline service station operations began at the Property in the 1910s and ceased in November 2016. The most recent service station configuration (convenience store, pump islands, and fuel underground storage tanks [USTs]) is shown on Figure 2.

2.2 Site Geology and Hydrology

Fill is present in areas at the Property to a maximum depth of 15 feet below ground surface (bgs). Fill is primarily associated with station rebuilds and backfill of former UST removals. Native soils at the Property consist of fine to medium sand with silt and occasional gravel, grading from loose to dense from approximately 15 to between 25 to 30 feet bgs, where fill exists. The native soil (fine to medium sand) occurs at ground surface where no fill exists, generally outside the footprint of former USTs. Underlying the fine to medium sand unit, is hard gray silt that occurs at depths of 25 to 33 feet bgs and is greater than 2 feet thick at all boring locations. A north-south and east-west cross section are presented on Figures 3 and 4, respectively, showing the Site geology, UST features, and groundwater elevations. The boring and monitoring well logs from Site investigations (including the November 2016 on-Property RI activities) are provided in Appendix A.

The depth to groundwater observed at monitoring wells on the Property varies seasonally and typically ranges in depth from 15 to 18 feet bgs or approximately 198 to 202 feet above mean sea level. Abnormally shallow groundwater of 11 feet bgs was observed from July 2009 to June 2010 at multiple wells. The highest groundwater elevations are observed in November to May, during periods of high precipitation. Also, depths to groundwater of 21 to 26 feet bgs have infrequently been observed at the end of summer and early fall; the driest part of the year. Variability in groundwater levels corresponds to high and low precipitation periods, and the backfill in the former and current UST pits.

Historical groundwater depth-to-water measurements were reported using an arbitrary Site datum (SAIC, 2013); the existing Site monitoring wells were surveyed (vertical datum NAVD 88) in November 2016 and groundwater elevations reported in the On-Property Remedial Investigation Data Report (Aspect, 2017a).

Groundwater flow is predominantly to the southeast, with a more easterly direction of flow in the southern portion and southerly in the northern portion (Aspect, 2016). A southeasterly direction of groundwater flow is consistent with data from another gasoline-release site (the former 76 Station at 4557 Brooklyn Ave NE) located southwest of the Site. Horizontal hydraulic gradients at the Site range from 0.01 and 0.02 feet per foot (ft/ft).

2.3 Summary of Previous Cleanup Actions

2.3.1 UST Replacement and Soil Cleanup Action (1990)

Approximately 900 cubic yards of soil impacted with total petroleum hydrocarbons (TPH) were excavated and disposed of at a permitted landfill in the course of a service station renovation project in early 1990. The excavation area is shown on Figure 2. Three old USTs were removed from the northern portion of the excavation. In the course of digging the pit for three new 12,000-gallon USTs, a 1,000-gallon fuel UST was encountered in the southeast corner of the pit. That UST, which had been previously filled with pea gravel, was left in place when the new USTs were installed. Its approximate location is shown on Figure 2 along with that of the replacement USTs.

2.3.2 LNAPL Bailing

Fourteen groundwater monitoring wells (MW-01 through MW-14) were installed at the Site in January 1990, and light nonaqueous phase liquid (LNAPL) was observed floating on the groundwater in wells MW-04 and MW-12. LNAPL was intermittently removed from these two wells using a bailer. Approximately 32 gallons of LNAPL was reportedly removed through August 1990.

An LNAPL sample collected from MW-04 in early 1990 was submitted for laboratory analysis. It was quantified as weathered gasoline, with an API gravity of 52.5 (specific gravity of 0.769 at 60 degrees Celsius).

2.3.3 Soil Vapor Extraction

A soil vapor extraction (SVE) system began operating on the Property in May 1990. SVE wells included 10 of the 14 monitoring wells installed in January 1990 (all except MW-2, MW-5, MW-8, and MW-10) plus recovery well (R-01), installed in April 1990. Wells MW-4 and MW-12 also included air sparging via a 0.75-inch-diameter pipe installed inside the well casing to promote volatilization of LNAPL. Extracted soil vapors were treated in a thermal oxidizer.

Between May 1990 and June 1995, the SVE system removed an estimated 2,900 gallons of LNAPL. It is not known when the SVE system was shut down.

2.3.4 UST Decommissioning (2017)

The three USTs were decommissioned and permanently closed in February 2017 in accordance with Ecology UST regulations (WAC 173-360). Documentation of UST decommissioning (including UST Site Assessment Report and Checklist) activities was provided to Ecology's UST Section in a technical memorandum dated March 3, 2017 (Aspect, 2017b).

Existing Site monitoring wells within the footprint of UST infrastructure were abandoned on February 3, 2017, prior to UST decommissioning and in accordance with Ecology regulations (WAC 173-160-140). Monitoring wells MW- 1, MW-2, MW-4, MW-5, MW-8, MW-9, and recovery well (R-01) were abandoned (Figure 2).

2.4 LNAPL Occurrence

In addition to MW-04 and MW-12, LNAPL has been observed on at least one occasion in wells MW-03, MW-09, MW-10, MW-11, MW-13, and R-01 (refer to Figure 7). During the November 2016 event, LNAPL thicknesses of 0.98 foot and 0.11 foot were measured in wells MW-10 and MW-13, respectively, and LNAPL sheens (less than 0.01-foot thickness) were observed in wells MW-09, MW-11, and MW-12 (Figure 7).

2.5 Soil Investigations and Proposed Cleanup Levels

Between January/February 1990 and November 2016, borings were advanced on five occasions to investigate the lateral and vertical extent of petroleum-contaminated soil located on the Property. Soil samples collected from the borings were analyzed for the following petroleum hydrocarbon constituents:

- Total petroleum hydrocarbon (TPH) fractions: gasoline-range organics (GRO); diesel-range organics (DRO); and oil-range organics (ORO)
- The gasoline constituents: benzene, toluene, ethylbenzene, and total xylenes (BTEX)

Soil sampling results for the above analytes are summarized in Table 1. Selected soil samples were also analyzed for the following:

- Other volatile organic compounds (VOCs)
- Polychlorinated biphenyls (PCBs)
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs)
- The metals cadmium, chromium, lead, nickel, and zinc

Soil sampling results for these analytes are summarized in Table 2.

Tables 1 and 2 include the proposed soil cleanup levels for the Property and this interim action. Results that exceed those levels are highlighted in Tables 1 and 2. For all analytes that have Method A soil cleanup levels (for unrestricted land use) established under MTCA, those are the cleanup levels proposed for the interim action for the Property. MTCA Method B soil cleanup levels are proposed for analytes that do not have Method A cleanup levels; refer to the table footnotes.

As shown in Table 1, none of the soil samples have detections of DRO or ORO exceeding the corresponding cleanup levels. Only two samples, MW-3-18 and MW-4-15.5, have exceedances for toluene, ethylbenzene, and total xylenes. However, the magnitude of those exceedances is small compared to the magnitude of the GRO and benzene exceedances. Therefore, GRO and benzene are used for determining interim action excavation extent (which includes MW-3-18 and MW-4-15.5 sample locations with exceedances of toluene, ethylbenzene, and total xylenes). GRO and benzene concentrations detected in soil samples are depicted on Figure 6.

There are only two soil samples with concentrations exceeding cleanup levels for the analytes listed in Table 2:

- The naphthalene concentration detected in AB-6-17 (6.4 milligrams per kilogram [mg/kg]) is 1.3 times the corresponding cleanup level.
- The estimated total cPAH TEQ concentration detected in AB-7-6 (0.15 mg/kg) is 1.5 times the corresponding cleanup level.

Sample AB-6-17 has a much higher cleanup level exceedance for GRO (i.e., more than 30 times the GRO cleanup level).

2.6 Groundwater Quality and Proposed Cleanup Levels

Wells MW-01 through MW-14 were installed in early 1990, and wells MW-15 and MW-16 in early 2001 (monitoring well logs are provided in Appendix A.) These wells were sampled periodically from the time they were installed up until 2014. Groundwater samples were submitted for laboratory analysis of GRO, DRO, ORO, and BTEX. Starting

in 2001, selected samples were also analyzed for the gasoline additive methyl tertiary-butyl ether (MTBE). If free product was present in the well at the time of monitoring, a groundwater sample was typically not collected.

Groundwater monitoring wells were sampled on November 21 and 22, 2016, for a broader range of constituents as described in the Preliminary Draft Remedial Investigation Work Plan (Aspect, 2016). Groundwater sampling results are summarized in Table 3 and on Figure 7. Figure 7 lists results for GRO, DRO, and benzene, since those are the analytes that exceeded proposed groundwater cleanup levels by the widest margins. Well MW-1 was not sampled due to an obstruction in the well. Well MW-8 was dry. Well MW-10 was not sampled due to the presence of measurable LNAPL. A sample was collected from below the LNAPL layer at MW-13 for VOC analysis to provide chlorinated VOC results.

The proposed groundwater cleanup levels for the Property for this interim action are listed in Table 3 (and on Figure 7 for GRO, DRO, and benzene). Results that exceed those levels are highlighted.

3 Interim Action Summary

The petroleum-contaminated soil removal interim action will allow for property redevelopment. Shoring will be installed to enable removal of contaminated soils above the proposed cleanup levels within the Property. For the purposes of this Work Plan, the average total excavation depth is assumed to be 24 feet bgs. The excavation may extend deeper at select locations where exceedances of proposed soil cleanup levels were identified, and where performance monitoring indicates exceedances. Excavated soils will be tested and, based on test results, will be screened for transport and disposal off-Property. Areas that are excavated below the final development depth will be backfilled with excavated soil suitable for reuse or clean, imported fill, and compacted for development requirements.

3.1 Deep Soil Cleanup Level Exceedances

The nine explorations advanced during the November 2016 Site investigation (AB-01 through AB-09) are the only Site explorations for which soil samples at or below 24-foot depth were submitted for laboratory analysis. As shown on Figure 6, soil cleanup level exceedances were detected at or below 24-foot depth in 4 explorations:

- AB-02 – Benzene exceedance at 24-foot depth
- AB-06 – Benzene exceedance at 24-foot depth
- AB-07 – Benzene exceedance at 33-foot depth
- AB-09 – Benzene exceedance at 27-foot depth

While AB-06 and AB-07 were drilled in an area of known historical release and LNAPL presence, AB-02 and AB-09 are situated along the eastern property boundary. Benzene

was not detected in any of the soil samples collected above 24-foot depth at AB-02 or above 27-foot depth at AB-09.

3.2 Estimated Volume of Soil to be Removed

Targeted soil excavation below the assumed 24-foot depth will be necessary to achieve the interim action goal of removing all soil cleanup level exceedances on the Property. This targeted excavation will occur at boring locations AB-07 and AB-09 to depths of at least 33 and 27 feet bgs, respectively (Figure 6).

Based on the above evaluation, exceedances of proposed soil cleanup levels extend down to the top of the silt layer in some areas. Figure 5 shows depths to the silt layer at all explorations that encountered that layer, based on soil classification during drilling. Those depths range from 25 feet at MW-16 to 33 feet at AB-01. Assuming an average total excavation depth of 24 feet, an estimated 26,000 tons of soil will be excavated during the interim action. Based on the available soil characterization data, an estimated 6,300 tons of this soil will be categorized as contaminated and an estimated 14,800 tons will be clean. The balance of soil will be Category 2 or "impacted," an estimated 4,900 tons. These estimated soil quantities are used for planning purposes; actual soil quantities will be determined during construction, based on methods described in Section 4.4.2.

The known clean and contaminated soil, based on Site characterization results (Figure 6), will be direct-loaded (to the extent possible) and transported to the appropriate, permitted disposal facility. All other soils will be managed as described in Section 4.4 and in accordance with Ecology's Guidance for Remediation of Petroleum Contaminated Sites. Additional construction detail will be included in the Environmental Construction Management Plan (ECMP) under separate cover.

4 Interim Action Elements

This section describes specific work elements of the interim action.

4.1 Construction and Safety Requirements

A traffic control plan will be implemented to minimize transportation impacts during the interim action. The traffic control plan will be prepared by the construction contractor and submitted to the City of Seattle for review and approval.

The following is a summary of construction and safety requirements to be employed at the Site when contamination is encountered during redevelopment construction:

- All persons performing Site activities where they may contact hazardous materials, including petroleum hydrocarbon-impacted soil or groundwater, must have completed Hazardous Waste Operations and Emergency Response (HAZWOPER) training in accordance with the Occupational Safety and Health Administration Part 1910.120 of Title 29 of the Code of Federal Regulations, and be in possession of a current HAZWOPER certification card.

- All work must be performed in accordance with the contractor's site-specific health and safety plan (HASP). The HASP includes guidelines to reduce the potential for injury, as well as incident preparedness and response procedures, emergency response and evacuation procedures, local and project emergency contact information, appropriate precautions for potential airborne contaminants, and Site hazards, and expected characteristics of generated waste. The general contractor will operate under its own HASP, as will any subcontractor performing site activities where hazardous materials may be contacted. The Aspect HASP establishes procedures and practices to protect employees of Aspect from potential hazards associated with interim action activities (Appendix D).
- A safety meeting will be conducted prior to the start of each workday to inform workers of changing work conditions, and to reinforce key safety requirements.

All work must be conducted in a manner consistent with federal, state, and local construction and health and safety standards applicable to the Site and to the work being performed. All companies are responsible for the health and safety of their own workers.

4.2 Monitoring Well Decommissioning

As discussed in Section 2.3.4, seven wells were abandoned in February 2017 prior to UST decommissioning. Before excavation commences, the remaining on-Property monitoring wells will be decommissioned in accordance with WAC 173-160-460. Additional monitoring wells are to be installed outside the footprint of the soil excavation and off-Property as described in the Final RIWP (Leidos, 2017) and will be used to monitor dewatering progress as discussed in Section 4.5.

4.3 UST Removal

As noted in Section 2.1 and shown on the attached figures, the three fuel USTs in the southwest portion of the property were removed in February 2017. The remaining 1,000-gallon UST, previously abandoned in place, will be removed during the interim action in accordance with Ecology's UST regulations (WAC 173-360-200 and WAC 173-360-385). If any additional USTs are encountered during soil excavation activities, they will be removed in accordance with Ecology's UST regulations.

4.4 Soil Monitoring and Management

4.4.1 Identification of Contaminated Soils

An Aspect field representative will be on-Site full-time to monitor excavation activities for evidence of unanticipated contamination. Criteria to be used include, but are not limited to:

- Petroleum hydrocarbon staining, sheen, or chemical color hues in soil or standing water.
- The presence of separate-phase petroleum hydrocarbon product or other chemicals.
- The presence of utility pipelines with sludge or trapped liquid indicating petroleum hydrocarbon or chemical discharge sludge.

- The presence of buried pipes, conduits, or tanks.
- Vapors causing eye irritation or nose tingling or burning.
- The presence of gasoline- or oil-like odors.

The remainder of Section 4.4 discusses monitoring and management protocols for soils contaminated with petroleum hydrocarbons, since those are the contaminants known to be present in Site soils. Soils impacted with petroleum hydrocarbons will be managed in accordance with Ecology's *Guidance for Remediation of Petroleum Contaminated Sites* (Ecology, 2016a). If other soil contaminants or other conditions are encountered, an appropriate environmental response will be developed on a case-by-case basis.

4.4.2 Field Screening, Segregation, and Stockpiling

Based on the results of the November 2016 investigation (Figure 6), the excavated soils will be handled as:

- Clean (Category 1) – Petroleum hydrocarbon contaminant concentrations are not detected and there is no odor, staining, or visible sheen. Generally, soils less than 13 feet bgs are expected to be clean based on the nondetect analytical results.
- Impacted (Category 2) – Petroleum hydrocarbon contaminants are detected below MTCA Method A cleanup levels.
- Contaminated (Categories 3 and 4) – Petroleum hydrocarbon contaminants are detected above MTCA Method A cleanup levels. The soils between depths of 13 and 24 feet bgs are where the most contamination is observed as expected (smear zone associated with LNAPL and groundwater table fluctuations).

When evidence of petroleum hydrocarbon-contaminated soil is encountered (and no analytical data available), an Aspect field representative will use visual and PID field screening techniques to assess the extent of contamination, and instruct the contractor in segregation of impacted and contaminated soils. The segregation of soils will follow Ecology guidance (Ecology, 2016a).

Excavated soils that are known to be contaminated based on analytical data presented herein (or field-determined) may be direct-loaded and hauled to the selected off-Site treatment/disposal facility. It may be necessary to temporarily stockpile soils for final categorization and subsequent handling based on laboratory analytical results. All temporary stockpiles will be below grade (within the excavation); however, any stockpiling will include the following requirements:

- All stockpiles will be lined with plastic sheeting of 10-mil minimum thickness, with adjacent sheeting sections overlapping a minimum of 3 feet.
- The perimeter of stockpiles will be surrounded by a berm to prevent run-on and/or runoff of precipitation.
- All stockpiles will be covered with plastic sheeting of 6-mil minimum thickness when not in use, and the cover will be anchored to prevent it from being disturbed by wind.

4.4.3 Soil Sampling and Analysis

In addition to field screening, Aspect will collect soil samples for laboratory analysis. Soil samples may be collected for the following reasons:

- To document contaminant concentrations in soils that are excavated.
- To determine disposal location of stockpiled soils.
- To determine whether contaminant concentrations in soils that are left in place comply with cleanup levels. Performance monitoring is described in Section 5.2.

Soil sampling and analysis will be conducted in accordance with the project-specific Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP), provided as Appendix B. Environmental data validation will be performed using Ecology's TCP Data Validation and Sampling Analysis Plan (SAP)/Quality Assurance Project Plan (QAAP) for data validation for all Formal Cleanup Sites (Ecology, 2016b). Data validation will be performed at Quality Assurance Level 2 (EPA2) with Third-Party Data Validation.

Soil samples for laboratory analysis will be collected using U.S. Environmental Protection Agency (EPA) Method 5035 sampling kits. Discrete grab samples will be submitted for analysis so that contaminant variability can be evaluated. Field screening techniques will generally be used to help ensure that a "worst-case" sample is collected for analysis. If a backhoe is used to collect the sample (e.g., when it is unsafe for the sampler to enter the excavation), care will be taken to ensure the backhoe bucket is clean of other soil before sampling. "Fresh" soils will be exposed just prior to sampling (to limit contaminant loss to volatilization), and the soil sample will be collected from the middle of the bucket, from soils that have not contacted the sides of the bucket. If sampling personnel are able to safely access the sampling location, a hand auger or shovel will be used to expose "fresh" soils just prior to sampling.

All laboratory analyses will include the following:

- GRO by Northwest Method NWTPH-Gx
- DRO and ORO by Northwest Method NWTPH-Dx
- BTEX by EPA Method 8021B

Additionally, select samples will be analyzed for the following from soils in the vicinity of AB-6 and AB-7:

- Naphthalene by EPA Method 8260
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by EPA Method 8270D

The overall scope of soil sampling and analysis activities will depend on field screening results, stockpile soil volumes, and treatment/disposal facility profiling requirements. The planned soil analytical is described below in Section 5.2 – Performance Monitoring.

4.4.4 Soil Profiling and Off-Site Treatment/Disposal/Reuse

All excavated soils with evidence of potential contamination will be characterized, primarily by laboratory analysis of representative samples, to determine off-Site treatment/disposal/reuse options. Contaminated and Impacted soils will be disposed of at

an appropriate, permitted disposal facility. Each landfill and treatment/disposal facility has its own waste acceptance criteria, and soil must be "profiled" to determine whether those criteria are met. The selected disposal facilities will be identified in the CMP. All soil segregation, profiling, and disposal will be conducted in accordance with Ecology guidance (Ecology, 2016a).

Aspect, in cooperation with the contractor, will be responsible for:

- Submitting representative soil samples for laboratory analysis and evaluating results to determine cost-effective treatment/disposal/reuse options.
- Identifying candidate landfills and treatment/disposal facilities, and interfacing with facility representatives to complete the soil profiling/acceptance process.

Contaminated soils shall be "preapproved" for acceptance at the selected treatment/disposal facility before soil excavation begins. Laboratory results from soil sampling conducted during the November 2016 Site investigation may be accepted by treatment/disposal facilities for this purpose. These actions will be completed prior to construction and the outcome presented in the CMP. Additionally, Aspect will be responsible for:

- Providing soil loadout assistance to ensure that all paperwork (waste manifests, bills of lading, soil tickets) is in place, monitor soil loadout, and track final soil disposition.

4.5 Dewatering and Water Management

Dewatering is necessary to advance the soil excavation to the target depths. Water generated during the interim action will consist of groundwater from the perimeter well-point system and sump dewatering,[1]as well as any stormwater entering the excavation. A subset of the monitoring wells proposed in the Final RIWP will be monitored to track dewatering progress and detect any changes in water quality (Leidos, 2017). Four of the proposed monitoring wells will be gauged daily during dewatering activities to monitor the propagation of drawdown outside of the excavation. Additionally, these four wells will be sampled weekly during initial dewatering activities and analyzed for GRO, DRO, ORO, and VOCs (EPA Method 8260). Once steady-state conditions are established, the sampling frequency will be reduced to monthly. The monitoring results and any changes to the monitoring will be communicated to Ecology at a minimum frequency of monthly.

All generated water will be pumped to tanks, pretreated on-Site, and discharged to surface water via storm sewer under a Construction Stormwater General Permit (CSWGP) and accompanying Administrative Order Docket No. 15707 (Appendix C) issued through Ecology Water Quality Section. The CSWGP Permit Number WAR306191 will be issued on or around March 19, 2018, after the public notice period closes. The Administrative Order establishes Indicator Levels for the project based on known Site contaminants for compliance with Water Quality Standards for the Surface Water of the State of Washington. The Administrative Order defines the conditions and

[1] A dewatering plan developed by The Riley Group, Inc. (RGI, 2016) includes well points installed at 15-foot spacing around the property perimeter.

actions necessary to comply with CSWGP WAR306191, including the installation of a temporary treatment system to treat water to be discharged to below Indicator Levels (Appendix C).

The on-Site pretreatment system will include an oil/water separator to remove any LNAPL and granular activated carbon (if required) to remove dissolved-phase contaminants to achieve the Administrative Order Indicator Levels. The discharge will be monitored in accordance with CSWGP WAR306191 and Administrative Order No. 15707. If unanticipated liquid-phase contamination is encountered that is outside the scope of the discharge authorization, Aspect will assist the contractor in evaluating treatment/disposal options that comply with Ecology and local requirements.

5 Compliance Monitoring

In accordance with WAC 173-340-410, compliance monitoring includes the following elements:

- **Protection monitoring** confirms that human health and the environment are adequately protected during the cleanup action.
- **Performance monitoring** confirms that the cleanup action has attained cleanup levels and/or other performance standards, such as permit requirements.
- **Confirmation monitoring** confirms the long-term effectiveness of the cleanup action once cleanup levels and/or other performance standards have been attained.

For this interim action, protection and performance monitoring will be conducted, as outlined below. Confirmation monitoring will be conducted as part of the final cleanup action for the Site, not as part of this interim action.

5.1 Protection Monitoring

Protection monitoring will be conducted during the interim action by requiring that on-Site workers conducting the soil handling and management are appropriately trained in hazardous waste operations and follow applicable HASPs prepared specifically for this interim action project. Aspect's HASP for the interim action is provided as Attachment D. The general contractor will operate under its own HASP, as will any subcontractor performing Site activities where hazardous materials may be contacted.

Protection monitoring includes real-time air monitoring within the worker breathing zone and at the downgradient property boundary. Air monitoring to be performed by Aspect is discussed in Aspect's HASP. Air monitoring data will be made available to on-Site workers and Ecology. Nothing in this Work Plan precludes contractors/consultants on-Site from choosing to conduct additional air monitoring.

5.2 Performance Monitoring

Performance monitoring will include laboratory analysis of both excavation sidewall and excavation bottom samples. The distance between samples will not exceed 20 feet, and closer sample spacing may be necessary. The samples will be submitted for laboratory analysis of parameters described in Section 4.3.3 and in accordance with the SAP/QAPP (Appendix B).

Once the assumed excavation depth of 24 feet bgs is reached, additional soil will be excavated at the four locations where soil cleanup level exceedances (for benzene) were detected at or below 24-foot depth (refer to Section 3.2 and Figure 6). Targeted excavations at these locations will extend to approximately 1 foot below the depths at which the benzene exceedances were detected (i.e., to 25 feet at AB-02 and AB-06; to 28 feet at AB-09; and to 34 feet at AB-07). Given the proximity to the Property perimeter of AB-02, AB-09, and AB-07, the temporary shoring-wall design (aligned on the Property boundary) was designed deeper at these locations to allow excavation of these contaminated soils. One bottom sample and four sidewall samples[2] from each targeted excavation[3] will be collected and submitted for BTEX analysis. If cleanup levels are exceeded in any sample, and if constructible, the localized excavation may be extended laterally an additional 2 feet in that direction and a second round samples will be submitted for BTEX analysis. The temporary shoring-wall design will not allow excavation greater than 1 foot deeper than the contaminated soil sample depth.

For performance monitoring of the assumed excavation bottom at 24 feet bgs, Aspect will establish a three-by-four sampling grid that divides the excavation bottom into twelve equal-area rectangles with dimensions of approximately 34 feet by 40 feet. Within each rectangular area, Aspect will field-screen the soil for evidence of contamination, and samples will be collected for laboratory analysis of GRO and BTEX at up to four locations where contamination is potentially indicated. If there are no indications of contamination within the entire rectangular area, a single soil sample will be collected for analysis from the approximate center of the rectangle. Where sampling results indicate cleanup level exceedances in the bottom samples, and if feasible, soil may be overexcavated and resampled, following the procedure outlined above, until all sampling results are at or below the proposed cleanup levels.

6 Permits and Other Requirements

The following permits and/or other requirements are required for this soil removal interim action:

[2] Sidewall samples will be collected at the four cardinal compass points, near the base of the excavation.

[3] If field-screening indicates the presence of contamination, Aspect may recommend that an excavation be further extended laterally prior to sample collection. However, this is unlikely, given the low concentrations detected in the November 2016 samples.

- Grading permit and SSPTD from the City of Seattle. The grading permit application, prepared by Caron Architecture, has been accepted by the City of Seattle Department of Construction and Inspections (Project No. 6499919).
- There are low levels of detections of chlorinated solvent degradation products (cis-1,2 Dichloroethene and vinyl chloride) in groundwater in the southwestern corner of the Property, where soil is contaminated with petroleum hydrocarbons. There is one detection of cis-1,2 Dichloroethene in soil at 29 feet bgs. The source of these detections is unknown and there is no known listed hazardous waste generator. The maximum soil excavation depth at that location of the cis-1,2 Dichlorethene detection in soil is 24 feet bgs. All Site COCs present in groundwater that could designate dangerous waste, also have Indicator Limits in the Administrative Order that, in all cases, are significantly less than any and all dangerous waste listing criteria.

  Aspect conducted thorough review of these data in light of Ecology's Dangerous Waste Regulations (WAC 173-303) and have self-designated the excavated soil, and treated water as nondangerous requiring no special handling, disposal, or discharge requirements. As there is not regulated dangerous waste being generated, the need for a Contained in Determination is precluded. These data were presented to and discussed with Ecology Dangerous Waste staff on January 17, 2018, who emphasized that designation is the responsibility of the generator, not Ecology, but verbally agreed with this basis of designation.
- All generated water will be pretreated and discharged to surface water via storm sewer under a Construction Stormwater General Permit (CSWGP) and accompanying Administrative Order Docket No. 15707 (Appendix C) issued through Ecology Water Quality Section. The CSWGP Permit Number WAR306191 will be issued on or around March 19, 2018, after the public notice period closes.
- Approvals from the treatment/disposal facilities receiving the excavated soils that are not suitable for reuse. Aspect is responsible for obtaining the treatment/disposal facility approvals and the selected facilities will be identified in the CMP.
- Compliance with SEPA, Chapter 43.21C RCW, will be achieved by conducting a SEPA review in accordance with applicable regulatory requirements, including WAC 197-11-268 (Ecology, 2014). A SEPA checklist was submitted to Ecology on April 5, 2017. Ecology issued a DNS on December 8, 2017, and held a public comment period for the DNS (and the Public Review Draft Interim Action Work Plan) from December 22, 2017 – January 22, 2017. Both the SEPA Checklist and Ecology's DNS are included in Appendix E.

7 Reporting

Upon completion of the interim action and in accordance with the Agreed Order, an Agency Review Draft Interim Action Report will be submitted within 60 days of receipt of all analytical data. The Report will describe the methods and outcome of the interim action, will be prepared and submitted to Ecology for review and comment. Ecology's comments will be incorporated into the Final Interim Action Report.

Pursuant to WAC 173-340-840(5), all sampling data shall be submitted to Ecology in both printed and electronic formats in accordance with Section VII (Work to be Performed), Ecology's Toxics Cleanup Program Policy 840 (Data Submittal Requirements), and/or any subsequent procedures specified by Ecology for data submittal.

8 Schedule

Aspect submitted a letter to Ecology on May 10, 2017, requesting an extension to the schedule for initiating the Interim Action. The requested extension to initiate by no later than March 15, 2018, was approved by Ecology on July 10, 2017. It is estimated that the Interim Action total construction duration is two to three months. It is also expected that the RI activities proposed in the Final RIWP (Leidos, 2017) will be conducted prior to initiation of the Interim Action. The start date of Interim Action subsurface excavation will be confirmed to Ecology once the final permits or authorizations are obtained/confirmed for the CSWGP and from the City of Seattle.

9 References

Aspect Consulting, LLC (Aspect), 2016, Preliminary Draft Remedial Investigation Work Plan, 4700 Brooklyn Ave., Seattle, Washington, November 4, 2016.

Aspect Consulting, LLC (Aspect), 2017a, Technical Memorandum to Washington State Department of Ecology (D. Myers) Re: On-Property Remedial Investigation Data Report, 4700 Brooklyn Avenue NE, Seattle, Washington, January 17, 2017.

Aspect Consulting, LLC (Aspect), 2017b, Technical Memorandum to Washington State Department of Ecology – UST Section Re: UST Site Assessment Report and Checklist, Chevron 90129 (UST ID No. 5046), 4700 Brooklyn Avenue NE, Seattle, Washington, March 3, 2017.

Aspect Consulting, LLC (Aspect), 2018, Re: Final Interim Action Work Plan Schedule Extension, 4700 Brooklyn Avenue NE (Chevron 90129), Seattle, Washington, February 21, 2018.

Leidos, 2017, Final Remedial Investigation Work Plan, Former Chevron Station No. 90129, May 26, 2017.

SAIC, 2013, First Quarter 2013 Ground water Monitoring and Sampling Report, Chevron Service Station No. 9-0129, July 10, 2013.

The Riley Group, Inc. (RGI), 2016, Chevron Station No. 9-0129 Dewatering Plan, 4700 Brooklyn Avenue Northeast, Seattle, Washington, January 27, 2016.

Washington State Department of Ecology (Ecology), 2004, Toxics Cleanup Program Policy 130A, Coordination of SEPA and MTCA, Revised July 28, 2004.

Washington State Department of Ecology (Ecology), 2016a, Guidance for Remediation of Petroleum Contaminated Sites, Ecology Publication No. 10-09-057, Revised June 2016.

Washington State Department of Ecology (Ecology), 2016b, TCP Data Validation and Sampling Analysis Plan (SAP)/ Quality Assurance Project Plan (QAPP), September 23, 2016.

10 Limitations

Work for this project was performed for FH Brooklyn (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

TABLES

Table 1. TPH and BTEX in Soil Exploration Samples

4700 Brooklyn Avenue NE, Seattle, WA 160092

Exploration ID/Date	Proposed Cleanup	AB-1/Nov 2016						AB-2/Nov 2016						AB-3/Nov 2016			
Sample ID	Levels	AB-1-8	AB-1-14	AB-1-19	AB-1-24	AB-1-29	AB-1-35	AB-2-6	AB-2-10	AB-2-14	AB-2-17.5	AB-2-24	AB-2-28	AB-3-4	AB-3-8	AB-3-14	AB-3-19
Sample Depth in Feet Below Ground Surface	in mg/kg[1]	8 ft	14 ft	19 ft	24 ft	29 ft	35 ft	6 ft	10 ft	14 ft	17.5 ft	24 ft	28 ft	4 ft	8 ft	14 ft	19 ft
Total Petroleum Hydrocarbons in mg/kg																	
Gasoline Range Organics	30	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**6.6**	2 U	2 U	2 U	**3**	2 U
Diesel Range Organics	2,000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Motor Oil Range Organics	2,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U
BTEX Compounds in mg/kg																	
Benzene	0.03	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.053**	0.02 U	0.02 U	0.02 U	**0.05**	0.02 U
Ethylbenzene	6	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.33**	0.02 U	0.02 U	0.02 U	**0.067**	0.02 U
Toluene	7	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.05**	0.02 U	0.02 U	0.02 U	**0.26**	0.02 U
Total Xylenes	9	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	**1**	0.06 U	0.06 U	**0.068**	**0.17**	0.06 U

Exploration ID/Date	Proposed Cleanup	AB-3/Nov 2016	AB-4/Nov 2016						AB-5/Nov 2016							AB-6/Nov 2016	
Sample ID	Levels	AB-3-24	AB-4-6	AB-4-10	AB-4-16.5	AB-4-19	AB-4-24	AB-4-29	AB-5-5	AB-5-10	AB-5-14	AB-5-19	AB-5-24	AB-5-29	AB-5-32	AB-6-8	AB-6-13
Sample Depth in Feet Below Ground Surface	in mg/kg[1]	24 ft	6 ft	10 ft	16.5 ft	19 ft	24 ft	29 ft	5 ft	10 ft	14 ft	19 ft	24 ft	29 ft	32 ft	8 ft	13 ft
Total Petroleum Hydrocarbons in mg/kg																	
Gasoline Range Organics	30	2 U	2 U	2 U	**16**	2 U	2 U	2 U	2 U	2 U	2 U	**4**	**5.3**	2 U	2 U	**11**	2 U
Diesel Range Organics	2,000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Motor Oil Range Organics	2,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	**400**
BTEX Compounds in mg/kg																	
Benzene	0.03	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Ethylbenzene	6	0.02 U	0.02 U	0.02 U	**0.068**	0.02 U	**0.068**	**0.041**	0.02 U	0.02 U	0.02 U	**0.056**	**0.14**	0.02 U	0.02 U	0.02 U	0.02 U
Toluene	7	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Total Xylenes	9	0.06 U	0.06 U	0.06 U	**0.15**	0.06 U	**0.09**	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U

Exploration ID/Date	Proposed Cleanup	AB-6/Nov 2016				AB-7/Nov 2016							AB-8/Nov 2016				
Sample ID	Levels	AB-6-24	AB-6-17	AB-6-29	AB-6-33	AB-7-6	AB-7-10	AB-7-14	AB-7-19	AB-7-24	AB-7-29	AB-7-33	AB-8-6	AB-8-10	AB-8-14	AB-8-18	AB-8-24
Sample Depth in Feet Below Ground Surface	in mg/kg[1]	24 ft	17 ft	29 ft	33 ft	6 ft	10 ft	14 ft	19 ft	24 ft	29 ft	33 ft	6 ft	10 ft	14 ft	18 ft	24 ft
Total Petroleum Hydrocarbons in mg/kg																	
Gasoline Range Organics	30	**3.9**	**920**	2 U	2 U	2 U	2 U	2 U	**1,100**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Diesel Range Organics	2,000	50 U	**840**	50 U	50 U	**110 X**	50 U	50 U	**480 X**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Motor Oil Range Organics	2,000	250 U	250 U	250 U	250 U	**1900**	250 U	250 U	250 U	250 U	250 U	250 U	**780**	250 U	250 U	250 U	250 U
BTEX Compounds in mg/kg																	
Benzene	0.03	**0.12**	0.02 UJ	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.15 J**	**0.024**	0.02 U	**0.09**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Ethylbenzene	6	**0.39**	0.1 U	**0.087**	0.02 U	0.02 U	0.02 U	0.02 U	**8.2**	**0.16**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Toluene	7	0.02 U	0.1 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**4.3**	0.02 U	0.02 U	**0.074**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Total Xylenes	9	**0.073**	**1.5**	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	**7.5**	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U

Exploration ID/Date	Proposed Cleanup	AB-8/Nov 2016		AB-9/Nov 2016						MW-01/Jan 1990		MW-02/Jan 1990		MW-03/Jan 1990		MW-04/Jan 1990	
Sample ID	Levels	AB-8-29	AB-8-33	AB-9-5	AB-9-8	AB-9-14	AB-9-19	AB-9-24	AB-9-27	MW-1-7	MW-1-13	MW-2-8	MW-2-13	MW-3-13	MW-3-18	MW-4-15.5	MW-4-20.5
Sample Depth in Feet Below Ground Surface	in mg/kg[1]	29 ft	33 ft	5 ft	8 ft	14 ft	19 ft	24 ft	27 ft	7 ft	13 ft	8 ft	13 ft	13 ft	18 ft	15.5 ft	20.5 ft
Total Petroleum Hydrocarbons in mg/kg																	
Gasoline Range Organics	30	2 U	2 U	**2.5**	2 U	2 U	**2.8**	2 U	2 U	ND	ND	ND	ND	ND	**5,568**	**3,267**	ND
Diesel Range Organics	2,000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	ND	ND	ND	ND	ND	ND	ND	ND
Motor Oil Range Organics	2,000	250 U	250 U	**520**	250 U	250 U	250 U	250 U	250 U								
BTEX Compounds in mg/kg																	
Benzene	0.03	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.06**	ND	ND	ND	ND	ND	**27.1**	**1.58**	ND
Ethylbenzene	6	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	**0.039**	0.02 U	0.02 U	**0.1**	ND	**0.12**	**0.14**	ND	**88.1**	**9.71**	ND
Toluene	7	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	ND	ND	ND	ND	ND	**327**	**31.1**	ND
Total Xylenes	9	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	**0.28**	**0.18**	**0.14**	**0.31**	**0.21**	**614**	**52.6**	ND

Table 1. TPH and BTEX in Soil Exploration Samples

4700 Brooklyn Avenue NE, Seattle, WA 160092

Exploration ID/Date	Proposed Cleanup	MW-05/Jan 1990		MW-06/Jan 1990		MW-07/Jan 1990		MW-08/Jan 1990		MW-09/Jan 1990		MW-10/Jan 1990	
Sample ID	Levels	MW-5-5.5	MW-5-10.5	MW-6-10.5	MW-6-15.5	MW-7-8	MW-7-13	MW-8-13	MW-8-18	MW-9-8	MW-9-13	MW-10-8	MW-10-13
Sample Depth in Feet Below Ground Surface	in mg/kg[(1)]	5.5 ft	10.5 ft	10.5 ft	15.5 ft	8 ft	13 ft	13 ft	18 ft	8 ft	13 ft	8 ft	13 ft
Total Petroleum Hydrocarbons in mg/kg													
Gasoline Range Organics	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diesel Range Organics	2,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Motor Oil Range Organics	2,000												
BTEX Compounds in mg/kg													
Benzene	0.03	ND	ND	ND	ND	ND	**0.17**	ND	ND	ND	ND	ND	ND
Ethylbenzene	6	ND	ND	ND	ND	ND	**0.17**	ND	ND	ND	ND	ND	ND
Toluene	7	ND	ND	ND	ND	ND	**0.25**	ND	ND	ND	ND	ND	ND
Total Xylenes	9	ND	ND	ND	ND	ND	**0.93**	**0.18**	ND	**0.33**	ND	ND	ND

Exploration ID/Date	Proposed Cleanup	MW-11/Jan 1990		MW-12/Jan 1990		MW-13/Jan 1990		MW-14/Feb 1990		MW-15/Mar 2001	MW-16/Mar 2001
Sample ID	Levels	MW-11-13	MW-11-18	MW-12-13	MW-12-23	MW-13-8	MW-13	MW-14-10	MW-14-15	MW-15-15	MW-16-15
Sample Depth in Feet Below Ground Surface	in mg/kg[(1)]	13 ft	18 ft	13 ft	23 ft	8 ft	13 ft	10 ft	15 ft	15 ft	15 ft
Total Petroleum Hydrocarbons in mg/kg											
Gasoline Range Organics	30	ND	ND	ND	**45**	ND	ND	ND	ND	5 U	5 U
Diesel Range Organics	2,000	ND	ND	ND	ND	ND	ND	ND	ND	10 U	
Motor Oil Range Organics	2,000									25 U	
BTEX Compounds in mg/kg											
Benzene	0.03	ND	ND	ND	**0.77**	ND	ND	ND	ND	0.05 U	0.05 U
Ethylbenzene	6	ND	ND	ND	**1.44**	ND	ND	ND	ND	0.05 U	0.05 U
Toluene	7	ND	**0.14**	ND	**1.19**	ND	**0.12**	ND	ND	0.05 U	0.05 U
Total Xylenes	9	ND	**0.34**	**0.18**	**7.24**	ND	**0.35**	ND	ND	0.1 U	0.1 U

Exploration ID/Date	Proposed Cleanup	P2/Feb 2015	P3/Feb 2015	P4/Feb 2015		P6/Feb 2015		P7/Feb 2015	P8/Feb 2015	SB-1/Oct 2010	
Sample ID	Levels	P2-5	P3-5	P4-10	P4-15	P6-5	P6-13	P7-15	P8-14	SB-1-15	SB-1-17.5
Sample Depth in Feet Below Ground Surface	in mg/kg[(1)]	5 ft	5 ft	10 ft	15 ft	5 ft	13 ft	15 ft	14 ft	15	17.5
Total Petroleum Hydrocarbons in mg/kg											
Gasoline Range Organics	30	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	1.2 U	1.3 U
Diesel Range Organics	2,000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	3.3U	3.6 U
Motor Oil Range Organics	2,000	250 U	250 U	250 U	250 U	250 U	250 U	250 U	250 U	11 U	12 U
BTEX Compounds in mg/kg											
Benzene	0.03	0.02 U	0.02 U	**0.032**	**0.025**	0.02 U	**0.063**	0.02 U	0.02 U	0.0006 U	0.0005 U
Ethylbenzene	6	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.001 U	0.001 U
Toluene	7	0.02 U	0.02 U	**0.14**	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.001 U	0.001 U
Total Xylenes	9	0.06 U	0.06 U	**0.10**	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.001 U	0.001 U

J Analyte was positively identified. The reported result is an estimate.

U Analyte was not detected at or above the reported result.

ND Not detected; detection limit unknown

UJ Analyte was not detected at or above the reported estimate

X The sample chromatographic pattern does not resemble the fueld standard used for quantitation by the laboratory.

BTEX Benzene, toluene, ethylbenzene, and total xylenes

TPH Total petroleum hydrocarbon

Notes

1) Proposed cleanup levels are MTCA Method A cleanup levels for unrestricted land use.

2) Bold indicates detected analyte; shading indicates detection above proposed cleanup level.

Table 2. Other Analytes in Soil Exploration Samples

4700 Brooklyn Avenue NE, Seattle, WA 160092

Exploration ID/Date	Proposed Cleanup	AB-3/Nov 2016					AB-4/Nov 2016						AB-5/Nov 2016			
Sample ID	Levels	AB-3-4	AB-3-8	AB-3-14	AB-3-19	AB-3-24	AB-4-6	AB-4-10	AB-4-16.5	AB-4-19	AB-4-24	AB-4-29	AB-5-5	AB-5-10	AB-5-14	AB-5-19
Sample Depth in Feet Below Ground Surface	in mg/kg[1]	4 ft	8 ft	14 ft	19 ft	24 ft	6 ft	10 ft	16.5 ft	19 ft	24 ft	29 ft	5 ft	10 ft	14 ft	19 ft
Volatile Organic Compounds in mg/kg																
Methyl tert-butyl ether (MTBE)	0.1															
Naphthalene	5															
1,2-Dibromoethane (EDB)	0.005															
1,2-Dichloroethane (EDC)	480[3]	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Tetrachloroethene (PCE)	0.05	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U	0.025 U
Trichloroethene (TCE)	0.03	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
1,1-Dichloroethene	4,000[3]	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,2-Dichloroethene (DCE)	160[3]	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	**0.066**	0.05 U	0.05 U	0.05 U	0.05 U
trans-1,2-Dichloroethene	1,600[3]	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Vinyl Chloride	0.67[3]	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Methylene Chloride	0.02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	2	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1-Dichloroethane	175[3]	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chloroethane		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total Metals in mg/kg																
Cadmium	2															
Chromium	19/2,000[4]															
Lead	250															
Nickel	1,600[3]															
Zinc	24,000[3]															
Polychlorinated Biphenyls (PCBs) in mg/kg																
Aroclor 1016																
Aroclor 1221																
Aroclor 1232																
Aroclor 1242																
Aroclor 1248																
Aroclor 1254																
Aroclor 1260																
Aroclor 1262																
Aroclor 1268																
Total PCBs (Sum of Aroclors)	1															
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) in mg/kg																
Benz(a)anthracene																
Benzo(a)pyrene																
Benzo(b)fluoranthene																
Benzo(k)fluoranthene																
Chrysene																
Dibenzo(a,h)anthracene																
Indeno(1,2,3-cd)pyrene																
Total cPAHs TEQ (ND = 1/2 RDL)	0.1															

Table 2. Other Analytes in Soil Exploration Samples

4700 Brooklyn Avenue NE, Seattle, WA 160092

Exploration ID/Date	Proposed Cleanup	AB-5/Nov 2016			AB-6/Nov 2016			AB-7/Nov 2016		AB-8/Nov 2016	AB-9/Nov 2016	MW-15/Mar 2001	MW-16/Mar 2001	P4/Feb 2015	P6/Feb 2015	SB-1/Oct 2010
Sample ID	Levels	AB-5-24	AB-5-29	AB-5-32	AB-6-13	AB-6-17	AB-6-24	AB-7-6	AB-7-19	AB-8-6	AB-9-5	MW-15-15	MW-16-15	P4-10	P6-5	SB-1-15
Sample Depth in Feet Below Ground Surface	in mg/kg[1]	24 ft	29 ft	32 ft	13 ft	17 ft	24 ft	6 ft	19 ft	6 ft	5 ft	15 ft	15 ft	10 ft	5 ft	15
Volatile Organic Compounds in mg/kg																
Methyl tert-butyl ether (MTBE)	0.1	0.05 U				0.05 U	0.05 U		0.05 U							0.006 U
Naphthalene	5	0.05 U				**6.4**	**0.084**		**3.5**							
1,2-Dibromoethane (EDB)	0.005	0.005 U				0.005 UJ	0.005 U		0.005 UJ							
1,2-Dichloroethane (EDC)	480[3]	0.05 U	0.05 U	0.05 U		0.05 U	0.05 U		0.05 U							
Tetrachloroethene (PCE)	0.05	0.025 U	0.025 U	0.025 U												
Trichloroethene (TCE)	0.03	0.02 U	0.02 U	0.02 U												
1,1-Dichloroethene	4,000[3]	0.05 U	0.05 U	0.05 U												
cis-1,2-Dichloroethene (DCE)	160[3]	0.05 U	0.05 U	0.05 U												
trans-1,2-Dichloroethene	1,600[3]	0.05 U	0.05 U	0.05 U												
Vinyl Chloride	0.67[3]	0.05 U	0.05 U	0.05 U												
Methylene Chloride	0.02	0.5 U	0.5 U	0.5 U												
1,1,1-Trichloroethane	2	0.05 U	0.05 U	0.05 U												
1,1-Dichloroethane	175[3]	0.05 U	0.05 U	0.05 U												
Chloroethane		0.5 U	0.5 U	0.5 U												
Total Metals in mg/kg																
Cadmium	2				1 U			1 U		1 U	1 U					
Chromium	19/2,000[4]				**23.3 J**			**17.5 J**		**15.5 J**	**21.6 J**					
Lead	250	**1.7**				**5.14**	**2.00**		**5.73**			**2.00**	**2.05**	**1.89**	**2.21**	**2.28**
Nickel	1,600[3]				**32.5 J**			**19.2 J**		**23 J**	**25.2 J**					
Zinc	24,000[3]				**21.8**			**32.4**		**42.2**	**49.7**					
Polychlorinated Biphenyls (PCBs) in mg/kg																
Aroclor 1016					0.2 U			0.2 U		0.2 U	0.2 U					
Aroclor 1221					0.2 U			0.2 U		0.2 U	0.2 U					
Aroclor 1232					0.2 U			0.2 U		0.2 U	0.2 U					
Aroclor 1242					0.2 U			0.2 U		0.2 U	0.2 U					
Aroclor 1248					0.2 U			0.2 U		0.2 U	0.2 U					
Aroclor 1254					0.2 U			0.2 U		0.2 U	0.2 U					
Aroclor 1260					0.2 U			0.2 U		0.2 U	0.2 U					
Aroclor 1262					0.2 U			0.2 U		0.2 U	0.2 U					
Aroclor 1268					0.2 U			0.2 U		0.2 U	0.2 U					
Total PCBs (Sum of Aroclors)	1				0.2 U			0.2 U		0.2 U	0.2 U					
Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) in mg/kg																
Benz(a)anthracene					0.01 UJ			0.1 UJ		**0.052 J**	0.01 UJ					
Benzo(a)pyrene					0.01 UJ			**0.11 J**		**0.052 J**	0.01 UJ					
Benzo(b)fluoranthene					0.01 UJ			**0.18 J**		**0.074 J**	**0.011 J**					
Benzo(k)fluoranthene					0.01 UJ			0.1 UJ		**0.025 J**	0.01 UJ					
Chrysene					0.01 UJ			**0.21 J**		**0.11 J**	**0.019 J**					
Dibenzo(a,h)anthracene					0.01 UJ			0.1 UJ		**0.011 J**	0.01 UJ					
Indeno(1,2,3-cd)pyrene					**0.011 J**			0.1 UJ		**0.025 J**	0.01 UJ					
Total cPAHs TEQ (ND = 1/2 RDL)	0.1				**0.008 J**			**0.15 J**		**0.072 J**	**0.008 J**					

J Analyte was positively identified. The reported result is an estimate.

U Analyte was not detected at or above the reported result.

UJ Analyte was not detected at or above the reported estimate

X The sample chromatographic pattern does not resemble the fuel standard used for quantitation by the laboratory.

Notes

1) Unless otherwise noted, proposed cleanup levels are MTCA Method A cleanup levels for unrestricted land use.

2) Bold indicates detected analyte; shading indicates detection above proposed cleanup level.

3) Method A does not have a soil cleanup level for vinyl chloride. The value listed is Method B - Soil Direct Contact.

4) Method A soil cleanup levels for Chromium IV/Chromium III

Table 3. Groundwater Quality Results, November, 2016

4700 Brooklyn Avenue NE, Seattle, WA 160092

	Proposed Cleanup Levels[1]	MW-02 11/21/2016	MW-03 11/21/2016	MW-3D 11/21/2016	MW-04 11/21/2016	MW-05 11/21/2016	MW-06 11/21/2016	MW-07 11/22/2016	MW-09 11/22/2016	MW-11 11/22/2016	MW-12 11/22/2016	MW-13 11/22/2016	MW-14 11/21/2016	MW-15 11/22/2016	MW-16 11/22/2016
Total Petroleum Hydrocarbons in ug/L															
Gasoline Range Organics (GRO)	800	< 100 U	**110**	**120**	**780**	< 100 U	< 100 U	< 100 U	**23,000**	**55,000**	**120,000**		< 100 U	< 100 U	**2,300**
Diesel Range Organics (DRO)	500	**58 X**	**170 X**	**120 X**	**810**	< 50 U	< 50 U	**200 X**	**3,500 X**	**4,500 X**	**8,800 X**		**110 X**	< 60 U	**660 X**
Motor Oil Range Organics (MORO)	500	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U		< 250 U	< 300 U	< 250 U
Metals in ug/L															
Lead (Dissolved)	15	< 1 UJ	< 1 UJ	< 1 UJ	< 1 UJ	< 1 UJ	< 1 UJ	< 1 UJ	< 1 UJ	**17.2 J**	**2.89 J**		< 1 UJ	< 1 UJ	< 1 UJ
Volatile Organic Compounds in ug/L															
Benzene	5	< 0.35 U	< 0.35 U	< 0.35 U	< 0.35 U	< 0.35 U	< 0.35 U	< 0.35 U	**940**	**90**	**5,500**		< 0.35 U	< 0.35 U	**77**
Toluene	1,000	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**740**	**530**	**6,300**		< 1 U	< 1 U	**2.6**
Ethylbenzene	700	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**420**	**1,500**	**2,300**		< 1 U	< 1 U	**100**
m,p-Xylenes		< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	**660**	**5,800**	**10,000**		< 2 U	< 2 U	**5.3**
o-Xylene		< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	**110**	**1,300**	**4,100**		< 1 U	< 1 U	**1.1**
Total Xylenes	1,000	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	< 2 U	**770**	**7,100**	**14,100**		< 2 U	< 2 U	**6.4**
Methyl tert-butyl ether (MTBE)	20	< 1 U	< 1 U	< 1 U	**1.8**	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U		< 1 U	< 1 U	< 1 U
Tetrachloroethene (PCE)	5								< 1 U	< 1 U		< 1 U			
Trichloroethene (TCE)	5								< 1 U	< 1 U		< 1 U			
1,1-Dichloroethene	400[3]								< 1 U	< 1 U		< 1 U			
cis-1,2-Dichloroethene (DCE)	16[3]								**15**	**9.7**		**15**			
trans-1,2-Dichloroethene	160[3]								< 1 U	< 1 U		**1**			
Vinyl Chloride	0.2								< 0.2 U	< 0.2 U		**0.22**			
1,1,1-Trichloroethane	200								< 1 U	< 1 U		< 1 U			
1,1-Dichloroethane	7.68[3]								< 1 U	< 1 U		< 1 U			
1,2-Dichloroethane (EDC)	5								**21**	< 1 U		< 1 U			
Chloroethane									< 1 U	< 1 U		< 1 U			
Methylene Chloride	5								< 5 U	< 5 U		< 5 U			

J Analyte was positively identified. The reported result is an estimate.
U Analyte was not detected at or above the reported result.
UJ Analyte was not detected at or above the reported estimate
X The sample chromatographic pattern does not resemble the fuel standard used for quantitation by the laboratory.

Notes:

1) Unless otherwise noted, proposed cleanup levels are MTCA Method A cleanup levels for unrestricted land use.
2) Bold indicates detected analyte; shading indicates detection above proposed cleanup level.
3) There is no Method A groundwater cleanup level. The value listed is Method B - noncancer.

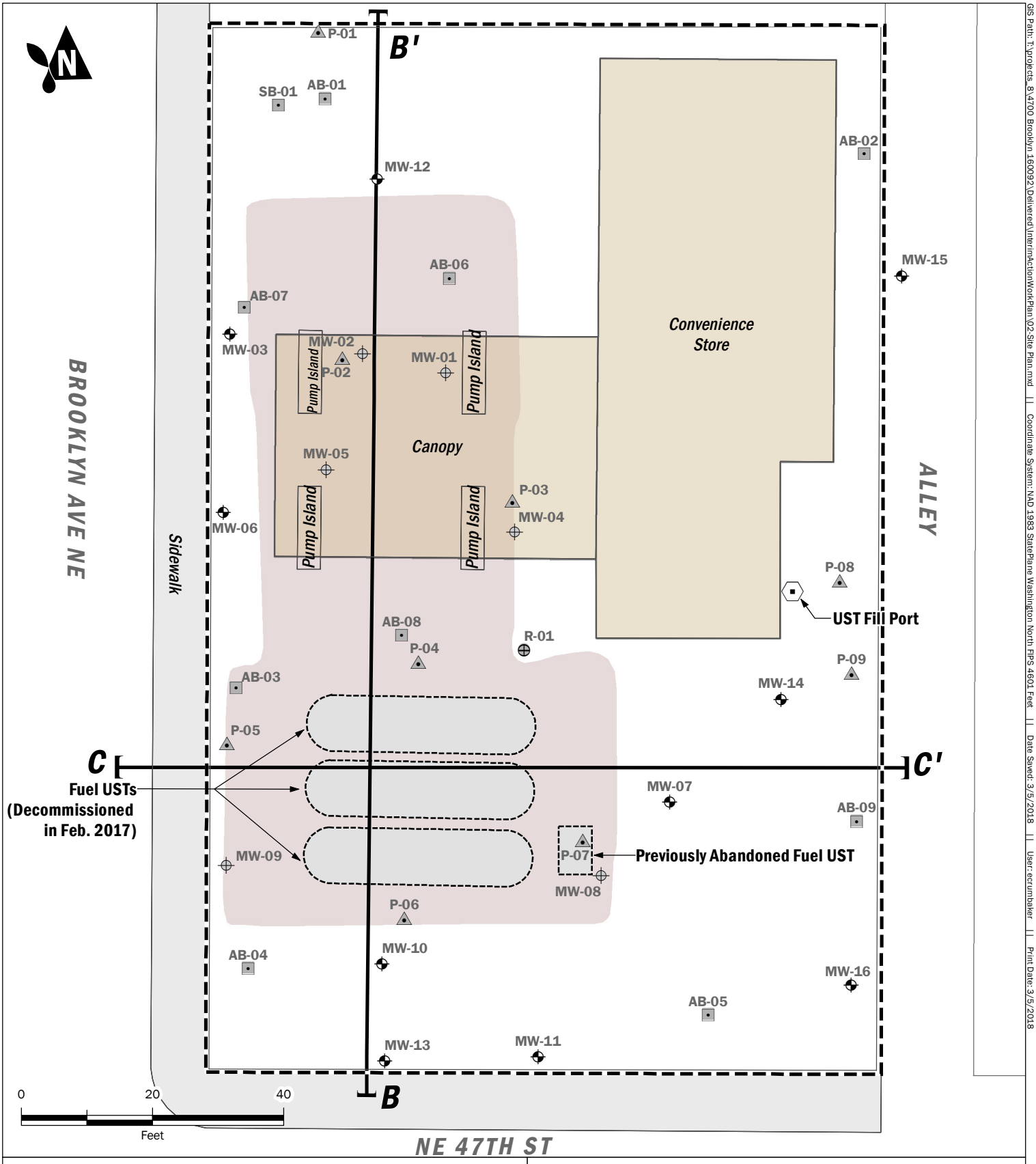
FIGURES

Site Location Map

Interim Action Work Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: DLC / EAC	FIGURE NO. 1
	PROJECT NO. 160092	REVISED BY: SCC / KES	

GIS Path: T:\projects_8\4700 Brooklyn 160092\Delivered\InterimActionWorkPlan\01-Site Location Map.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 3/5/2018 || User: ecrumbaker || Print Date: 3/5/2018



Monitoring Well
Abandoned in Feb. 2017

Monitoring Well

Product Recovery Well
Abandoned in Feb. 2017

Soil Boring

Test Probe

Property Boundary

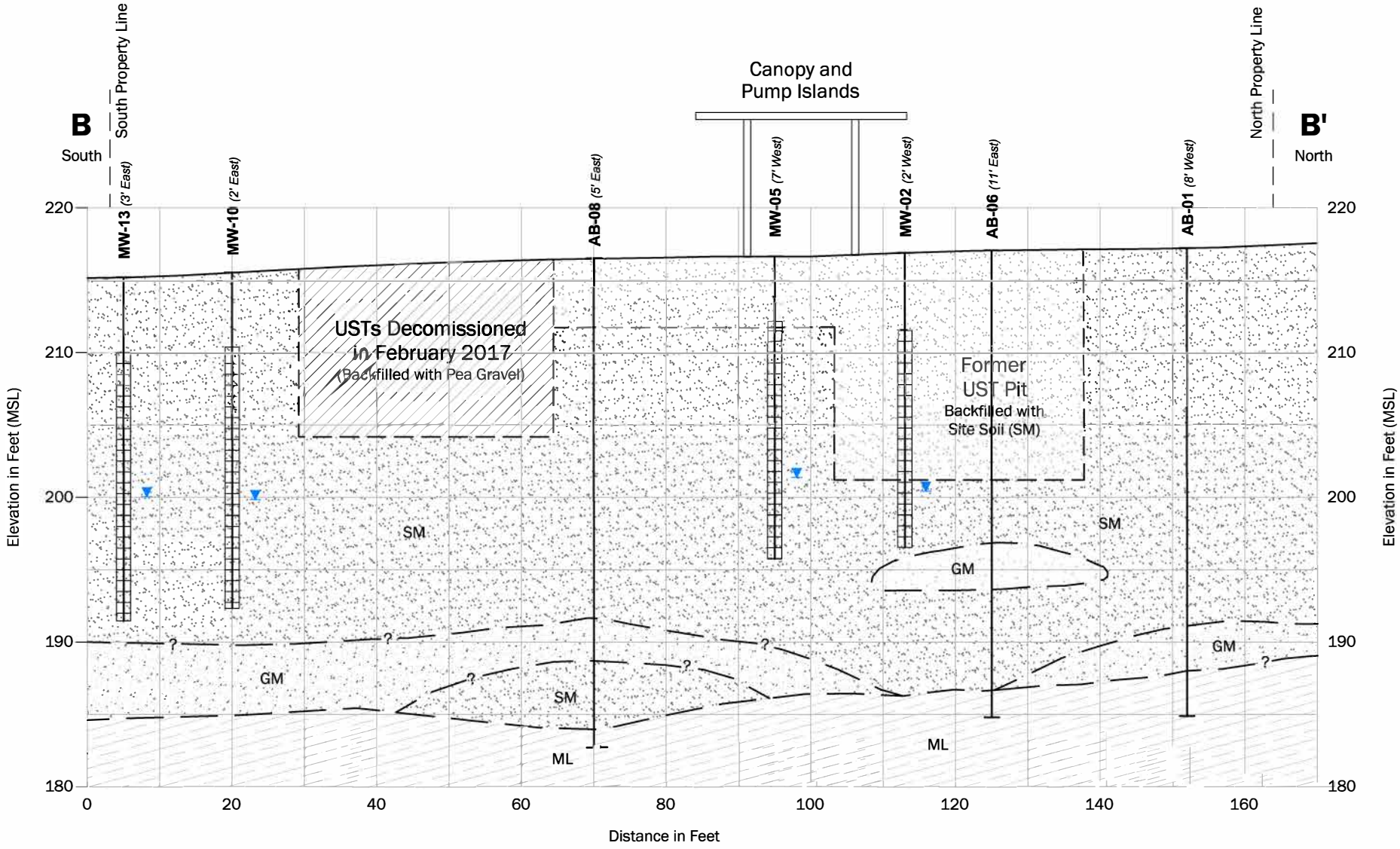
1990 Soil Excavation

Cross Section

Site Plan

Interim Action Work Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: DAH / EAC	FIGURE NO. 2
	PROJECT NO. 160092	REVISED BY: ACG/ KES	



Gray fine to medium sand with silt and occasional gravel. Grades from loose to dense with depth (SM).

Moist gray sandy, silty gravel. Fine to coarse subrounded gravel (GM).

Medium stiff to hard gray silt (ML).

Groundwater Elevation (November 2016)

Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 10'
Vertical Exaggeration 2x

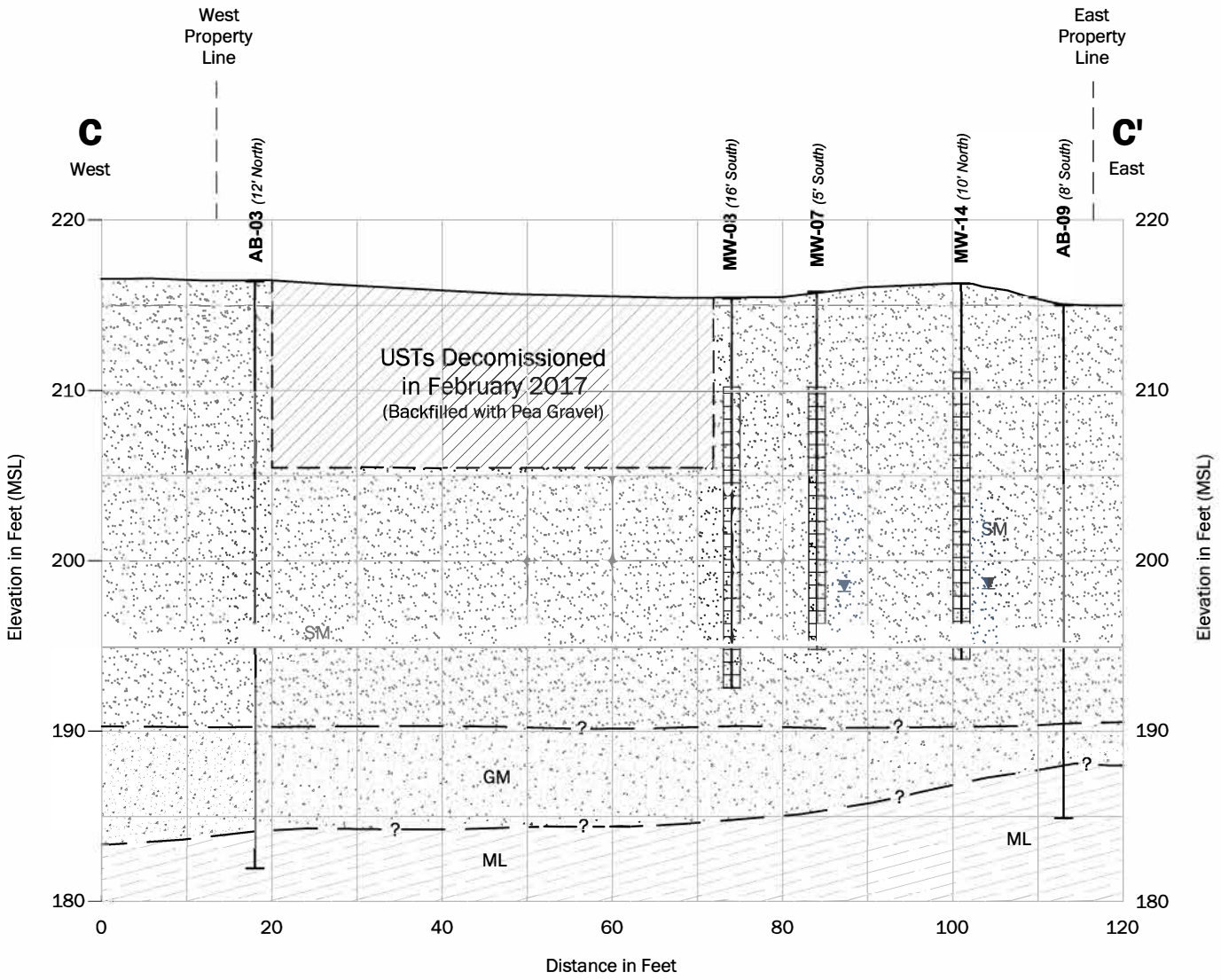
0 20 40 Feet

Cross Section B-B'

Interim Action Work Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect Consulting	Jul-2017	BY: ACG/SCC	FIGURE NO. 3
	PROJECT NO. 160092	REV BY: SCC	

CAD Path: \\seastore2\Drafting\6309 9th Avenue NE\4700 Brooklyn Avenue NE\160092 Interim Action\2017-06 Interim Action Work Plan\160092-BB.dwg Cross Section B-B' || Date Saved: Jul 24, 2017 2:51pm || User: cvanslyke



Gray fine to medium sand with silt and occasional gravel. Grades from loose to dense with depth (SM).

Moist gray sandy, silty gravel. Fine to coarse subrounded gravel (GM).

Medium stiff to hard gray silt (ML).

Groundwater Elevation (November 2016)

Note: MW-08 was dry. Sediment observed in well at 10.6 feet below ground surface.

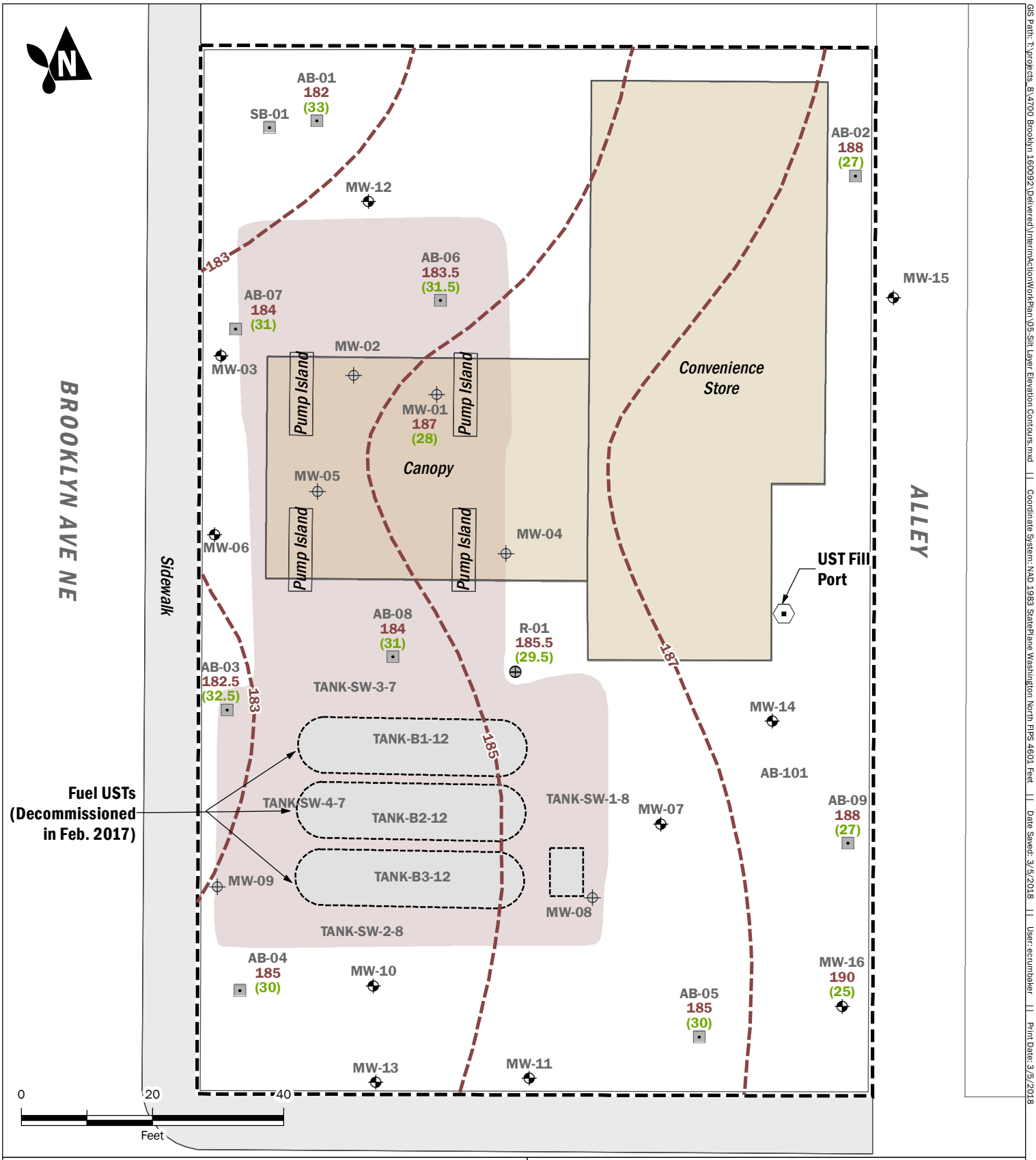
Horizontal Scale: 1" = 20'
Vertical Scale: 1" = 10'
Vertical Exaggeration 2x

0 20 40 Feet

Cross Section C-C'

Interim Action Work Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect Consulting	Jul-2017	BY: ACG/SCC	FIGURE NO. 4
	PROJECT NO. 160092	REV BY: SCC	



Monitoring Well
Abandoned in Feb. 2017

Monitoring Well

Product Recovery Well
Abandoned in Feb. 2017

Soil Boring

Property Boundary

1990 Soil Excavation

Silt Layer Elevation Contour in feet (NAVD88)

Exploration ID
AB-04
185
(30)
Approximate Silt Layer Elevation (feet)
Approximate Silt Layer Depth Below Ground Surface (feet)

Silt Layer Elevation Contours

Interim Action Work Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: DAH / EAC	FIGURE NO. 5
	PROJECT NO. 160092	REVISED BY: ACG/ KES	

GIS Path: T:\projects_8\4700 Brooklyn 160092\Delivered\InterimActionWorkPlan\05-Silt Layer Elevation Contours.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 3/5/2018 || User: ecrumbaker || Print Date: 3/5/2018

BROOKLYN AVE NE

ALLEY

NE 47TH ST

Pump Island

Pump Island

Pump Island

Pump Island

Canopy

Convenience Store

Concrete UST Pad

UST Fill Port

Fuel USTs (Decommissioned in Feb. 2017)

Previously Abandoned Fuel UST

P-01

P-05

R-01

P-09

SB-01 (2010)

Depth	GRO	Bzn
15	nd	nd
17.5	nd	nd

P-02 (2015)

Depth	GRO	Bzn
5	nd	nd

MW-05 (1990)

Depth	GRO	Bzn
5.5	nd	nd
10.5	nd	nd

AB-07 (2016)

Depth	GRO	Bzn
6	nd	nd
10	nd	nd
14	nd	nd
19	1,100	0.15 J
24	nd	0.024
29	nd	nd
33	nd	0.09

MW-03 (1990)

Depth	GRO	Bzn
13	nd	nd
18	5,568	27.1

AB-08 (2016)

Depth	GRO	Bzn
6	nd	nd
10	nd	nd
14	nd	nd
18	nd	nd
24	nd	nd
29	nd	nd
33	nd	nd

MW-06 (1990)

Depth	GRO	Bzn
10.5	nd	nd
15.5	nd	nd

P-04 (2015)

Depth	GRO	Bzn
10	nd	0.032
15	nd	0.025

TANK-SW-3-7 (2017)

Depth	GRO	Bzn
7	nd	nd

AB-03 (2016)

Depth	GRO	Bzn
4	nd	nd
8	nd	nd
14	3	0.05
19	nd	nd
24	nd	nd

TANK-SW-4-7 (2017)

Depth	GRO	Bzn
7	nd	nd

MW-09 (1990)

Depth	GRO	Bzn
8	nd	nd
13	nd	nd

AB-04 (2016)

Depth	GRO	Bzn
6	nd	nd
10	nd	nd
16.5	16	nd
19	nd	nd
24	nd	nd
29	nd	nd

TANK-SW-2-8 (2017)

Depth	GRO	Bzn
8	nd	nd

MW-10 (1990)

Depth	GRO	Bzn
8	nd	nd
13	nd	nd

MW-13 (1990)

Depth	GRO	Bzn
8	nd	nd
13	nd	nd

AB-01 (2016)

Depth	GRO	Bzn
8	nd	nd
14	nd	nd
19	nd	nd
24	nd	nd
29	nd	nd
35	nd	nd

MW-12 (1990)

Depth	GRO	Bzn
13	nd	nd
23	45	0.77

MW-02 (1990)

Depth	GRO	Bzn
8	nd	nd
13	nd	nd

AB-06 (2016)

Depth	GRO	Bzn
8	11	nd
13	nd	nd
17y	920	nd
24	3.9	0.12
29	nd	nd
33	nd	nd

MW-01 (1990)

Depth	GRO	Bzn
7	nd	nd
13	nd	nd

P-03 (2015)

Depth	GRO	Bzn
5	nd	nd

MW-04 (1990)

Depth	GRO	Bzn
15.5	3,267	1.58
20.5	nd	nd

TANK-B1-12 (2017)

Depth	GRO	Bzn
12	nd	0.073

TANK-B2-12 (2017)

Depth	GRO	Bzn
12	nd	nd

TANK-SW-1-8 (2017)

Depth	GRO	Bzn
8	nd	nd

TANK-B3-12 (2017)

Depth	GRO	Bzn
12	nd	nd

P-06 (2015)

Depth	GRO	Bzn
5	nd	nd
13	nd	0.063

P-07 (2015)

Depth	GRO	Bzn
15	nd	nd

MW-08 (1990)

Depth	GRO	Bzn
13	nd	nd
18	nd	nd

MW-11 (1990)

Depth	GRO	Bzn
13	nd	nd
18	nd	nd

AB-05 (2016)

Depth	GRO	Bzn
5	nd	nd
10	nd	nd
14	nd	nd
19	4	nd
24	5.3	nd
29	nd	nd
32	nd	nd

AB-02 (2016)

Depth	GRO	Bzn
6	nd	nd
10	nd	nd
14	nd	nd
17.5	nd	nd
24	6.6	0.053
28	nd	nd

MW-15 (2001)

Depth	GRO	Bzn
15	nd	nd

P-08 (2015)

Depth	GRO	Bzn
14	nd	nd

MW-14 (1990)

Depth	GRO	Bzn
10	nd	nd
15	nd	nd

MW-07 (1990)

Depth	GRO	Bzn
8	nd	nd
13	nd	0.17

AB-09 (2016)

Depth	GRO	Bzn
5	2.5	nd
8	nd	nd
14	nd	nd
19	2.8	nd
24	nd	nd
27	nd	0.06

MW-16 (2001)

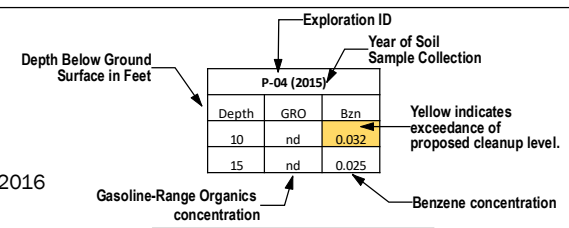
Depth	GRO	Bzn
15	nd	nd

Notes:
1. All concentrations are in milligrams per kilogram (mg/kg).
2. "nd" indicates "not detected".
3. Refer to Tables 1 and 2 for other soil analysis results.

N

0 10 20
Feet

- UST Site Assessment Location
- Monitoring Well *Abandoned in Feb. 2017*
- Monitoring Well
- Product Recovery Well *Abandoned in Feb. 2017*
- Soil Boring
- Test Probe
- LNAPL observed on 11/21/16
- LNAPL detected prior to 2016
- Property Boundary
- 1990 Soil Excavation



Proposed Cleanup Levels in mg/kg	
Gasoline Range Organics	30
Benzene	0.03

GRO and Benzene Detections in Soil

Interim Action Work Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING

MAR-2018	BY: DLC / EAC	FIGURE NO. 6
PROJECT NO. 160092	REVISED BY: DAH	

MW-12[5]		
GRO	DRO	Bzn
120,000	8,800 X	5,500

200.37

MW-02		
GRO	DRO	Bzn
nd	58 X	nd

MW-03		
GRO	DRO	Bzn
110	170 X	nd

200.19

MW-05		
GRO	DRO	Bzn
nd	nd	nd

MW-06		
GRO	DRO	Bzn
nd	nd	nd

201.61

201.37

200.42

MW-01

Pump Island

Pump Island

Pump Island

Pump Island

Canopy

Convenience Store

MW-04		
GRO	DRO	Bzn
780	810	nd

200.00

MW-15		
GRO	DRO	Bzn
nd	nd	nd

199.56

ALLEY

UST Fill Port

MW-14		
GRO	DRO	Bzn
nd	110 X	nd

198.35

R-01

Fuel USTs (Decommissioned in Feb. 2017)

MW-09[5]		
GRO	DRO	Bzn
23,000	3,500 X	940

200.03

MW-07		
GRO	DRO	Bzn
nd	200 X	nd

198.19

Previously Abandoned Fuel UST

MW-08

Concrete UST Pad

MW-10[6]
198.30
(0.98)

MW-16		
GRO	DRO	Bzn
2,300	660 X	77

198.97

MW-13[6]
199.80
(0.11)

199.55

MW-11[5]		
GRO	DRO	Bzn
55,000	4,500 X	90

NE 47TH ST

200

201

199

Groundwater Elevation (feet) → MW-13 ← Well Name
199.80
(0.11)
Light Non-Aqueous-Phase Liquid (LNAPL) Thickness in Feet

Monitoring Well
Abandoned in Feb. 2017

Monitoring Well

Product Recovery Well
Abandoned in Feb. 2017

Groundwater Elevation in feet (NAVD88)

LNAPL observed on 11/21/16

LNAPL observed prior to 2016

Property Boundary

1990 Soil Excavation

Proposed Cleanup Levels in µg/L	
Gasoline Range Organics	800
Diesel Range Organics	500
Benzene	5

Well ID

MW-04		
GRO	DRO	Bzn
780	810	nd

Yellow indicates exceedance of proposed cleanup level.

Gasoline-Range Organics concentration

Diesel-Range Organics concentration

Benzene concentration

Notes:
1. All concentrations are in micrograms per liter (µg/L).
2. "nd" indicates "not detected".
3. "X" indicates the sample chromatographic pattern did not resemble the fuel standard used for quantitation.
4. Refer to Table 3 for data on other analytes.
5. LNAPL sheen was observed on the groundwater surface in this well.
6. The groundwater elevation shown has been corrected to account for the presence of LNAPL.

N

0 7.5 15
Feet

Groundwater and LNAPL Conditions November 2016

Interim Action Work Plan
4700 Brooklyn Avenue NE
Seattle, Washington

Aspect CONSULTING	MAR-2018	BY: DLC / EAC	FIGURE NO. 7
	PROJECT NO. 160092	REVISED BY: DAH / ACG / KES	

APPENDIX A

Boring Logs

Coarse-Grained Soils - More than 50% [1] Retained on No. 200 Sieve	Gravels - More than 50% [1] of Coarse Fraction Retained on No. 4 Sieve	≦5% Fines [5]	GW	Well-graded gravel and gravel with sand, little to no fines
			GP	Poorly-graded gravel and gravel with sand, little to no fines
		≧15% Fines [5]	GM	Silty gravel and silty gravel with sand
			GC	Clayey gravel and clayey gravel with sand
	Sands - 50% [1] or More of Coarse Fraction Passes No. 4 Sieve	≦5% Fines [5]	SW	Well-graded sand and sand with gravel, little to no fines
			SP	Poorly-graded sand and sand with gravel, little to no fines
		≧15% Fines [5]	SM	Silty sand and silty sand with gravel
			SC	Clayey sand and clayey sand with gravel
Fine-Grained Soils - 50% [1] or More Passes No. 200 Sieve	Silts and Clays Liquid Limit Less than 50		ML	Silt, sandy silt, gravelly silt, silt with sand or gravel
			CL	Clay of low to medium plasticity; silty, sandy, or gravelly clay, lean clay
			OL	Organic clay or silt of low plasticity
	Silts and Clays Liquid Limit 50 or More		MH	Elastic silt, clayey silt, silt with micaceous or diatomaceous fine sand or silt
			CH	Clay of high plasticity, sandy or gravelly clay, fat clay with sand or gravel
			OH	Organic clay or silt of medium to high plasticity
Highly Organic Soils			PT	Peat, muck and other highly organic soils

Terms Describing Relative Density and Consistency

	Density	SPT [2] blows/foot
Coarse-Grained Soils	Very Loose	0 to 4
	Loose	4 to 10
	Medium Dense	10 to 30
	Dense	30 to 50
	Very Dense	>50
	Consistency	**SPT [2] blows/foot**
Fine-Grained Soils	Very Soft	0 to 2
	Soft	2 to 4
	Medium Stiff	4 to 8
	Stiff	8 to 15
	Very Stiff	15 to 30
	Hard	>30

Test Symbols

FC = Fines Content
GS = Grain Size
MC = Moisture Content
AL = Atterberg Limits
C = Consolidation
DD = Dry Density
K = Permeability
Str = Shear Strength
Env = Environmental
PiD = Photoionization Detector

Component Definitions

Descriptive Term	Size Range and Sieve Number
Boulders	Larger than 12"
Cobbles	3" to 12"
Gravel	3" to No. 4 (4.75 mm)
Coarse Gravel	3" to 3/4"
Fine Gravel	3/4" to No. 4 (4.75 mm)
Sand	No. 4 (4.75 mm) to No. 200 (0.075 mm)
Coarse Sand	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	Smaller than No. 200 (0.075 mm)

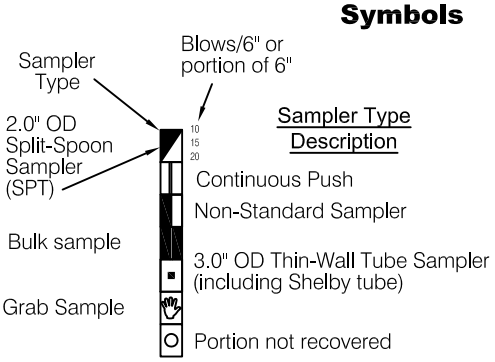
[3] Estimated Percentage

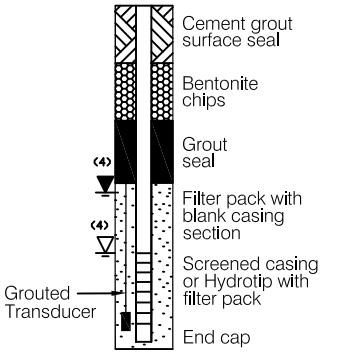
Percentage by Weight	Modifier
<5	Trace
5 to 15	Slightly (sandy, silty, clayey, gravelly)
15 to 30	Sandy, silty, clayey, gravelly)
30 to 49	Very (sandy, silty, clayey, gravelly)

Moisture Content

Dry - Absence of moisture, dusty, dry to the touch
Slightly Moist - Perceptible moisture
Moist - Damp but no visible water
Very Moist - Water visible but not free draining
Wet - Visible free water, usually from below water table

Symbols





(1) Percentage by dry weight
(2) (SPT) Standard Penetration Test (ASTM D-1586)
(3) In General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)
(4) Depth of groundwater — ATD = At time of drilling; Static water level (date); BGS = below ground surface
(5) Combined USCS symbols used for fines between 5% and 15% as estimated in General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)

Classifications of soils in this report are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D-2487 and D-2488 were used as an identification guide for the Unified Soil Classification System.

Aspect consulting earth+water
www.aspectconsulting.com
a limited liability company

Exploration Log Key

DATE:
DESIGNED BY:
DRAWN BY:
REVISED BY:
PROJECT NO.
FIGURE NO. A-1

Q:_ACAD Standards\Standard Details\Exploration Log Key A1.dwg

Aspect Consulting	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location		*Coordinates (SPN NAD83 ft)*	*Exploration Number*
	4700 Brooklyn Ave NE, Seattle, WA, Northwest property corner		E:1275572 N:245566 (est)	**AB-1**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface (GS) Elev.*	
Holt Services	Rotary drill rig	Rotary core	215'(est)	
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Dave	Sonic	11/9/2016	NA	No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal					Asphalt	0
							Slightly moist, brown, gravelly, slightly silty SAND (SP-SM); fine to medium sand, fine to coarse subrounded gravel, no odor.	
		Backfilled with bentonite chips						
5	210		S1				Vacuumed to 6 ft	5
					PID= 0.1		Moist, brown, SAND (SP); trace fine subrounded gravel, fine to medium sand, no odor, no sheen.	
				AB-1-8 NWTPH-Gx, -Dx, BTEX				
					PID= 0.3			
10	205							10
				AB-1-14 NWTPH-Gx, -Dx, BTEX	PID= 0.4			
15	200		S2					15
				AB-1-19 NWTPH-Gx, -Dx, BTEX				
20	195						Grades to gray brown	20
					PID= 1.0			
					PID= 0.2			
				AB-1-24 NWTPH-Gx, -Dx, BTEX				
25	190		S3		PID= 6.8			25
					PID= 2.1			
				AB-1-29 NWTPH-Gx, -Dx, BTEX				
30	185				PID= 0.0		Very moist, gray, sandy, silty GRAVEL (GM); fine to coarse sand, fine to coarse subrounded gravel, slight product odor, no sheen.	30
			S4		PID= 3.1		Hard, moist, gray, slightly sandy SILT (ML); fine sand, with low plasticity, no odor, no sheen.	
35	180			AB-1-35 NWTPH-Gx, -Dx, BTEX	PID= 0.0		Bottom of exploration at 35 ft. bgs.	35

Legend

Sample Method: Continuous core 4" ID

Water Level: No Water Encountered

See Exploration Log Key for explanation of symbols

Logged by: MML
Approved by: DC & AG

Exploration Log AB-1

Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

Aspect CONSULTING	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location		*Coordinates (SPN NAD83 ft)*	*Exploration Number*
	4700 Brooklyn Ave NE, Seattle, WA, Northeast property corner		E:1275654 N:245555 (est)	**AB-2**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface (GS) Elev.*	
Holt Services	Rotary drill rig	Rotary core	215'(est)	
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Dave	Sonic	11/8/2016	NA	18' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal					Asphalt	0
							Moist, brown, gravelly, slightly silty SAND (SP-SM); fine to medium sand, fine subrounded gravel, no odor, no sheen.	
5	210	Backfilled with bentonite chips	S1					5
					PID= 0.0		Moist, brown, gravelly, SAND (SP); trace silt, fine to medium sand, fine subrounded gravel, no odor, no sheen.	
				Soil: AB-2-8 NWTPH-Gx, - Dx, BTEX				
					PID= 6.0		No silt observed.	
10	205			Soil: AB-2-10 NWTPH-Gx, - Dx, BTEX				10
					PID= 9.4			
15	200		S2	Soil: AB-2-14 NWTPH-Gx, - Dx, BTEX				15
		▽ 11/8/2016		Soil: AB-2-17.5 NWTPH-Gx, - Dx, BTEX			Becomes gray with weak product odor.	
			○				Wet, gray, sandy, slightly silty GRAVEL (GP-GM); fine to coarse sand, fine subrounded gravel, weak product odor.	
20	195						Becomes silty GRAVEL (GM); with weak product odor.	20
					PID= 4.4			
25	190		S3	Soil: AB-2-24 NWTPH-Gx, - Dx, BTEX			Moist to very moist, gray SAND (SP); fine to medium sand, with weak product odor, no sheen.	25
					PID= 6.6		Wet, gray, sandy, silty GRAVEL (GM); fine to coarse sand, fine subrounded gravel, with weak product odor.	
				Soil: AB-2-28 NWTPH-Gx, - Dx, BTEX			Hard, moist, gray, slightly sandy SILT (ML); fine sand, with low to none plasticity, no odor, no sheen.	
30	185						Bottom of exploration at 30 ft. bgs.	30
35	180							35

Legend

Sample Method: ○ No Soil Sample Recovery

Water Level: ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: MML
Approved by: DC & AG

Exploration Log AB-2

Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

Aspect CONSULTING	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location		*Coordinates (SPN NAD83 ft)*	*Exploration Number*
	4700 Brooklyn Ave NE, Seattle, WA, Western property line		E:1275556 N:245476 (est)	**AB-3**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface (GS) Elev.*	
Holt Services	Rotary drill rig	Rotary core	215'(est)	
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Dave	Sonic	11/7/2016	NA	28' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal					Asphalt	0
							Moist, brown slightly silty SAND (SP-SM); fine to medium sand, fine subrounded gravel, with no odor.	
		Backfilled with bentonite chips	S1	Soil: AB-3-4 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 6.6			
5	210				PID= 17.1		Becomes silty SAND (SM); fine to medium sand, with weak product odor, no sheen.	5
				Soil: AB-3-8 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 21.4		Moist, brown, SAND (SP); fine to medium sand, with weak product odor, no sheen.	
10	205							10
			S2	Soil: AB-3-14 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 36.4			
15	200						Becomes gray brown, product odor weaker with depth.	15
				Soil: AB-3-19 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 26.6		Becomes brown.	
20	195		S3					20
				Soil: AB-3-24 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 4.4			
25	190						Moist, brown to black, sandy, silty GRAVEL (GM); fine to medium sand, fine to coarse subrounded gravel, with no odor, no sheen.	25
							Grades to gray brown.	
		11/7/2016	S4		PID= 3.1		Moist, brown, slightly gravelly SAND (SP); fine to medium sand, fine subrounded gravel, with no odor.	
30	185						Wet, gray brown, slightly silty GRAVEL (GW-GM); fine to medium sand, fine to coarse subrounded gravel, with no sheen.	30
							Becomes silty GRAVEL (GM)	
			S5		PID= 0.0			
35	180						Hard, moist, gray, slightly sandy SILT (ML); fine sand, with no odor.	35
							Bottom of exploration at 30 ft. bgs.	

Legend

Sample Method: ◯ No Soil Sample Recovery

Water Level: ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: MML
Approved by: DC & AG

Exploration Log AB-3

Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

Aspect CONSULTING	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location		*Coordinates (SPN NAD83 ft)*	*Exploration Number*
	4700 Brooklyn Ave NE, Seattle, WA, Southwest property corner		E:1275557 N:245434 (est)	**AB-4**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface (GS) Elev.*	
Holt Services	Rotary drill rig	Rotary core	215'(est)	
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Dave	Sonic	11/8/2016	NA	28' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal				Asphalt	Asphalt	0
							Moist, brown, gravelly, silty SAND (SM); fine to medium sand, fine subrounded gravel, with no odor.	
							Vacuumed out from 0 to 6 ft bgs for utilities.	
		Backfilled with bentonite chips						
5	210			Soil: AB-4-6 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 15.5			5
					PID= 450			
10	205			Soil: AB-4-10 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 66.3		Moist, brown SAND (SP); fine to medium sand.	10
							Weak product odor between 10 and 14 ft bgs.	
					PID= 71.7			
					PID= 1840			
15	200		S1				Product odor grades to strong between 14 to 17 ft bgs.	15
				Soil: AB-4-16.5 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 1635			
				Soil: AB-4-19 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 42.2		Grades to gray brown.	
20	195				PID= 100			20
					PID= 9.1			
				Soil: AB-4-24 NWTPH-Gx, -Gx, BTEX, CVOCs	PID= 6.1		Soil coarsening with depth.	
25	190		S2		PID= 4.0		Becomes gravelly with weak product odor.	25
		▽ 11/8/2016			PID= 0.0			
				Soil: AB-4-29 NWTPH-Gx, -Gx, BTEX, CVOCs			Wet, gray brown, very sandy, silty GRAVEL (GM); fine to coarse sand, fine subrounded gravel, with no odor, no sheen.	
30	185				PID= 3.5		Hard, moist, gray, slightly sandy, gravelly SILT (ML); fine sand, fine subrounded gravel, with none to low plasticity, no odor, no sheen.	30
			S3		PID= 9.9		5-inch cobble at 33 ft bgs.	
35	180				PID= 31			35
							Bottom of exploration at 35 ft. bgs.	

Legend

Sample Method

Water Level ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: MML
Approved by: DC & AG

Exploration Log AB-4

Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

Aspect CONSULTING	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location		*Coordinates (SPN NAD83 ft)*	*Exploration Number*
	4700 Brooklyn Ave NE, Seattle, WA, Southwest property corner		E:1275627 N:245425 (est)	**AB-5**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface (GS) Elev.*	
Holt Services	Rotary drill rig	Rotary core	215'(est)	
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Dave	Sonic	11/8/2016	NA	27' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal					Asphalt	0
							Slightly moist, brown, slightly silty SAND (SP-SM); trace fine subrounded gravel, fine to medium sand, with no odor.	
							Vacuumed out from 0 to 5 ft bgs for utilities.	
		Backfilled with bentonite chips						
5	210		S1	Soil: AB-5-5 NWTPH-Gx, -Dx, BTEX, CVOCs				5
10	205			Soil: AB-5-10 NWTPH-Gx, -Dx, BTEX, CVOCs			Moist, brown SAND (SP); trace silt, fine to medium sand, with no odor.	10
							Becomes gray brown	
15	200		S2	Soil: AB-5-14 NWTPH-Gx, -Dx, BTEX, CVOCs			Moderate product odor.	15
20	195		S3	Soil: AB-5-19 NWTPH-Gx, -Dx, BTEX, CVOCs				20
25	190	▽ 11/8/2016		Soil: AB-5-24 NWTPH-Gx, -Dx, BTEX, CVOCs	PID= 41.2		No product odor.	25
			S4				Wet, gray, gravelly, slightly silty SAND (SP-SM); fine to medium sand, fine subrounded gravel, with no odor, no sheen.	
30	185			Soil: AB-5-29 NWTPH-Gx, -Dx, BTEX, CVOCs			Moist, gray brown, gravelly, silty SAND (SM); fine subrounded grave, fine to medium sand, with diamict fabric, no odor, no sheen.	30
			S5	Soil: AB-5-32 NWTPH-Gx, -Dx, BTEX, CVOCs			Hard, moist, gray, slightly sandy SILT (ML); fine sand, with no odor, no sheen, none to low plasiticity.	
35	180						Bottom of exploration at 35 ft. bgs.	35
							Note: PID malfunction, measurements not made.	

Legend

Sample Method

Water Level ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: MML
Approved by: DC & AG

Exploration Log AB-5

Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

Aspect CONSULTING	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location		*Coordinates (SPN NAD83 ft)*	*Exploration Number*
	4700 Brooklyn Ave NE, Seattle, WA, Southwest property corner		E:1275591 N:245538 (est)	**AB-6**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface (GS) Elev.*	
Holt Services	Rotary drill rig	Rotary core	215'(est)	
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Dave	Sonic	11/9/2016	NA	21' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal					Asphalt	0
							Moist, brown, gravelly, slightly silty SAND (SP-SM); fine to medium sand, fine subrounded gravel, with no odor. Vacuumed out from 0 to 6 ft bgs for utilities.	
		Backfilled with bentonite chips	S1					
5	210				PID= 27.8			5
				Soil: AB-6-8 NWTPH-Gx, -Dx, BTEX				
					PID= 0.0			
10	205							10
					PID= 0.0		Moist, brown SAND (SP); fine to medium sand, with no odor.	
				Soil: AB-6-13 NWTPH-Gx, -Dx, BTEX			Weak product odor.	
15	200		S2		PID= 21.7			15
				Soil: AB-6-17 NWTPH-Gx, -Dx, BTEX, Select VOCs, Pb	PID= 1043		Grades to gray with a strong product odor.	
					PID= 68.2		Becomes slightly silty SAND (SP-SM);	
20	195	▽ 11/9/2016			PID= 11.8		Wet, gray, sandy, silty GRAVEL (GM); fine to coarse sand, fine to coarse subrounded gravel, weak product odor.	20
					PID= 2.5		Moist to wet, gray, slightly silty SAND (SP-SM); fine to medium sand, with very weak product odor.	
				Soil: AB-6-24 NWTPH-Gx, -Dx, BTEX				
25	190		S3		PID= 0.3		No product odor.	25
							Becomes silty SAND (SM)	
				Soil: AB-6-29 NWTPH-Gx, -Dx, BTEX	PID= 0.0			
30	185				PID= 0.0			30
			S4	Soil: AB-6-33 NWTPH-Gx, -Dx, BTEX	PID= 0.0		Hard, moist, gray, slightly sandy SILT (ML); fine sand, with none to low plasticity, no odor.	
							Bottom of exploration at 33 ft. bgs.	
35	180							35

Legend

Sample Method: Continuous core 4" ID

Water Level: ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: MML
Approved by: DC & AG

Exploration Log AB-6

Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

Aspect CONSULTING	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location		*Coordinates (SPN NAD83 ft)*	*Exploration Number*
	4700 Brooklyn Ave NE, Seattle, WA, West property line		E:1275559 N:245534 (est)	**AB-7**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface (GS) Elev.*	
Holt Services	Rotary drill rig	Rotary core	215'(est)	
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Dave	Sonic	11/9/2016	NA	27' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal					Asphalt	0
							Moist, brown, gravelly, slightly silty SAND (SP-SM); fine to medium sand, fine subrounded gravel, no odor.	
		Backfilled with bentonite chips						
5	210		S1	Soil: AB-7-6 NWTPH-Gx, -Dx, BTEX	PID= 0.0			5
10	205			Soil: AB-7-10 NWTPH-Gx, -Dx, BTEX	PID= 0.0		Moist, brown SAND (SP); fine to medium sand, with no odor.	10
					PID= 28.7		Becomes gray with weak product odor.	
15	200		S2	Soil: AB-7-14 NWTPH-Gx, -Dx, BTEX	PID= 550		Product odor becomes moderate.	15
					PID= 232		Product odor becomes strong.	
20	195			Soil: AB-7-19 NWTPH-Gx, -Dx, BTEX	PID= 1656		Product odor becomes very strong.	20
					PID= 42.0		Woodchips between 20 and 21 ft bgs.	
25	190	▽ 11/9/2016	S3	Soil: AB-7-24 NWTPH-Gx, -Dx, BTEX	PID= 29.6		Becomes gravelly with fine subrounded gravel.	25
					PID= 25.1		Wet, gray brown, gravelly, slightly silty SAND (SP-SM); fine to coarse sand, fine subrounded gravel, with moderate product odor, grading siltier with depth.	
30	185			Soil: AB-7-29 NWTPH-Gx, -Dx, BTEX	PID= 25.1		Becomes slightly moist, with weak product odor.	30
			S4		PID= 9.3		Hard, moist, gray, slightly sandy SILT (ML); fine sand, with none to low plasticity, no odor.	
35	180			Soil: AB-7-33 NWTPH-Gx, -Dx, BTEX	PID= 8.9		Bottom of exploration at 33 ft. bgs.	35

Legend

Sample Method: Continuous core 4" ID

Water Level: ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: MML
Approved by: DC & AG

Exploration Log AB-7
Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

Aspect CONSULTING	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location		*Coordinates (SPN NAD83 ft)*	*Exploration Number*
	4700 Brooklyn Ave NE, Seattle, WA, North of fueling islands		E:1275582 N:245484 (est)	**AB-8**
Contractor	*Equipment*	*Sampling Method*	*Ground Surface (GS) Elev.*	
Holt Services	Rotary drill rig	Rotary core	215'(est)	
Operator	*Exploration Method(s)*	*Work Start/Completion Dates*	*Top of Casing Elev.*	*Depth to Water (Below GS)*
Dave	Sonic	11/9/2016	NA	25' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal					Asphalt	0
							Moist, brown SAND (SP); fine to medium sand, no odor.	
							Vacuumed out from 0 to 6 ft bgs for utilities.	
		Backfilled with bentonite chips						
5	210		S1	Soil: AB-8-6 NWTPH-Gx, -Dx, BTEX	PID= 4.8			5
10	205			Soil: AB-8-10 NWTPH-Gx, -Dx, BTEX	PID= 39.7			10
					PID= 28.8			
15	200		S2	Soil: AB-8-14 NWTPH-Gx, -Dx, BTEX	PID= 32.6		Becomes gray brown, with a very weak product odor.	15
					PID= 39.5			
20	195			Soil: AB-8-18 NWTPH-Gx, -Dx, BTEX	PID= 18.6		No product odor.	20
					PID= 22.5			
25	190	▽ 11/9/2016	S3	Soil: AB-8-24 NWTPH-Gx, -Dx, BTEX	PID= 17.1		Wet, brown, silty GRAVEL (GM); fine to coarse sand, fine to coarse subrounded gravel, with no odor.	25
30	185			Soil: AB-8-29 NWTPH-Gx, -Dx, BTEX	PID= 25.4		Wet, gray, gravelly, silty SAND (SM); fine to coarse sand, fine to coarse subrounded gravel, with no odor.	30
					PID= 10.8		Hard, moist, gray, slightly sandy SILT (ML); fine sand, with none to low plasticity, no odor.	
35	180		S4	Soil: AB-8-33 NWTPH-Gx, -Dx, BTEX	PID= 12.4			35
							Bottom of exploration at 35 ft. bgs.	

Legend

Sample Method
- ◯ No Soil Sample Recovery
- ◧ Continuous core 4" ID

Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: MML
Approved by: DC & AG

Exploration Log AB-8
Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

Aspect CONSULTING	Brooklyn Ave - 160092		Environmental Exploration Log	
	Project Address & Site Specific Location 4700 Brooklyn Ave NE, Seattle, WA, East property line		*Coordinates (SPN NAD83 ft)* E:1275650 N:245454 (est)	*Exploration Number* **AB-9**
Contractor Holt Services	*Equipment* Rotary drill rig	*Sampling Method* Rotary core	*Ground Surface (GS) Elev.* 215'(est)	
Operator Dave	*Exploration Method(s)* Sonic	*Work Start/Completion Dates* 11/7/2016	*Top of Casing Elev.* NA	*Depth to Water (Below GS)* No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
0	215	Concrete surface seal			PID= 36.6		Asphalt Moist, gray brown, slightly gravelly, slightly silty SAND (SP-SM); fine to medium sand, fine subrounded gravel, weak product odor.	0
		Backfilled with bentonite chips			PID= 76.1		Becomes brown with no product odor.	
5	210		S1	Soil: AB-9-5 NWTPH-Gx, -Dx, BTEX	PID= 106			5
				Soil: AB-9-8 NWTPH-Gx, -Dx, BTEX	PID= 46.1			
10	205				PID= 59.2		Moist, brown SAND (SP); fine to medium sand, with no odor, no sheen.	10
				Soil: AB-9-14 NWTPH-Gx, -Dx, BTEX	PID= 72.9			
15	200		S2		PID= 317		Becomes gray with weak product odor.	15
				Soil: AB-9-19 NWTPH-Gx, -Dx, BTEX	PID= 472		Becomes slightly gravelly with fine subrounded gravel, and scattered very thin beds of silty sand.	
20	195		S3				Sand coarsening with depth.	20
				Soil: AB-9-24 NWTPH-Gx, -Dx, BTEX	PID= 79.1		Becomes gravelly with fine to coarse subrounded gravel.	
25	190				PID= 36.1		Moist, gray, sandy, silty GRAVEL (GM); fine to medium sand, fine subrounded gravel, with no odor.	25
			S4	Soil: AB-9-27 NWTPH-Gx, -Dx, BTEX	PID= 24.3		Hard, moist, gray, slightly sandy, slightly gravelly, SILT (ML); fine sand, fine subrounded gravel, with none to low plasticity, no odor, no sheen.	
30	185						Bottom of exploration at 30 ft. bgs. Note: PID malfunction, measurements likely overstated.	30
35	180							35

Legend

Sample Method: ◯ No Soil Sample Recovery

Water Level: No Water Encountered

See Exploration Log Key for explanation of symbols

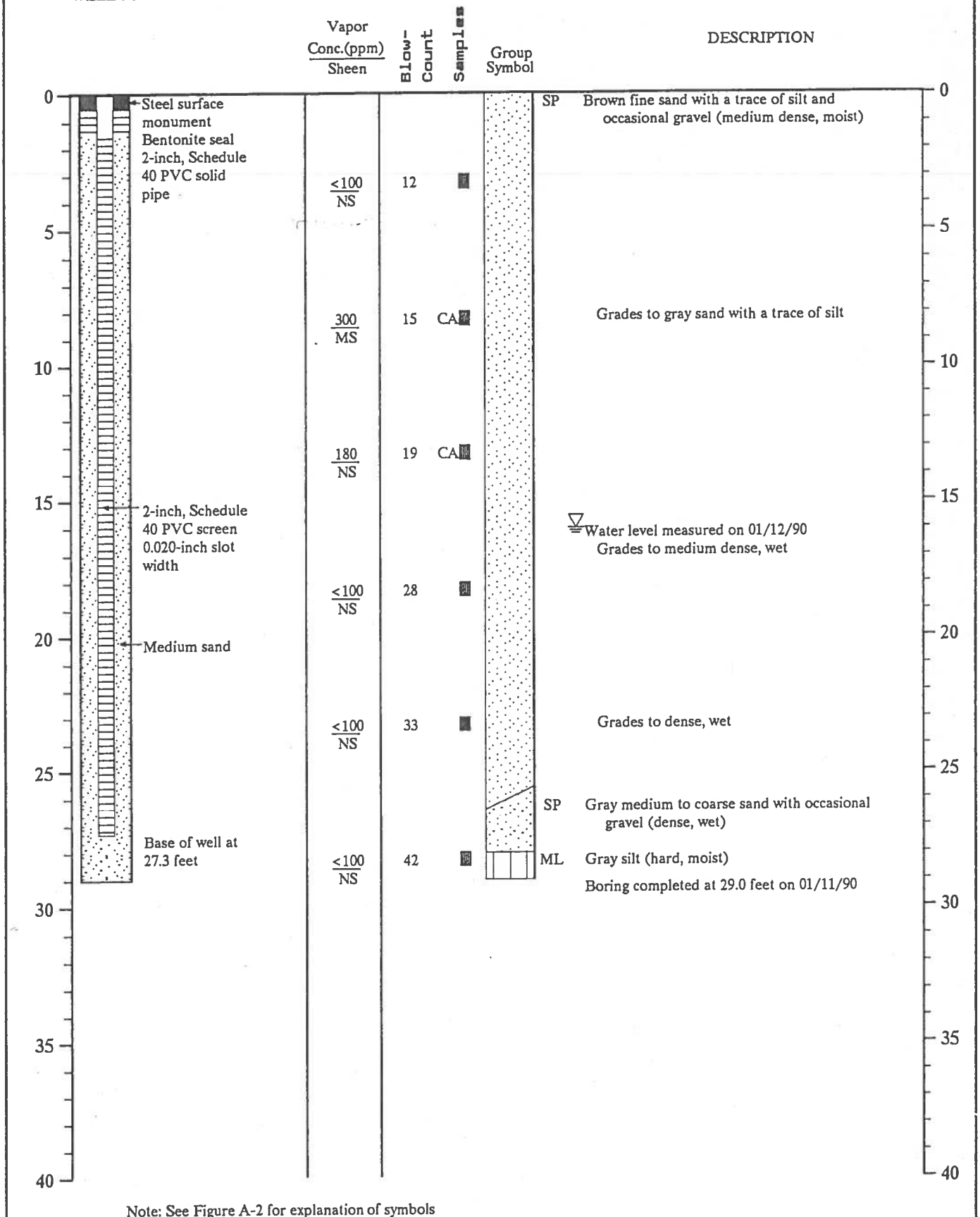
Logged by: MML
Approved by: DC & AG

Exploration Log AB-9

Sheet 1 of 1

ASPECT STANDARD EXPLORATION LOG TEMPLATE P:\GINTWPROJECTS\4700 BROOKLYN AVE-160092.GPJ March 7, 2018

MONITOR WELL NO. MW-1



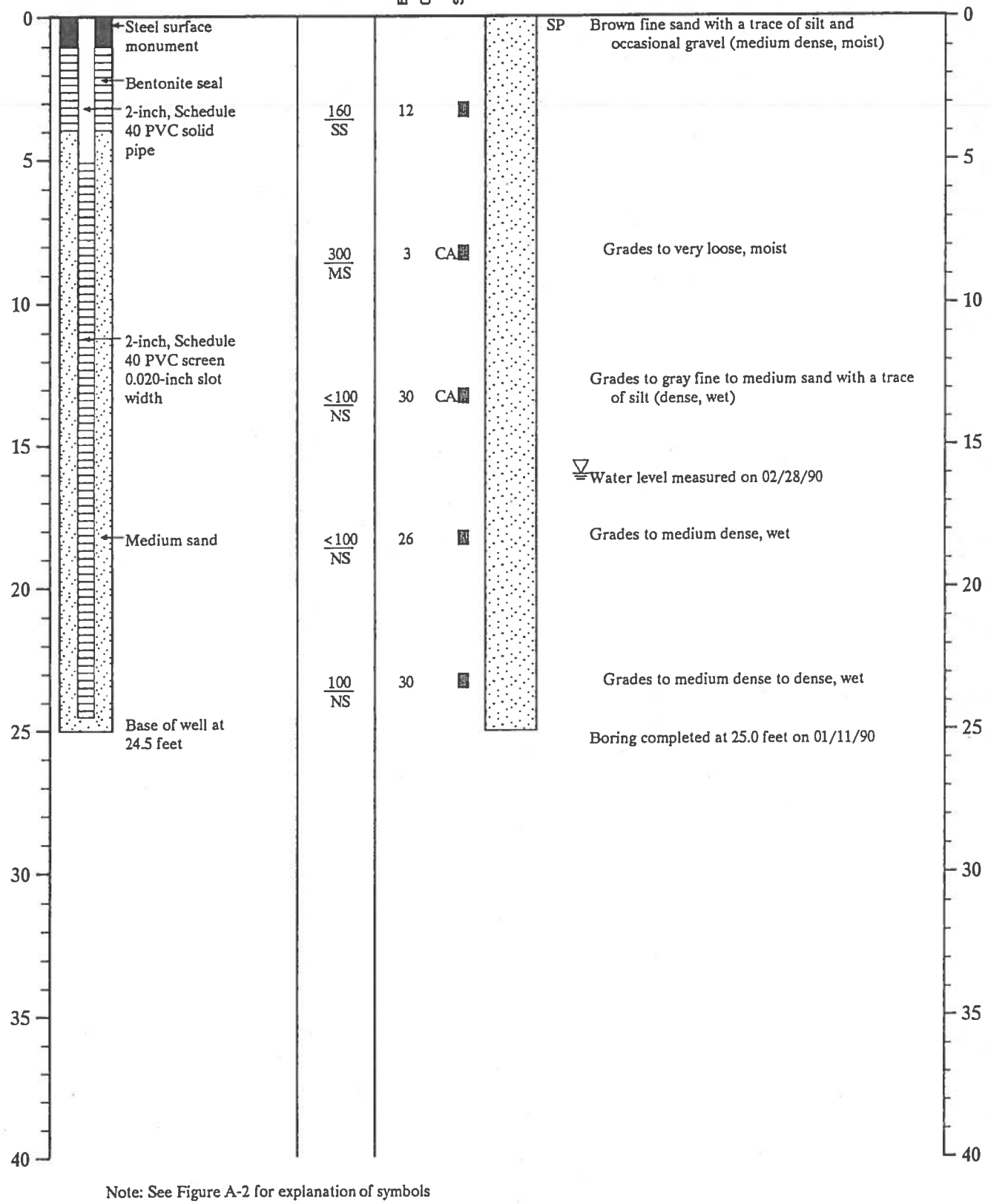
Note: See Figure A-2 for explanation of symbols

GeoEngineers

Log of Monitor Well

Figure A-3

MONITOR WELL NO. MW-2



Note: See Figure A-2 for explanation of symbols

Geo Engineers

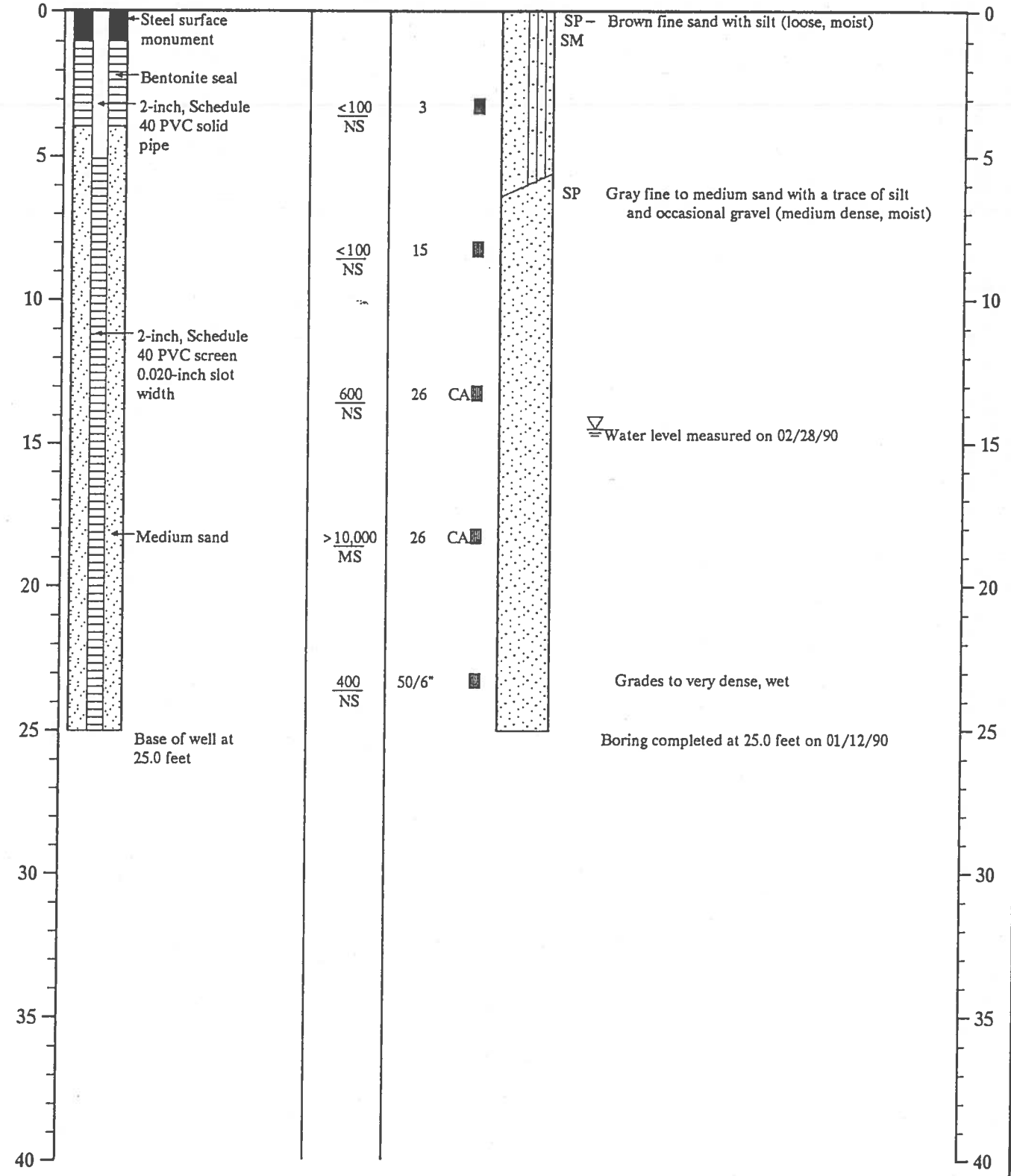
Log of Monitor Well

Figure A-4

:LRM:CLH:IRA 6/13/90

0372-068-B04

MONITOR WELL NO. MW-3



Note: See Figure A-2 for explanation of symbols

Geo Engineers

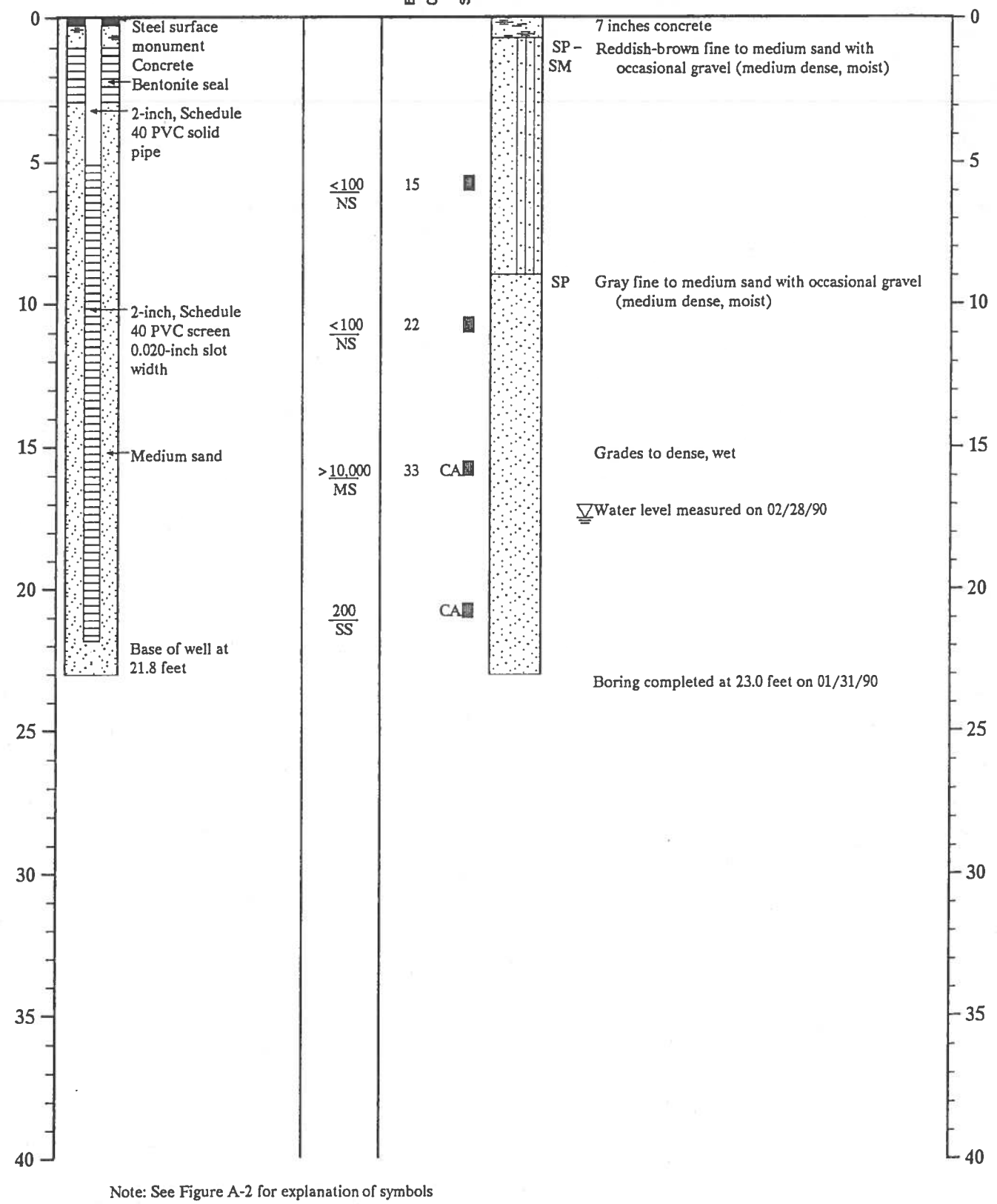
Log of Monitor Well

Figure A-5

:LRM:CLH:IRA 6/13/90

0372-068-B04

MONITOR WELL NO. MW-4



Note: See Figure A-2 for explanation of symbols

Geo Engineers

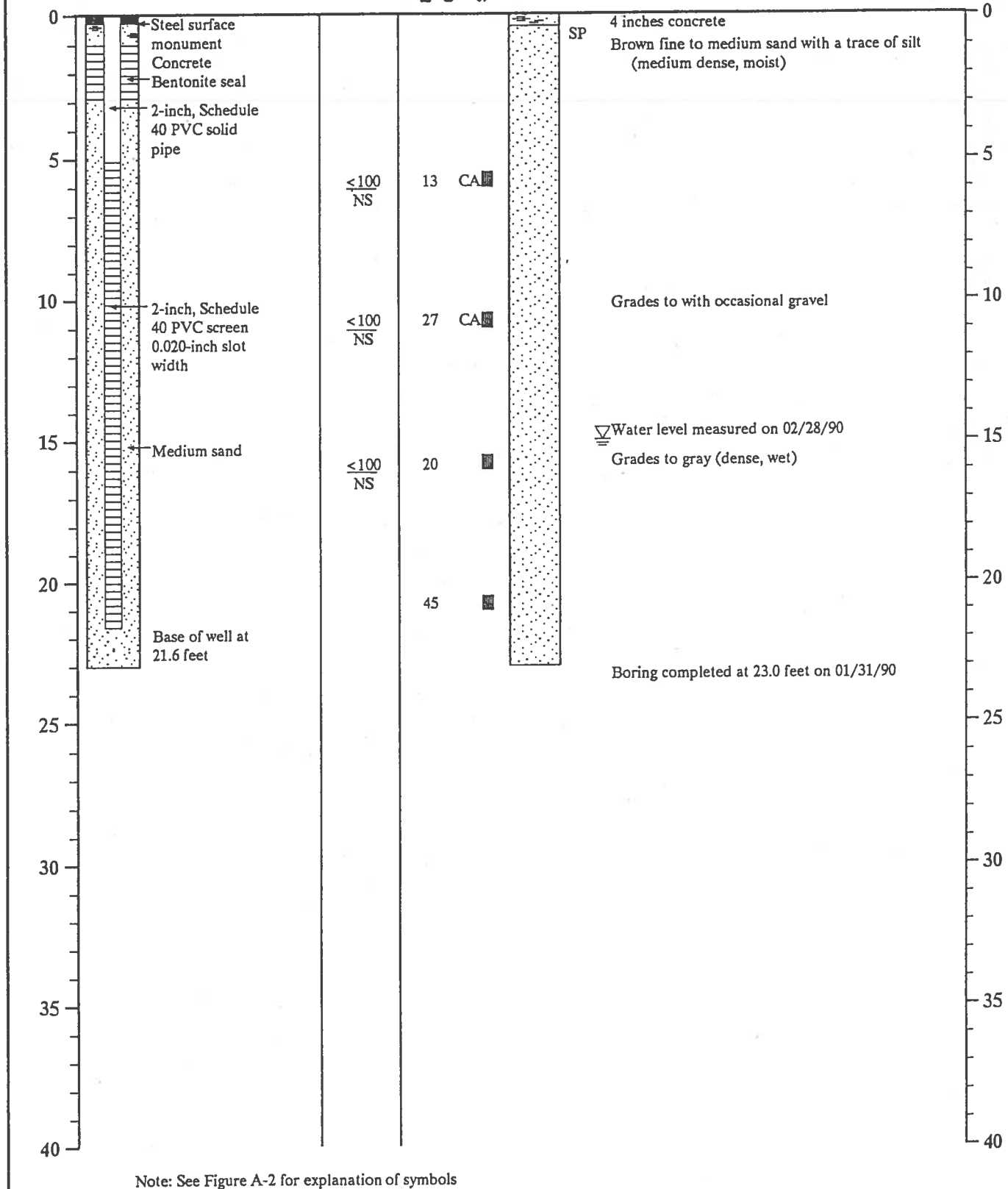
Log of Monitor Well

Figure A-6

:LRM:CLH:IRA 6/13/90

0372-068-B04

MONITOR WELL NO. MW-5



Note: See Figure A-2 for explanation of symbols

Geo Engineers

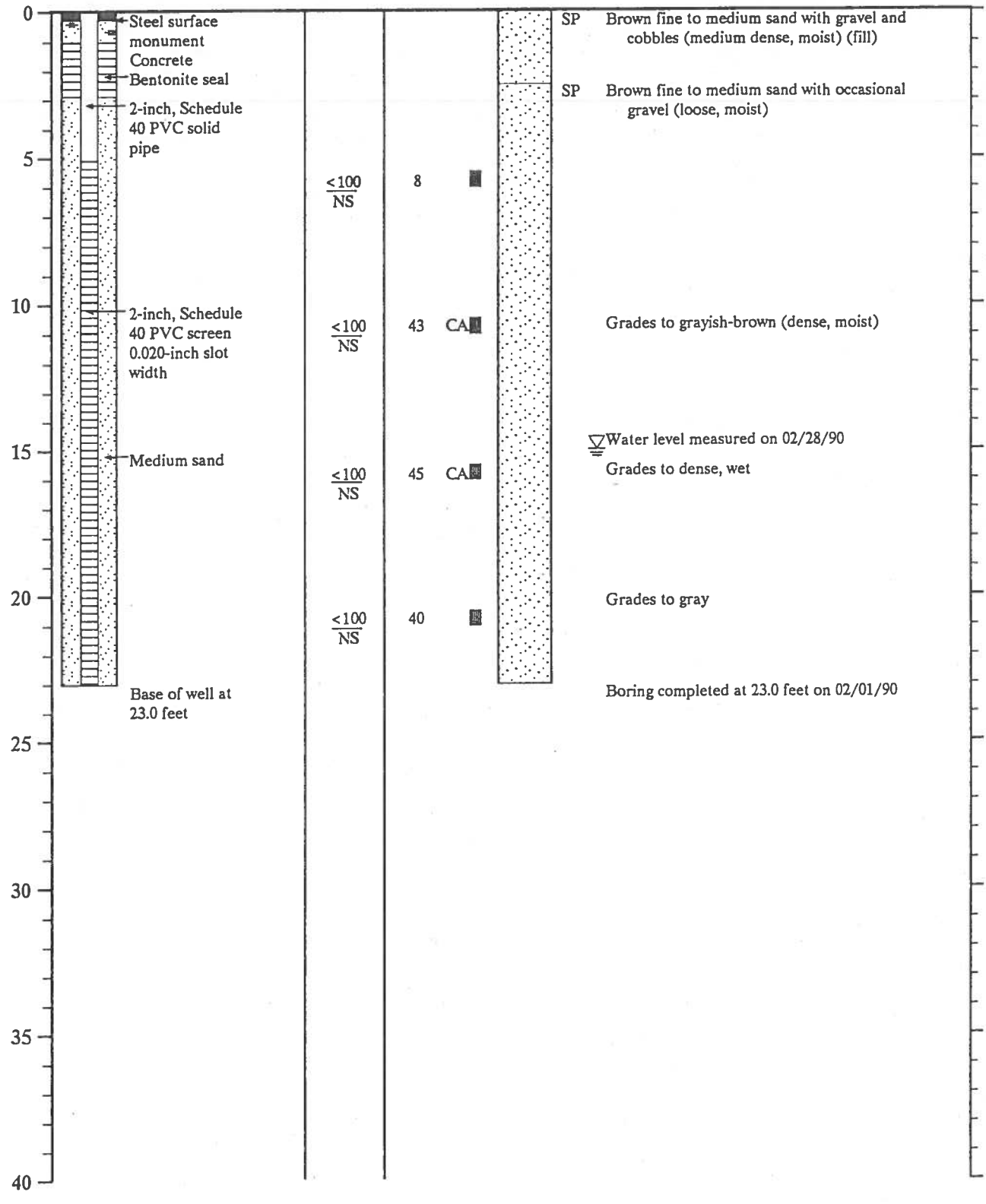
Log of Monitor Well

Figure A-7

:LRM:CLH:IRA 6/13/90

0372-068-B04

MONITOR WELL NO. MW-6



Note: See Figure A-2 for explanation of symbols

Geo Engineers

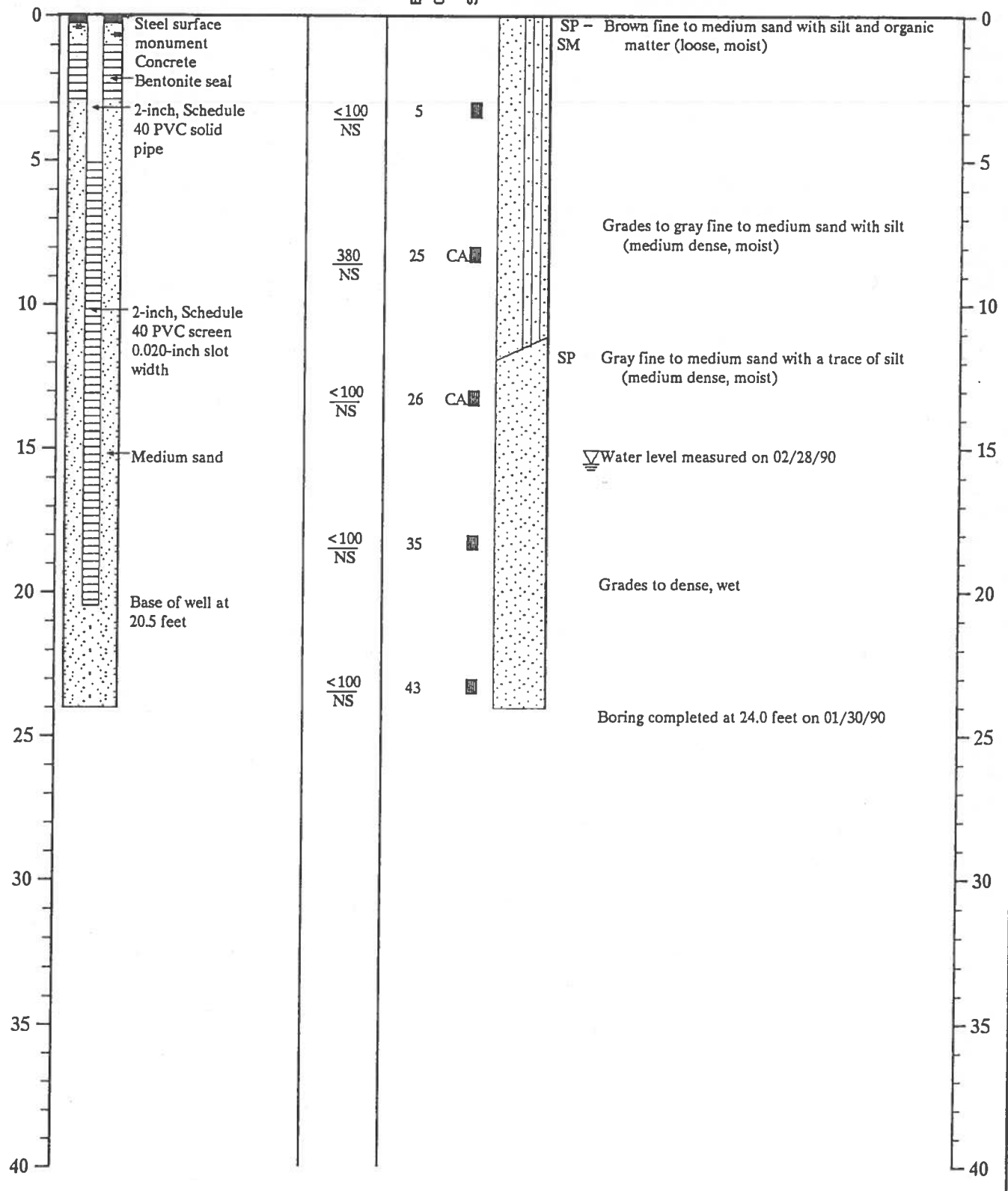
Log of Monitor Well

Figure A-8

:LRM:CLH:IRA 6/15/90

0372-068-B04

MONITOR WELL NO. MW-7



Note: See Figure A-2 for explanation of symbols

Geo Engineers

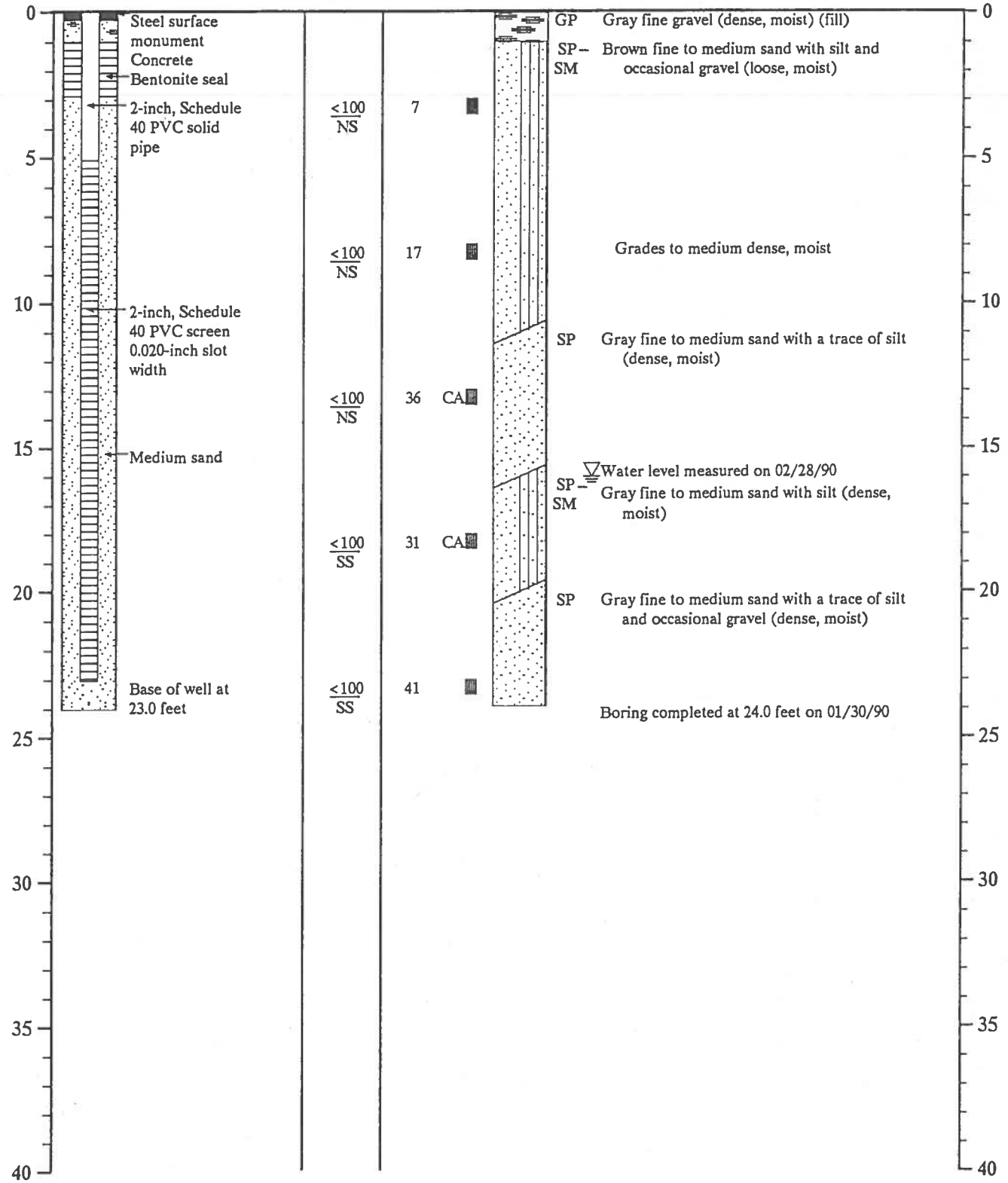
Log of Monitor Well

Figure A-9

:LRM:CLH:IRA 6/13/90

0372-068-B04

MONITOR WELL NO. MW-8



Note: See Figure A-2 for explanation of symbols

Geo Engineers

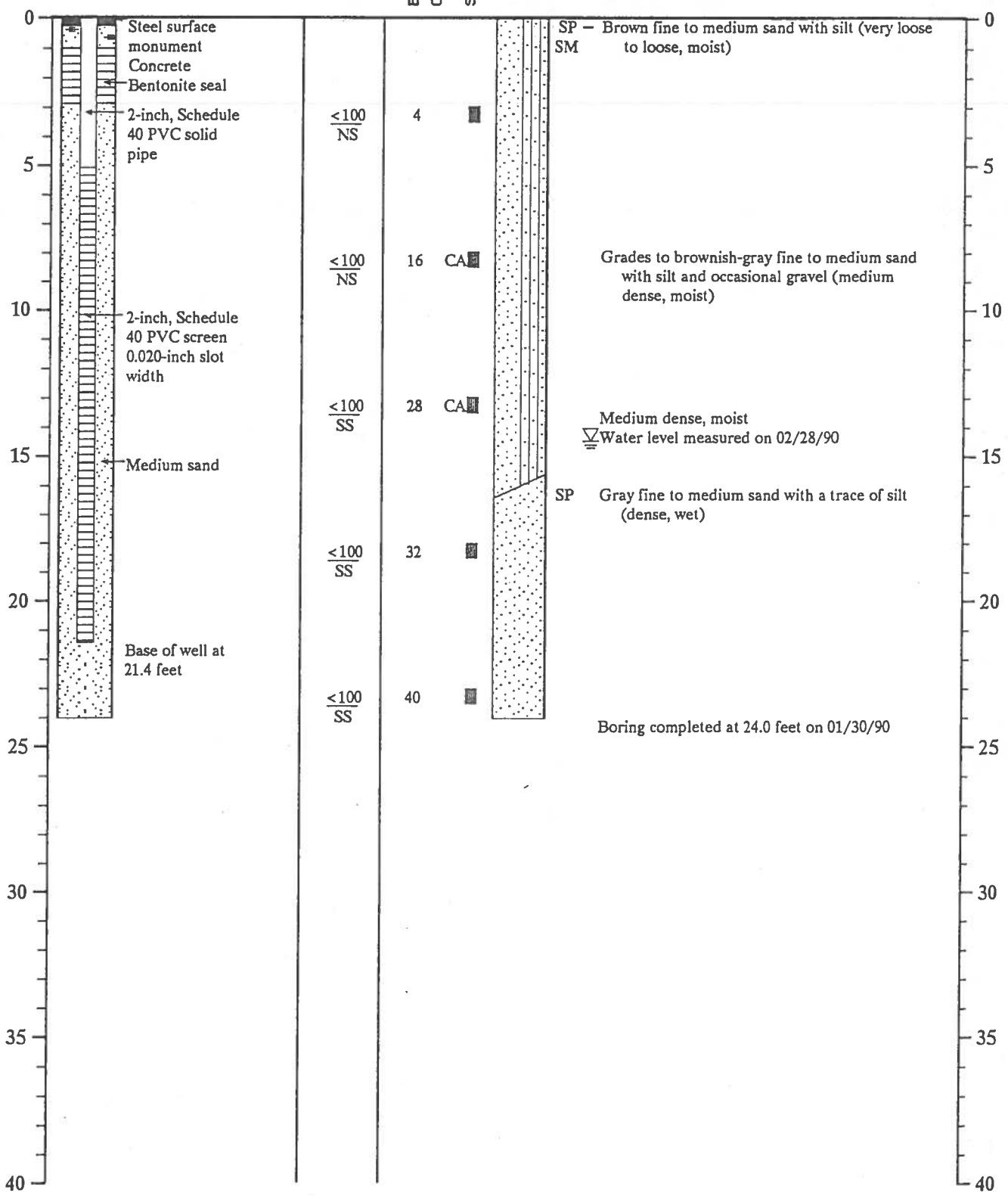
Log of Monitor Well

Figure A-10

:LRM:CLH:IRA 6/13/90

0372-068-B04

MONITOR WELL NO. MW-9



Note: See Figure A-2 for explanation of symbols

Geo Engineers

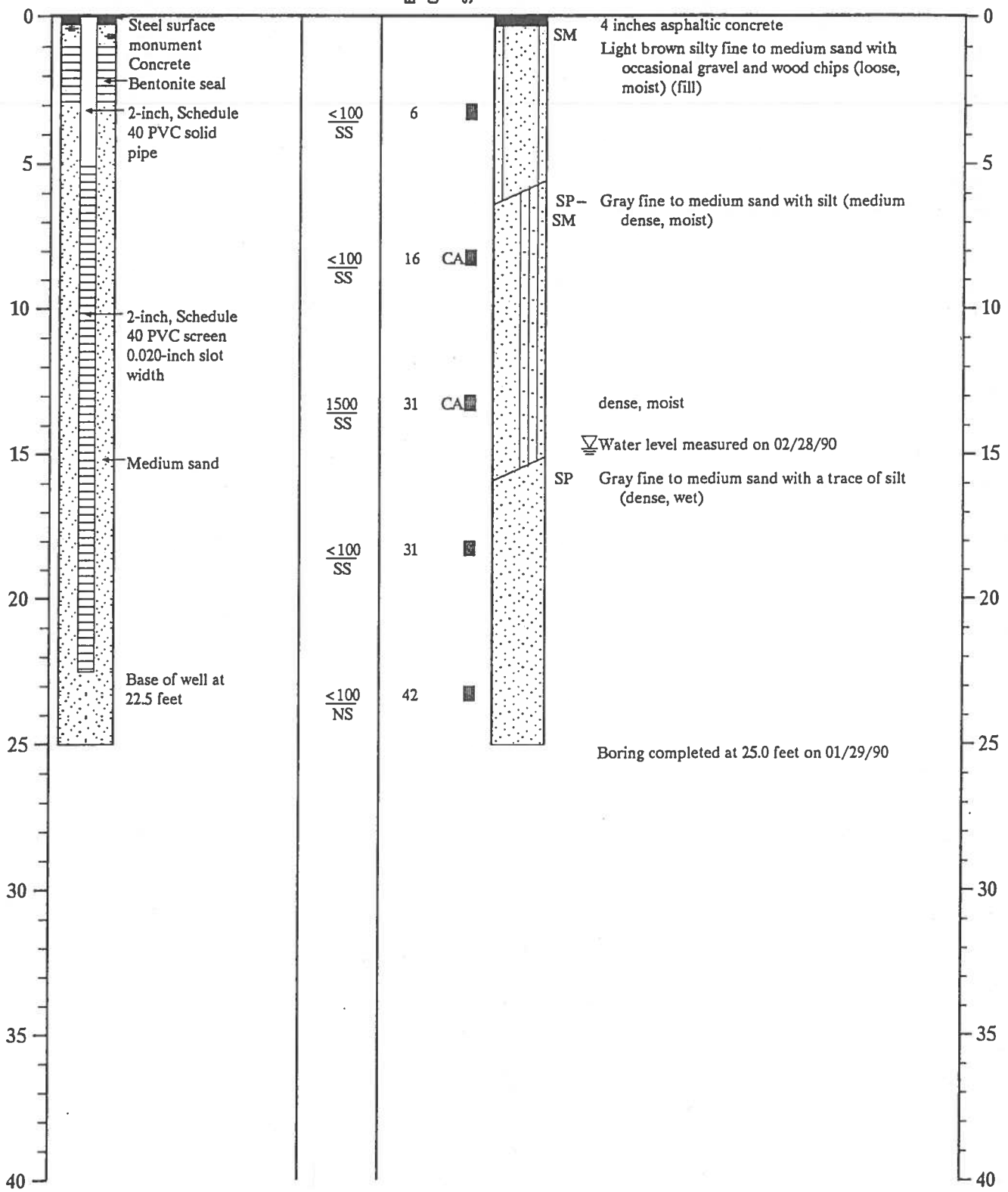
Log of Monitor Well

Figure A-11

:LRM:CLH:IRA 6/13/90

0372-068-B04

MONITOR WELL NO. MW-10



Note: See Figure A-2 for explanation of symbols

GeoEngineers

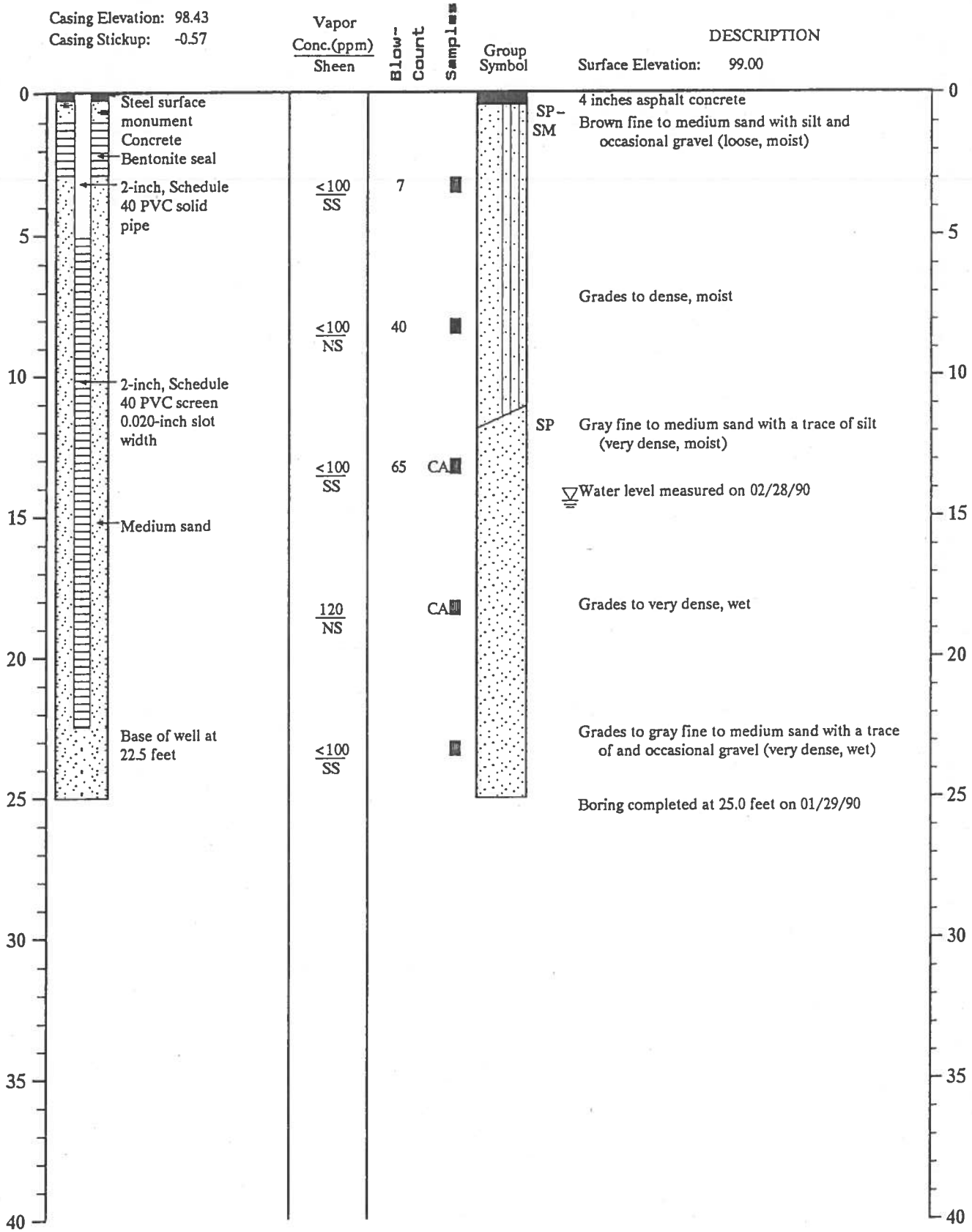
Log of Monitor Well

Figure A-12

:LRM:CLH:IRA 6/15/90

0372-068-B04

MONITOR WELL NO. MW-11



Note: See Figure A-2 for explanation of symbols

Geo Engineers

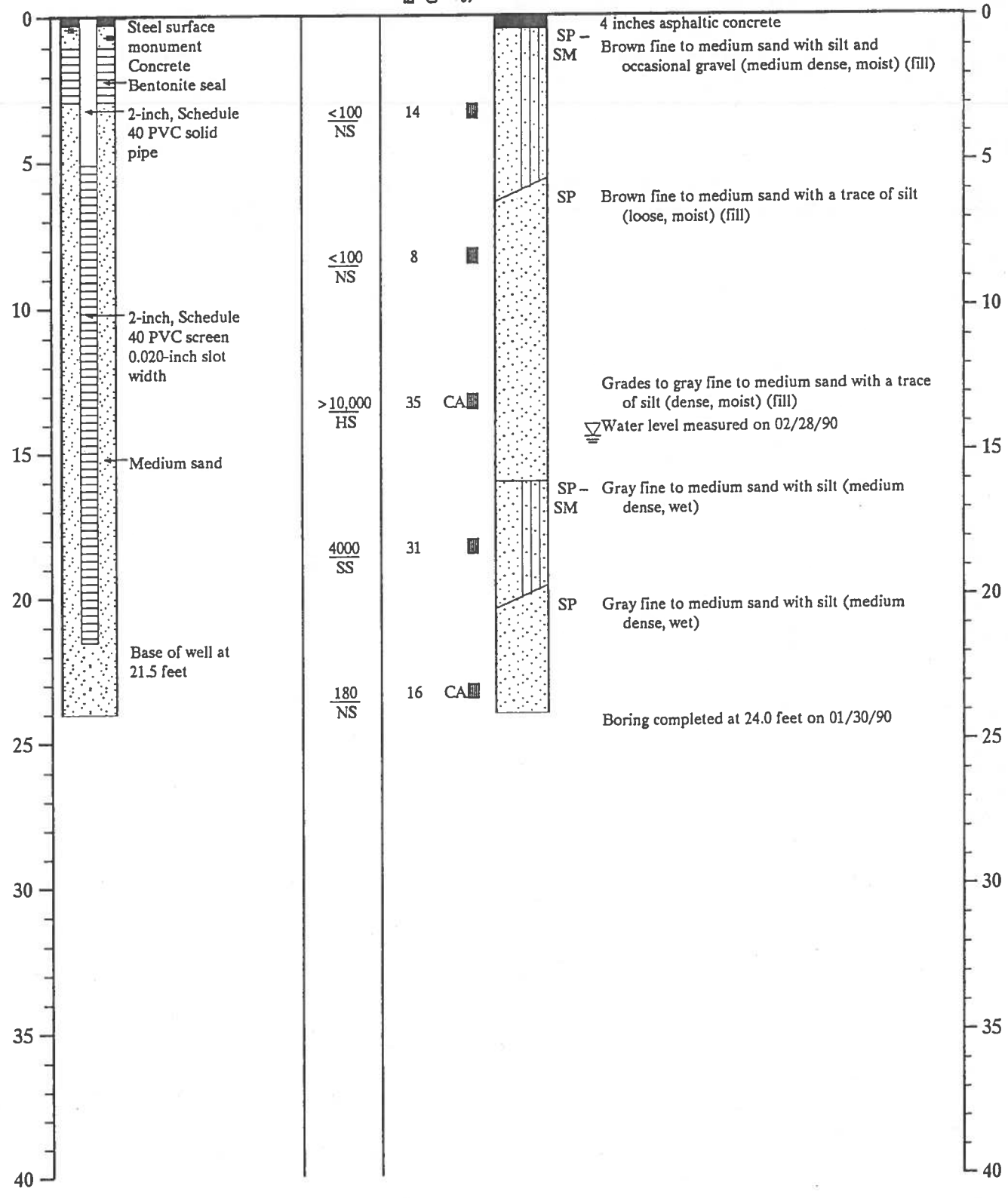
Log of Monitor Well

Figure A-13

:LRM:CLH:IRA 6/15/90

0372-068-B04

MONITOR WELL NO. MW-12



Note: See Figure A-2 for explanation of symbols

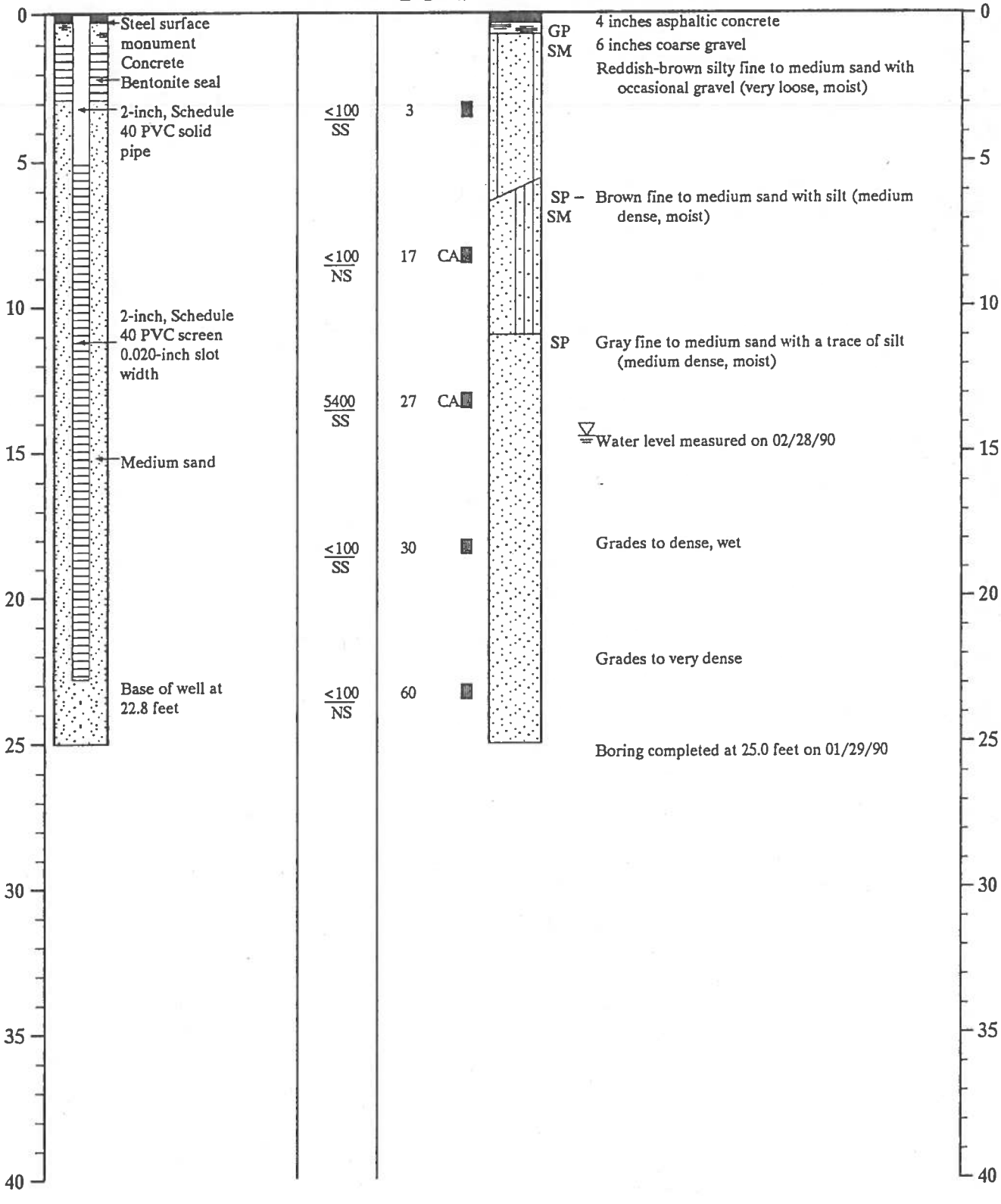
Geo Engineers

Log of Monitor Well

Figure A-14

0372-068-B04 :LRM:CLH:IRA 6/13/90

MONITOR WELL NO. MW-13



Note: See Figure A-2 for explanation of symbols

Geo Engineers

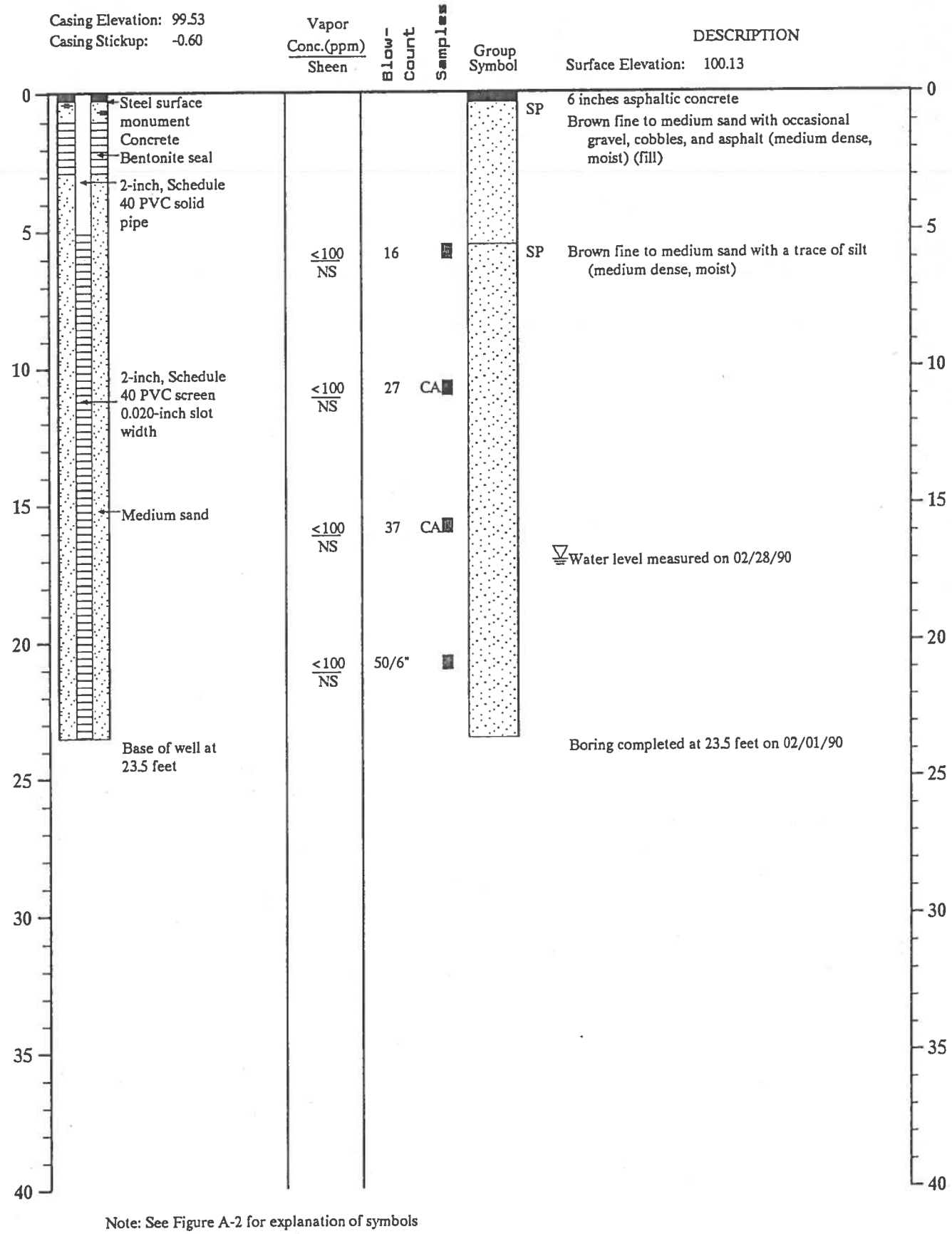
Log of Monitor Well

Figure A-15

:LRM:CLH:IRA 6/13/90

0372-068-B04

MONITOR WELL NO. MW-14



Note: See Figure A-2 for explanation of symbols

Geo Engineers

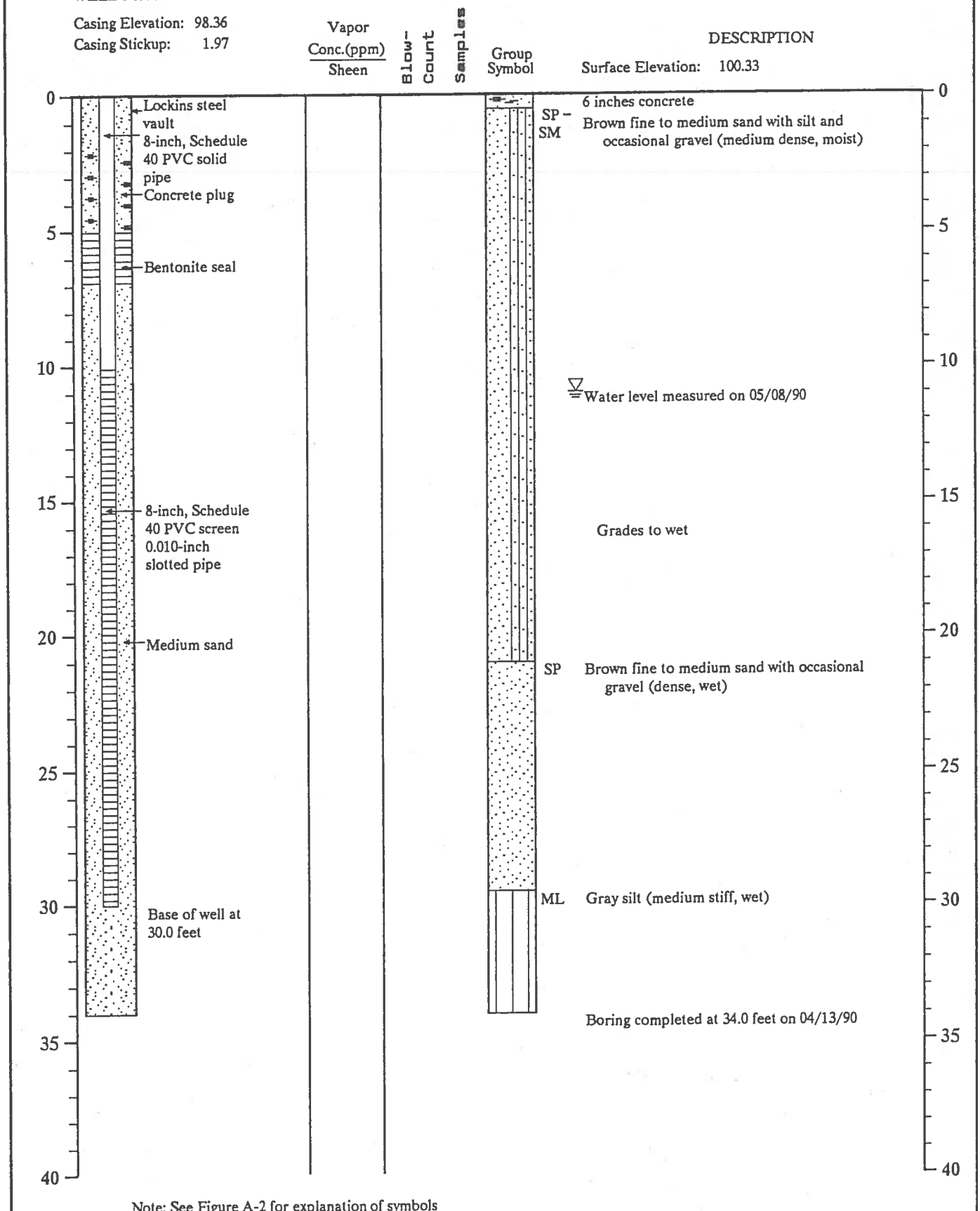
Log of Monitor Well

Figure A-16

:LRM:CLH:IRA 6/13/90

0372-068-B04

RECOVERY WELL NO. RW-1



Note: See Figure A-2 for explanation of symbols

Geo Engineers

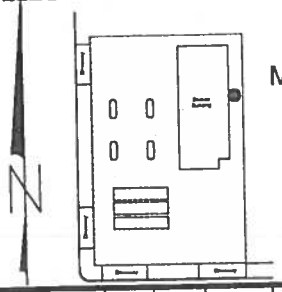
Log of Recovery Well

Figure A-17

:LRM:CLH:IRA 6/15/90

0372-068-B04

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: MW-15

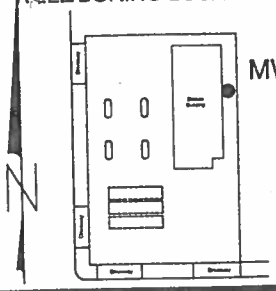
DATE:3/8/2001	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 90129	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 90129	BORING DIAMETER: 8"
LOCATION: 4700 Brooklyn Avenue	BORING DEPTH: 25.5'
CITY: Seattle	WELL CASING: 2" SCH 40 PVC
STATE: WA.	WELL SCREEN: 10-25' (0.020")
DRILLER: Cascade	SAND PACK: 8-25.5' (#2/12)

CASING ELEVATION	99.09
DATE:	3/8/2001
TIME:	

DESCRIPTION/LOGGED BY: Shawn Madison

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete / Bentonite / Sand			DP	0	27 38 39	5–6			SM		SILTY SAND: brown; 10% fines; fine to medium sand; very dense; no odor
			DP	0	24 26 29	10–11			SM		SILTY SAND: grayish brown; 20% fines; fine to medium sand; dense; no odor
		▼	DP	0	50/6	15–16			SM		SILTY SAND: gray; 10% fines; fine to medium sand; very dense; no odor
	▽		WT	0	80/6 50/4	20–21			SM		SILTY SAND: gray; 10% fines; fine to medium sand; very dense; no odor

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: MW-15

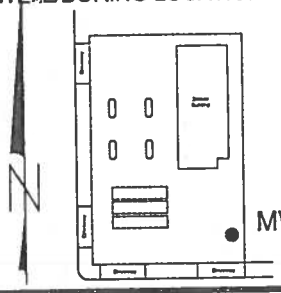
DATE:3/8/2001	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 90129	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 90129	BORING DIAMETER: 8"
LOCATION: 4700 Brooklyn Avenue	BORING DEPTH: 25.5'
CITY: Seattle	WELL CASING: 2" SCH 40 PVC
STATE: WA.	WELL SCREEN: 10-25' (0.020")
DRILLER: Cascade	SAND PACK: 8-25.5' (#2/12)

CASING ELEVATION	99.09
DATE:	3/8/2001
TIME:	

DESCRIPTION/LOGGED BY: Shawn Madison

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	
Sand			WT	0	50/6	23			GM		SILTY GRAVEL: gray; 25% silt; 10% fine to medium sand; gravel; very dense; no odor
						24					
						25					
						26					
						27					
						28					
						29					
						30					
						31					
						32					
						33					
						34					
						35					
						36					
						37					
						38					
						39					
						40					
						41					
						42					
						43					
						44					

WELL/BORING LOCATION MAP



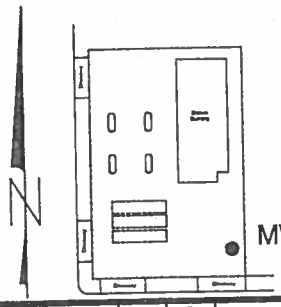
Delta Environmental Consultants, Inc.	WELL/BORING: MW-16
DATE:3/8/2001	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 90129	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 90129	BORING DIAMETER: 8"
LOCATION: 4700 Brooklyn Avenue	BORING DEPTH: 25.5'
CITY: Seattle	WELL CASING: 2" SCH 40 PVC
STATE: WA.	WELL SCREEN: 10-25' (0.020")
DRILLER: Cascade	SAND PACK: 8-25.5' (#2/12)

CASING ELEVATION	97.67
DATE:	3/8/2001
TIME:	

DESCRIPTION/LOGGED BY: Shawn Madison

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION
Concrete / Bentonite / Sand				0	8 8 10	5–6			SM		SILTY SAND: light brown; 10% fines; fine to medium sand; medium dense; no odor
				0	27 31 40	10–11			SM		SILTY SAND: gray; 20% fines; fine to medium sand; very dense; no odor
		▼		0	23 30	15–16			SM		SILTY SAND: gray; 20% fines; fine sand; very dense; no odor
				0	36 30	20–21			SM		SILTY SAND: gray; 20% fines; fine sand; very dense; no odor

WELL/BORING LOCATION MAP



Delta Environmental Consultants, Inc.

WELL/BORING: MW-16

DATE: 3/8/2001	DRILLING METHOD: Hollow Stem Auger
PROJECT: CW 90129	SAMPLING METHOD: DM Split Spoon
CLIENT: Chevron 90129	BORING DIAMETER: 8"
LOCATION: 4700 Brooklyn Avenue	BORING DEPTH: 25.5'
CITY: Seattle	WELL CASING: 2" SCH 40 PVC
STATE: WA.	WELL SCREEN: 10-25' (0.020")
DRILLER: Cascade	SAND PACK: 8-25.5' (#2/12)

CASING ELEVATION	97.67
DATE:	3/8/2001
TIME:	

DESCRIPTION/LOGGED BY:

WELL/BORING COMPLETION	FIRST ▽	STABILIZED ▼	MOISTURE	PID (ppm)	DENSITY BLOWS / 6"	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	USCS SYMBOL	GRAPHIC	DESCRIPTION/LOGGED BY:
Sand						23					
						24			SM		
			DP	0	50/6	25			ML		INORGANIC SILT: gray; fines; 20% very fine to fine sand; low placticity; very dense; no odor
						26					
						27					
						28					
						29					
						30					
						31					
						32					
						33					
						34					
						35					
						36					
						37					
						38					
						39					
						40					
						41					
						42					
						43					
						44					

Project Name: **Chevron Station No. 9-0129**
Project Number: **2015-006A**
Client: **Fields Holdings, LLC**

RILEYGROUP

Test Probe No.: **P1**

Sheet 1 of 2

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Asphalt**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **22 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **17.5 feet bgs**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
					0	Asphalt	
						Light brown, medium SAND, dry, no odor, no sheen	
0.3	P1-5				5	Light brown, medium, silty SAND, dry, no odor, no sheen	
0.2	P1-9				10	With ~0.5" diameter, angular gravel	
0.4	P1-15				15	Becomes wet	
	P1-W			▽			
0.1	P1-18				20		

Project Name: **Chevron Station No. 9-0129**

Project Number: **2015-006A**

Client: **Fields Holdings, LLC**

RILEYGROUP

Test Probe No.: **P1**

Sheet 2 of 2

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
0.2	P1-22				20	Light gray, medium, silty SAND, wet, no odor, no sheen	
						Test probe terminated at 22 feet bgs	
					25		
					30		
					35		
					40		
					45		
					50		
					55		

The Riley Group, Inc.
17522 Bothell Way NE, Bothell, WA 98011

Project Name: **Chevron Station No. 9-0129**
Project Number: **2015-006A**
Client: **Fields Holdings, LLC**

RILEYGROUP

Test Probe No.: **P2**

Sheet 1 of 1

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Concrete**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **10 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **Not Encountered**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION
					0	Concrete
						Light brown, fine to coarse, silty SAND, dry, no odor, no sheen
1.7						
0.4	P2-5				5	Vacuum, excavated to 5 feet bgs
0.1	P2-10				10	Test probe terminated at 10 feet bgs
					15	
					20	

The Riley Group, Inc.
17522 Bothell Way NE, Bothell, WA 98011

Project Name: **Chevron Station No. 9-0129**
Project Number: **2015-006A**
Client: **Fields Holdings, LLC**

RILEYGROUP

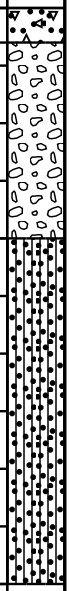
Test Probe No.: P3

Sheet 1 of 1

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Concrete**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **10 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **Not Encountered**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION
					0	Concrete
						Pea GRAVEL
						Product lines and air sparge/vapor extraction lines observed
						Light brown, medium to fine, silty SAND, dry, no odor, no sheen
1.7	P3-5				5	Vacuum, excavated to 5 feet bgs
1.0	P3-10				10	Test probe terminated at 10 feet bgs
					15	
					20	

Graphic Log



The Riley Group, Inc.
17522 Bothell Way NE, Bothell, WA 98011

Project Name: **Chevron Station No. 9-0129**
Project Number: **2015-006A**
Client: **Fields Holdings, LLC**

RILEYGROUP

Test Probe No.: **P4**

Sheet 1 of 1

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Concrete**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **19 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **17.5 feet bgs**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION
					0	Concrete
						Light brown, medium to fine, silty SAND, dry, no odor, no sheen
1.4						
3.4	P4-5				5	Vacuum, excavated to 5 feet bgs Becomes slightly moist, slight odor
90.1	P4-10				10	No odor, elevated PID reading
						Light gray, medium to fine, silty SAND, no odor, no sheen
8.3	P4-15				15	Light gray, medium to fine SAND, no odor, no sheen
	P4-19			▽		
						Test probe terminated at 19 feet bgs
					20	

Graphic Log

Project Name: **Chevron Station No. 9-0129**
Project Number: **2015-006A**
Client: **Fields Holdings, LLC**

RILEYGROUP

Test Probe No.: **P5**

Sheet 1 of 1

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Asphalt**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **5 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **Not Encountered**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
					0	Asphalt	
0.7						Gray, pea GRAVEL, dry, no odor, no sheen	
1.1	P5-5					Light brown, medium, silty SAND, dry, no odor, no sheen	
					5	Test probe terminated at 5 feet bgs	
					10		
					15		
					20		

The Riley Group, Inc.
17522 Bothell Way NE, Bothell, WA 98011

Project Name: **Chevron Station No. 9-0129**
Project Number: **2015-006A**
Client: **Fields Holdings, LLC**

RILEYGROUP

Test Probe No.: P6

Sheet 1 of 1

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Asphalt**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **18.5 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **16.5 feet bgs**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION
					0	Asphalt
						Gray, pea GRAVEL, subangular, dry, no odor, no sheen
41.0	P6-5				5	Gray, fine to medium, silty SAND, dry, slight sheen, no odor
1.2	P6-9				10	
2.0	P6-13					
3.9	P6-14					Becomes wet, strong odor, sheen
				▽	15	
1,156						Test probe terminated at 18.5 feet bgs
					20	

Graphic Log

The Riley Group, Inc.
17522 Bothell Way NE, Bothell, WA 98011

Project Name: **Chevron Station No. 9-0129**	Test Probe No.: **P7**
Project Number: **2015-006A**	**Sheet 1 of 1**
Client: **Fields Holdings, LLC**	RILEYGROUP

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Asphalt**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **17 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **Not Encountered**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION
					0	Asphalt
						Gray, pea GRAVEL, dry, no odor, no sheen
4.5	P7-5				5	Light brown, medium to fine, silty SAND, dry, no odor, no sheen Becomes moist
8.4	P7-10				10	Becomes dry
3.2	P7-15				15	Becomes gray
3.0	P7-17					Test probe terminated at 17 feet bgs
					20	

Graphic Log

Project Name: **Chevron Station No. 9-0129**	Test Probe No.: **P8**
Project Number: **2015-006A**	**Sheet 1 of 1**
Client: **Fields Holdings, LLC**	RILEYGROUP

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Asphalt**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **19 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **17.5 feet bgs**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
					0	Asphalt	
						Light brown, medium to fine, silty SAND with ~0.5" diameter subangular gravel, dry, no odor, no sheen	
1.7	P8-5				5		
						Becomes moist	
2.0	P8-10				10	Becomes dry	
2.1	P8-14				15		
2.5	P8-17						
	P8-W			▽		Becomes wet	
						Gray, medium to fine, silty SAND, wet, odor, sheen	
						Test probe terminated at 19 feet bgs	
					20		

The Riley Group, Inc.
17522 Bothell Way NE, Bothell, WA 98011

Project Name: **Chevron Station No. 9-0129** Project Number: **2015-006A** Client: **Fields Holdings, LLC**	RILEYGROUP Test Probe No.: **P9** **Sheet 1 of 1**

Date(s) Drilled: **02/24/15**	Logged By: **SL**	Surface Conditions: **Asphalt**
Drilling Method(s): **Direct Push**	Drill Bit Size/Type: **2.25" Diameter**	Total Depth of Borehole: **10 feet bgs**
Drill Rig Type: **Track-Mounted**	Drilling Contractor: **The Riley Group, Inc.**	Approximate Surface Elevation: **n/a**
Groundwater Level: **Not Encountered**	Sampling Method(s): **Continuous**	Hammer Data : **n/a**
Borehole Backfill: **Bentonite**	Location: **4700 Brooklyn Avenue Northeast, Seattle, Washington 98105**	

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
					0	Asphalt	
						Light brown, medium to fine, silty SAND, dry, no odor, no sheen	
2.1	P9-5				5	Becomes slightly moist	
0.3	P9-10				10	Test probe terminated at 10 feet bgs	
					15		
					20		

Project Name: **Chevron Station No. 9-0129**

Project Number: **2015-006A**

Client: **Fields Holdings, LLC**

RILEYGROUP

Boring Log Key

Sheet 1 of 1

PID Reading, ppm	Sample ID	Sample Type	% Recovery	GW Depth	Depth (feet)	MATERIAL DESCRIPTION	Graphic Log
1	2	3	4	5	6	7	8

COLUMN DESCRIPTIONS

1. PID Reading, ppm: The reading from a photo-ionization detector, in parts per million.
2. Sample ID: Sample identification number.
3. Sample Type: Type of soil sample collected at the depth interval shown.
4. % Recovery: % Recoverysquare foot.
5. GW Depth: Groundwater depth in feet below the ground surface.
6. Depth (feet): Depth in feet below the ground surface.
7. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
8. Graphic Log: Graphic depiction of the subsurface material encountered.

FIELD AND LABORATORY TEST ABBREVIATIONS

CHEM: Chemical tests to assess corrosivity
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

MATERIAL GRAPHIC SYMBOLS


Asphaltic Concrete (AC)


Portland Cement Concrete


Poorly graded GRAVEL (GP)


Silty SAND (SM)


Poorly graded SAND (SP)

TYPICAL SAMPLER GRAPHIC SYMBOLS


Auger sampler


Bulk Sample


3-inch-OD California w/ brass rings


CME Sampler


Continuous


Grab Sample


2.5-inch-OD Modified California w/ brass liners


Pitcher Sample


2-inch-OD unlined split spoon (SPT)


Shelby Tube (Thin-walled, fixed head)

OTHER GRAPHIC SYMBOLS

Water level (at time of drilling, ATD)

Water level (after waiting)

Minor change in material properties within a stratum

Inferred/gradational contact between strata

Queried contact between strata

GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

SAIC
From Science to Solutions
18912 North Creek Parkway, Suite 101
Bothell, WA 98011

Boring: SB-1

Project: Chevron Service Station No. 9-0129
Client: Chevron
Location: 4700 Brooklyn Ave NE, Seattle, WA

Logged By: G. Cisneros
Date Started: 10/2/2010
Date Completed: 10/2/2010

Driller: Cascade
Drill Method: AK/HSA
Total Boring Depth: 25 ft

MOISTURE CONTENT	ORGANIC VAPOR (ppm)	BLOWS/6"	SAMP. INTERVAL	ANALYTICAL SAMPLE	Analyical Results (mg/mk)	U.S.C.S. SYMBOL	GRAPHIC LOG	DEPTH (ft)	LITHOLOGY/DESCRIPTION
								0	Asphalt
Moist	0.3					SW		1	(SW) Brown, loose, fine to medium SAND with 20% fine to medium gravel & <5% silt. No odor; No sheen. (Fill)
								2	Bricks
Moist	0.3					SW		3	(SW) Brown, loose, fine to medium SAND with 20% fine to medium gravel & <5% silt. No odor; No sheen. (Fill)
								4	(GP) Same as above, less gravel, No odor; No sheen.
Moist	0.0					GP		5	
								6	
								7	
								8	(GP) Light brown, loose, fine to medium SAND with <20% fine to medium gravel, <5% silt. No odor; No sheen.
						GP		9	
Moist	0.0	21 31 50				SP		10	(SP) Brown, dense, medium SAND with 10% fine gravel. No odor; No sheen.
								11	
Moist	0.0	32 50						12	
						SP		13	(SP) Brown, dense, medium to coarse SAND w/10% fine gravel. No odor; No sheen.
								14	
Wet	1.9	50		SB-1-15	G = N.D. D = N.D. HO = N.D. B = N.D.			15	
						SP		16	(SP) Orange brown, dense, medium SAND. No odor; No sheen; 10.0ppm.
								17	
Saturated	0.0	50		SB-1-17.5	G = N.D. D = N.D. HO = N.D. B = N.D.			18	(SP) Light brown to gray, dense, medium to coarse SAND with 5% gravel. No odor; No sheen.
						SP		19	
Saturated		50						20	(SP) Gray, dense, medium to coarse SAND wtih 10% fine to medium gravel.
						SP		21	
								22	
Saturated	1.3	25 50						23	(SP) Gray, dense, medium to coarse SAND with 5% fine to medium gravel. No odor; No sheen.
						SP		24	
								25	Bottom of borehole at 25.0 feet.
								26	

APPENDIX B

Sampling and Analysis Plan/ Quality Assurance Project Plan (Revised August 22, 2017)

Contents

List of Tables

B1 Introduction

Aspect Consulting, LLC (Aspect) prepared this Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) for the 4700 Brooklyn Ave NE Site (Site) as Appendix B to the Interim Action Work Plan (Work Plan). The purpose of this SAP/QAPP is to ensure that field sample collection, handling, and laboratory analysis will generate data to meet project-specific data quality objectives (DQOs) in accordance with the Model Toxics Control Act (MTCA) requirements (WAC 173-340-350). This SAP/QAPP is comprised of two major components: a Field Sampling Plan (FSP) for defining field protocols and a Quality Assurance Project Plan (QAPP) for defining analytical protocols.

Environmental investigation activities to be performed under this SAP/QAPP are on behalf of two parties, FH Brooklyn LLC (FH Brooklyn) and Chevron Environmental Management (Chevron) according to the Agreed Order 13815. The parties have an agreement of responsibility for the different environmental investigations to be performed and therefore each investigation will have a lead party. FH Brooklyn is the lead party for on-property activities and Aspect will perform activities on behalf of FH Brooklyn. Chevron is the lead party for off-property activities and Leidos will perform activities on behalf of Chevron. Given this joint party agreement, this SAP/QAPP contains counterpart elements that apply to the on-property work performed by Aspect, and the off-property work performed by Leidos. It is the responsibility of the Aspect and Leidos personnel and subcontracted analytical laboratory personnel performing the sampling and analysis activities to adhere to the requirements of this SAP/QAPP.

The Field Sampling Plan (Section C2) and Quality Assurance Project Plan (Section C3) are presented below.

B2 Field Sampling Plan

B2.1 Soil Sampling

Performance monitoring associated with the Interim Action will include laboratory analysis of both excavation sidewall and excavation bottom samples. The distance between samples will not exceed 20 feet, and closer sample spacing may be necessary. The samples will be submitted for laboratory analysis of parameters described in this QAPP.

For performance monitoring of the assumed excavation bottom at 24 ft bgs, Aspect will establish a three by four sampling grid that divides the excavation bottom into twelve equal-area rectangles with dimensions of approximately 34 feet by 40 feet. Within each rectangular area, Aspect will field-screen the soil for evidence of contamination, and samples will be collected for laboratory analysis of GRO and BTEX at up to four locations where contamination is potentially indicated. If there are no indications of contamination within the entire rectangular area, a single soil sample will be collected for analysis from the approximate center of the rectangle.

The following subsections detail the procedures for soil sample collection, handling, identification, and sample quality assurance/quality control (QA/QC).

B2.1.1 Soil Sample Collection and Handling Procedures

A geologist from Aspect and/or Leidos will oversee the drilling activities and prepare a geologic log for each of the explorations completed, including an examination of the full length of each soil core recovered by the sonic drilling rig. The field representative will visually classify the soils in accordance with American Society of Testing and Materials (ASTM) Method D2488 and record soil descriptions, field screening results, and other relevant details (e.g., staining, debris, odors, etc.) on the boring log form. If samples are collected for chemical analysis, the sample ID and depth will also be recorded on the log.

Soil samples collected during the Interim Action will be grab samples.

Headspace Vapor

Samples will be field screened to obtain a relative estimate of its volatile organic carbon (VOC) concentration. This field screening will be performed by measuring the concentration of VOCs in the headspace above the sample in a closed container using a field flame-ionization detector (FID) or photoionization detector (PID). The field screening will be performed by placing the soil into a sealed plastic bag (e.g., Ziploc), disaggregating the soil by hand, allowing the sample to equilibrate for at least five minutes, and then opening the bag slightly, inserting the instrument probe, and measuring the VOC concentration in the headspace. If the ambient temperature is below 65ºF, the sample will be warmed (e.g., in a heated vehicle) before the headspace measurement is made.

The PID will be calibrated daily in the field using the manufacturer's calibration standard (100 ppm isobutylene gas). A calibration test, referred to as a "bump test," will be performed as necessary in the field using the calibration gas to check that the PID remains properly calibrated throughout the day.

Sheen Testing

Sheen testing will be conducted by placing soil in a pan of water and observing the water surface for signs of sheen. Sheens are classified as follows:

- **Slight Sheen:** Light, colorless, dull sheen. The spread is irregular and dissipates rapidly.
- **Moderate Sheen:** Light to heavy sheen, may show color/iridescence. The spread is irregular to flowing. Few remaining areas of no sheen are evident on the water surface.
- **Heavy Sheen:** Heavy sheen with color/iridescence. The spread is rapid and the entire water surface may be covered with sheen.

Sample Collection for Laboratory Analysis

All soil samples to be submitted for gasoline-range total petroleum hydrocarbons (TPH-Gx) and VOC analyses will be collected in accordance with U.S. Environmental Protection Agency (EPA) Method 5035A. The soil aliquot for these analyses will be

collected using a laboratory-supplied modified disposable plastic syringe as required by the EPA Method 5035A, and placed in preweighed laboratory-supplied vials.

For all other analyses, the soil samples will be removed from the sampler using a stainless-steel spoon and placed in a stainless-steel bowl for homogenization with the stainless-steel spoon. Gravel-sized material greater than approximately 0.5 inch will be removed from the sample during mixing. A representative aliquot of the homogenized soil will be placed into certified-clean jars supplied by the analytical laboratory.

The initial laboratory submittal will have samples selected for TPH-Gx, TPH-Dx, and BTEX. Samples will be selected based on field screening and to provide proper horizontal and vertical characterization. Select soil samples will be submitted for analysis of chlorinated volatile compounds (CVOCs).

QC soil samples (e.g., field duplicates and trip blanks) will be collected at the respective frequencies prescribed in Section B3.5 of the QAPP.

B2.1.2 Soil Sample Identification

Each soil sample collected for chemical analysis will be assigned a unique sample identification number including the location ID and the depth from which the sample was collected. For example, the soil sample collected from sidewall location 5 at a depth of 10 feet below ground surface (bgs) would be identified as SW-5-10.

B2.2 Ground Water Sampling

Any ground water samples will be collected and handled in accordance with the procedures described below:

- The locking well cap will be removed and the depth-to-ground water will be measured from the surveyed location to the nearest 0.01 foot using an electronic water level measuring device. The depth to the bottom of the monitoring well will also be measured to evaluate siltation of the monitoring well. The water level indicator will be decontaminated between wells.
- The presence of light non-aqueous phase liquid (LNAPL) will be evaluated in all wells screened in the 15-foot zone within the area of LNAPL indicators depicted in Figure 6 of the RIWP. LNAPL presence and thickness will be evaluated using an electronic oil/water interface probe. The oil/water interface probe will be decontaminated between wells.
- Each monitoring well will be purged at a low-flow rate less than 0.5 liter per minute (Puls and Barcelona, 1996; Ecology, 2012) using a peristaltic pump and dedicated tubing (polyethylene tubing with a short length of silicon tubing through the pump head). The tubing intake will be placed just below the center of the saturated section of well screen. During purging, field parameters (temperature, pH, specific electrical conductance, dissolved oxygen, and oxidation-reduction potential [ORP]) will be monitored using a YSI meter and flow-through cell, or equivalent. These field parameters will be recorded at 2- to 4-minute intervals throughout well purging until they stabilize. Stabilization is defined as three successive readings where the parameter values vary by less than

10 percent (or 0.5 milligrams per liter [mg/L] dissolved oxygen if the readings are below 1 mg/L). However, no more than three well casing volumes will be purged prior to ground water sample collection. Three turbidity measurements will also be made before collecting the sample (Hach 2100Q turbidimeter).

- Samples with a field-measured specific electrical conductance greater than 1,000 microSiemans per centimeter (µS/cm) or turbidity greater than 25 nephelometric turbidity units (NTU) will be denoted as such on the chain-of-custody (COC) form, so that the laboratory can employ appropriate sample preparation techniques to avoid analytical interferences for specific analyses.
- If the monitoring well is completely dewatered during purging, samples will be collected when sufficient recharge has occurred to allow filling of all sample containers.
- Once purging is complete, the ground water samples will be collected using the same low-flow rate directly into laboratory-supplied sample containers. Samples for dissolved metals analyses will be filtered using an in-line 0.45 micrometer (µm) filter; at least 0.5 liter of water will be purged through the filter prior to sample collection.
- In wells that have measurable LNAPL, but that require sample collection for CVOC analysis, an additional sampling procedure will be implemented to advance the 1/4-inch peristaltic tubing past the LNAPL. One end of a length of 3/8-inch tubing will be covered with Teflon plumbers tape and the tubing will be placed into the well to a level below the measured LNAPL layer. The 1/4-inch peristaltic tubing will be inserted into the 3/8-inch tubing and pushed through the Teflon tape at the end of the 3/8-inch tubing. Purging and sample collection will then proceed as described above.
- QC ground water samples (e.g., field duplicates and trip blanks) will be collected at the respective frequencies prescribed in Section B3.5.
- Following sampling, the wells cap and monument cap will be secured. Each well's dedicated tubing will be retained in a labeled Ziploc bag for subsequent sampling events. Any damaged or defective well caps or monuments will be noted and scheduled for replacement, if necessary.

B2.2.1 Ground water Sample Identification

Each ground water sample will be assigned a unique sample identification number that includes the well number and the 8-digit date on which the sample was collected. For example, a ground water sample collected from monitoring well MW-10 on December 10, 2016, would be identified as MW-10-121016.

B2.3 Sample Custody and Field Documentation

B2.3.1 Sample Custody

Upon collection, samples will be placed upright in a cooler. Ice or blue ice will be placed in each cooler to meet sample preservation requirements. Inert cushioning material will be placed in the remaining space of the cooler as needed to limit movement of the sample

containers. If the sample coolers are being shipped, not hand carried, to the laboratory, the COC form will be placed in a waterproof bag taped to the inside lid of the cooler for shipment.

After collection, samples will be maintained in the consultant's custody until formally transferred to the analytical laboratory. For purposes of this work, custody of the samples will be defined as follows:

- In plain view of the field representatives;
- Inside a cooler that is in plain view of the field representative; or
- Inside any locked space such as a cooler, locker, car, or truck to which the field representative has the only immediately available key(s).

A COC record provided by the laboratory will be initiated at the time of sampling for all samples collected. The record will be signed by the field representative and others who subsequently take custody of the sample. Couriers or other professional shipping representatives are not required to sign the COC form; however, shipping receipts will be collected and maintained as a part of custody documentation in project files. A copy of the COC form with appropriate signatures will be kept by consultants's project manager.

Upon sample receipt, the laboratory will fill out a cooler receipt form to document sample delivery conditions. A designated sample custodian will accept custody of the shipped samples and will verify that the COC form matches the samples received. The laboratory will notify the project manager, as soon as possible, of any issues noted with the sample shipment or custody.

B2.3.2 Field Documentation

While conducting field work, the field representative will document pertinent observations and events, specific to each activity, on field forms (e.g., boring log form, as-built well completion form, well development form, ground water sampling form, etc.) and/or in a field notebook, and, when warranted, provide photographic documentation of specific sampling efforts. Field notes will include a description of the field activity, sample descriptions, and associated details such as the date, time, and field conditions.

B2.4 Ground Water Level Monitoring

Depth-to-ground water measurements will be conducted in monitoring wells using an electric well sounder, graduated to 0.01 foot. Where there is potential for light or dense non-aqueous phase liquid (NAPL), an oil-water interface probe will be used to measure water levels and evaluate the presence of separate-phase product—either floating or at the bottom of the well.

B2.5 Surveying

Horizontal coordinates for each soil sampling location will be recorded using a hand-held global positioning system (GPS) instrument with real-time differential correction, or with survey equipment, if available.

B2.6 Decontamination and Investigative-Derived Waste Management

All nondisposable sampling equipment (stainless steel spoons and bowls) will be decontaminated before collection of each sample. The decontamination sequence consists of a scrub with a non-phosphate (Alconox or Liquinox) solution, followed by tap water (potable) rinse, and finished with thorough spraying with deionized or distilled water. A solvent rinse – methanol or hexane – may be used to remove petroleum product from sampling equipment prior to the decontamination procedure described above.

Investigation-derived waste (IDW) water generated during equipment decontamination and sampling will be containerized in labeled drums. The containerized IDW water will be disposed of appropriately at a permitted off-site disposal facility.

Soil cuttings from borings and disposable personal protective equipment (PPE) will be placed in labeled Department of Transportation (DOT)-approved drums pending the analytical results to determine appropriate disposal. Each drum will be labeled with the following information:

- Non-Classified IDW
- Content of the drum (soil, water, PPE) and its source (i.e., the exploration[s] from which the contents came);
- Date IDW was generated; and
- Name and telephone number of the contact person.

The drums of IDW will be temporarily consolidated on-site, profiled (in accordance with applicable waste regulations) based on available analytical data, and disposed of appropriately at a permitted off-site disposal facility. Containers of IDW will be on site less than 90 days from date of generation.

Documentation for off-site disposal of IDW will be maintained in the project file.

B3 Quality Assurance Project Plan

This QAPP identifies QC procedures and criteria required to ensure that data collected are of known quality and acceptable to achieve project objectives. Specific protocols and criteria are also set forth in this QAPP for data quality evaluation, upon the completion of data collection, to determine the level of completeness and usability of the data. It is the responsibility of the project personnel performing or overseeing the sampling and analysis activities to adhere to the requirements of the FSP and this QAPP.

B3.1 Purpose of the QAPP

As stated in the Washington State Department of Ecology's (Ecology) Guidelines for Preparation of Quality Assurance Project Plans for Environmental Studies (Ecology Publication No. 04-03-030, July 2004), specific goals of this QAPP are as follows:

- Focus project manager and project team to factors affecting data quality during the planning stage of the project;
- Facilitate communication among field, laboratory, and management staff as the project progresses;
- Document the planning, implementation, and assessment procedures for QA/QC activities for the investigation;
- Ensure that the DQOs are achieved; and
- Provide a record of the project to facilitate final report preparation.

The DQOs for the project include both qualitative and quantitative objectives, which define the appropriate type of data, and specify the tolerable levels of potential decision errors that will be used as a basis for establishing the quality and quantity of data needed to support the environmental assessment. To ensure that the DQOs are achieved, this QAPP details aspects of data collection including analytical methods, QA/QC procedures, and data quality reviews. This QAPP describes both quantitative and qualitative measures of data to ensure that the DQOs are achieved. DQOs dictate data collection rationale, sampling and analysis designs that are presented in the main body of the RIWP, and sample collection procedures that are presented in the FSP (Section B2 of this Appendix).

B3.2 Project Organization and Responsibilities

The project consultant team involved with data generation includes representatives from the lead party, either Aspect or Leidos, depending on party responsible for the investigation component. Key individuals and their roles on this project are as follows:

Project Manager—Aspect; Leidos. The project manager is responsible for the successful completion of all aspects of this project, including day-to-day management, production of reports, liaison with party and regulatory agencies, and coordination with the project team members. The project manager is also responsible for resolution of non-conformance issues, is the lead author on project plans and reports, and will provide regular, up-to-date progress reports and other requested information to project team and Ecology.

Field Manager—Aspect; Leidos. The field manager is responsible for overseeing the field sampling program outlined in this plan, including collecting representative samples and ensuring that they are handled properly prior to transfer of custody to the project laboratory. The field manager will manage procurement of necessary field supplies, assure that monitoring equipment is operational and calibrated in accordance with the specifications provided herein, and act as the Site Health and Safety Officer.

Data Quality Manager—Aspect; Leidos. The data quality manager is responsible for developing data quality objectives, selecting analytical methods, coordinating with the analytical laboratory, overseeing laboratory performance, and approving QA/QC procedures. The data quality manager is also responsible for overseeing QA validation of the analytical data reports received from the project laboratory. Data will be validated in-house by the lead party for the data collection, either Aspect or Leidos. The validator works independently, with no interference from those who collect and use the Site data.

Laboratory Project Manager—Friedman and Bruya, Inc. (FBI); Eurofins Lancaster Laboratories. Aspect will contract FBI laboratory for the analysis described in the Interim Action Work Plan. Chevron will contract Eurofins Lancaster Laboratories for investigation activities for which their responsible. The laboratory project manager is responsible for ensuring that all laboratory analytical work for soil and water media complies with project requirements, and acting as a liaison with the project manager, field manager, and data quality manager to fulfill project needs on the analytical laboratory work. This responsibility also applies to analysis the laboratory project manager subcontracts to another laboratory.

B3.3 Analytical Methods and Reporting Limits

Laboratory analytical methods for soil and ground water analyses to be performed during this environmental characterization are as follow:

Chemical Group and Analyte	Analytical Method
Gasoline Range Organics	NWTPH-Gx
Diesel & Residual Range Organics	NWTPH-Dx
Benzene, Toluene, Ethylbenzene, Xylenes	EPA 8260C or 8021B
Chlorinated Volatile Organic Compounds	EPA 8260C
Petroleum Fractionation (EPH/VPH)	NWEPH and NWVPH
Total/Dissolved Lead, cadmium, chromium, nickel, and zinc	EPA 6000 series
Methyl tert-butyl ether (MTBE) Ethylene dibromide (EDB) and Ethylene Dichloride (EDC), Naphthalene	EPA 8260C
Carcinogenic polycyclic aromatic hydrocarbons (cPAHs)	EPA 8270
Polychlorinated biphenyls (PCBs)	EPA 8082

Table C-1 lists samples containers, preservation, and analytical holding times for each analysis.

B3.3.1 Method Detection Limit and Method Reporting Limit

The method detection limit (MDL) is the minimum concentration of a compound that can be measured and reported with a 99-percent confidence that the analyte concentration is greater than zero. MDLs are established by the laboratory using prepared samples, not samples of environmental media.

The method reporting limit (RL) is defined as the lowest concentration at which a chemical can be accurately and reproducibly quantified, within specified limits of

precision and accuracy, for a given environmental sample. The RL can vary from sample to sample depending on sample size, sample dilution, matrix interferences, moisture content, and other sample-specific conditions. As a minimum requirement for organic analyses, the RL should be equivalent to or greater than the concentration of the lowest calibration standard in the initial calibration curve. The expected MDLs and RLs from FBI laboratory are summarized in Tables C-3 and C-4 for water and soil samples collected by Aspect, respectively The expected MDLs and RLs from Eurofins Lancaster Laboratory are summarized in Tables C-5 and C-6 for water and soil samples collected by Leidos, respectively.

B3.4 Data Quality Objectives

DQOs, including the Measurement Quality Indicators (MQIs)—precision, accuracy, representativeness, comparability, completeness, and sensitivity (namely PARCCS parameters) —and sample-specific RLs are dictated by the data quality objectives, project requirements, and intended uses of the data. For this project, the analytical data must be of sufficient technical quality to determine whether contaminants are present and, if present, whether their concentrations are greater than or less than applicable screening criteria based on protection of human health and the environment.

The quality of data generated will be assessed against the MQIs set forth in this QAPP. Specific QC parameters associated with each of the MQIs are summarized in Table C-2. Specific MQI goals and evaluation criteria (i.e., MDLs, RLs, percent recovery (%R) for accuracy measurements, relative percent difference (RPD) for precision measurements, are defined in Tables C-3 through C-6. Definitions of these parameters and the applicable QC procedures are presented below.

B3.4.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared with their average values. Analytical precision is measured through matrix spike/matrix spike duplicate (MS/MSD) samples and laboratory control samples/laboratory control sample duplicate (LCS/LCSD) when there is sufficient sample volume. A laboratory duplicate sample or just an LCS/LCSD may be used in place of an MS/MSD if there is insufficient volume.

Analytical precision is quantitatively expressed as the relative percent difference (RPD) between the LCS/LCSD, MS/MSD, or laboratory duplicate pairs and is calculated with the following formula:

$$RPD\ (\%) = 100 \times \frac{|S - D|}{(S + D)/2}$$

where:
S = analyte concentration in sample
D = analyte concentration in duplicate sample

Analytical precision measurements will be carried out at a minimum frequency of 1 per 20 samples for each matrix sampled, or one per laboratory analysis group. Laboratory precision will be evaluated against laboratory quantitative RPD performance criteria as defined in Tables C-3 through C-6 for specific analytical methods and sample matrices. If the control criteria are not met, the laboratory will supply a justification of why the limits were exceeded and implement the appropriate corrective actions. The RPD will be evaluated during data review and validation. The data reviewer will note deviations from the specified limits and will comment on the effect of the deviations on reported data.

B3.4.2 Accuracy

Accuracy measures the closeness of the measured value to the true value. The accuracy of chemical test results is assessed by "spiking" samples with known standards (surrogates, blank spikes, or matrix spikes) and establishing the average recovery. Accuracy is quantified as the %R. The closer the %R is to 100%, the more accurate the data.

Surrogate recovery will be calculated as follows:

$$\text{Recovery (\%)} = \frac{MC}{SC} \times 100$$

where:

SC = spiked concentration
MC = measured concentration

MS percent recovery will be calculated as follows:

$$\text{Recovery (\%)} = \frac{MC - USC}{SC} \times 100$$

where:

SC = spiked concentration
MC = measured concentration
USC = unspiked sample concentration

Accuracy measurements on MS samples will be carried out at a minimum frequency of 1 in 20 samples per matrix analyzed. Blank spikes will also be analyzed at a minimum frequency of 1 in 20 samples (not including QC samples) per matrix analyzed. Surrogate recoveries for organic compounds will be determined for each sample analyzed for respective compounds. Laboratory accuracy will be evaluated against the performance criteria defined in Tables C-3 through C-6. If the control criteria are not met, the laboratory will supply a justification of why the limits were exceeded and implement the appropriate corrective actions. Percent recoveries will be evaluated during data review and validation, and the data reviewer will comment on the effect of the deviations on the reported data.

B3.4.3 Representativeness

Representativeness measures how closely the measured results reflect the actual concentration or distribution of the chemical compounds in the matrix sampled. The FSP sampling techniques and sample handling protocols (e.g., homogenizing, storage, preservation, and use of duplicates and blanks) have been developed to ensure representative samples. Only representative data will be deemed usable.. The field sampling procedures are described in the FSP (Section B2) of this SAP.

The representativeness of a data point is determined by assessing the integrity of the sample upon receipt at the laboratory (e.g., consistency of sample ID and collection date/time between container labels versus COC forms, breakage/leakage, cooler temperature, preservation, headspace for VOA containers, etc.); compliance of method required sample preparation and analysis holding times; the conditions of blanks (trip blank, rinsate blank, field blank, method/preparation blank, and calibration blank) associated with the sample; and the overall consistency of the results within a field duplicate pair.

B3.4.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal will be achieved through the use of standard techniques to collect samples, USEPA-approved standard methods to analyze samples, and consistent units to report analytical results. Data comparability also depends on data quality. Data of unknown quality cannot be compared.

B3.4.5 Completeness

Completeness is defined as the percentage of measurements made that are judged to be valid. Results will be considered valid if the precision, accuracy, and representativeness objectives are met and if RLs are sufficient for the intended uses of the data. Completeness is calculated as follows:

$$Completeness\ (\%) = \frac{V}{P} \times 100$$

where:

V = number of valid measurements
P = number of measurements taken

Valid and invalid data (i.e., data qualified with the R flag [rejected]) will be identified during data validation. The target completeness goal for this project is 95 percent.

B3.4.6 Sensitivity

Sensitivity depicts the level of ability an analytical system (i.e., sample preparation and instrumental analysis) of detecting a target component in a given sample matrix with a defined level of confidence. Factors affecting the sensitivity of an analytical system include: analytical system background (e.g., laboratory artifact or method

blank contamination), sample matrix (e.g., mass spectrometry ion ratio change, co-elution of peaks, or baseline elevation), and instrument instability.

B3.5 Quality Control Procedures

Field and laboratory QC procedures are outlined below.

B3.5.1 Field Quality Control

Beyond use of standard sampling protocols defined in the FSP, field QC procedures include maintaining the field instrumentation used. Field instruments (e.g., PID for evaluating presence of VOCs in soil samples, and the YSI meter for measuring field parameters during ground water sampling) are maintained and calibrated regularly prior to use, in accordance with manufacturer recommendations.

In addition, field QC samples will be collected and submitted for analyses to monitor the precision and accuracy associated with field procedures. Field QC samples to be collected and analyzed for this RI include field duplicates, trip blanks, and equipment rinsate blanks. The definition and sampling requirements for field QC samples are presented below.

Blind Field Duplicates

Blind field duplicate samples are used to check for sampling and analysis reproducibility; however, the field duplicate sample results include variability introduced during both field sampling and laboratory preparation and analysis, and EPA data validation guidance provides no specific evaluation criteria for field duplicate samples. Advisory evaluation criteria are set forth at 35 percent for RPD (if both results are greater than five times the RL) and two times the RLs for concentration difference (if either of the result is less than five times the RL) between the original and field duplicate results.

Field Duplicates will be submitted "blind" to the laboratory as discrete samples (i.e., given unique sample identifiers to keep the duplicate identity unknown to the laboratory), but will be clearly identified in the field log. **Field duplicate samples will be collected at a frequency of 5 percent (1 per 20) of the field samples for each matrix and analytical method, but not less than one duplicate per sampling event per matrix.**

If a given soil sample depth interval lacks sufficient volume (recovery) to supply material for a planned analysis and its field duplicate analysis, the field duplicate aliquot will be collected for that analysis from another depth interval in that same location if practical.

Trip Blank

Trip blank samples will be used to monitor possible VOC cross-contamination occurring during sample transport. Trip blank samples are prepared and supplied by the laboratory using organic-free, reagent-grade water into a VOC vial prior to the collection of field samples. The trip blank sample vials are placed with and accompany the VOC and TPH-Gx samples through the entire transporting process. **One trip blank will be collected for each soil sampling round and each ground water sampling round where VOC or TPH-Gx analyses are conducted.**

In case a target compound is present in a trip blank, results for all samples shipped with this trip blank will be evaluated and data qualified accordingly if determined that the results are affected.

Equipment Rinsate Blank

Equipment rinsate blanks are collected to determine the potential of cross-contamination introduced by nondedicated equipment (e.g., bladder pump and YSI meter) that is used at multiple sample locations. Deionized water (obtained from the laboratory) is rinsed through the decontaminated sampling equipment and collected into adequate sample containers for analysis. The equipment rinsate blank is then handled in a manner identical to the primary samples collected with that piece of equipment. The blank is then processed, analyzed, and reported as a regular field sample. **The rinsate blank collection frequency will be 1 per 20 samples for each matrix and analytical method, but not less than one equipment rinsate per sampling event per matrix**. When dedicated equipment is used, equipment rinsate blanks will not be collected.

B3.5.2 Laboratory Quality Control

The laboratories' analytical procedures must meet requirements specified in the respective analytical methods or approved laboratory standard operating procedures (SOPs), e.g., instrument performance check, initial calibration, calibration check, blanks, surrogate spikes, internal standards, and/or labeled compound spikes. Specific laboratory QC analyses required for this project will consist of the following at a minimum:

- Instrument tuning, instrument initial calibration, and calibration verification analyses as required in the analytical methods and the laboratory standard operating procedures (SOPs);
- Laboratory and/or instrument method blank measurements at a minimum frequency of 5percent (1 per 20 samples) or in accordance with method requirements, whichever is more frequent; and
- Accuracy and precision measurements as defined in Table C-2, at a minimum frequency of 5 percent (1 per 20 samples) or in accordance with method requirements, whichever is more frequent. In cases where a pair of MS/MSD or MS/laboratory duplicate analyses are not performed on a project sample, a set of LCS/LCSD analyses will be performed to provide sufficient measures for analytical precision and accuracy evaluation.

The laboratory's QA officers are responsible for ensuring that the laboratory implements the internal QC and QA procedures detailed in the laboratory's Quality Assurance Manual.

B3.6 Corrective Actions

If routine QC audits by the laboratory result in detection of unacceptable conditions or data, actions specified in the laboratory SOPs will be taken. Specific corrective actions are outlined in each SOP used and can include the following:

- Identifying the source of the violation;

- Reanalyzing samples if holding time criteria permit;
- Resampling and analyzing;
- Evaluating and amending sampling and analytical procedures; and/or
- Accepting but qualifying data to indicate the level of uncertainty.

If unacceptable conditions occur, the laboratory will contact the project manager to discuss the issues and determine the appropriate corrective action. Corrective actions taken by the laboratory during analysis of samples for this project will be documented by the laboratory in the case narrative associated with the affected samples.

In addition, the project data quality manager will review the laboratory data generated for this investigation to ensure that project DQOs are met. If the review indicates that non-conformances in the data have resulted from field sampling or documentation procedures or laboratory analytical or documentation procedures, the impact of those non-conformances on the overall project data usability will be assessed. Appropriate actions, including re-sampling and/or re-analysis of samples may be recommended to the project manager to achieve project objectives.

B3.7 Data Reduction, Quality Review, and Reporting

All data will undergo a QA/QC evaluation at the laboratory which will then be reviewed by the responsible data quality manager. Initial data reduction, evaluation, and reporting at the laboratory will be carried out in full compliance with the method requirement and laboratory SOPs. The laboratory internal review will include verification (for correctness and completeness) of electronic data deliverable (EDD) accompanied with each laboratory report. The responsible database manager will verify the completeness and correctness of all laboratory deliverables (i.e., laboratory report and EDDs) before releasing the deliverables for data validation.

B3.7.1 Minimum Data Reporting Requirements

The following sections specify general and specific requirements for analytical data reporting to provide sufficient deliverables for project documentation and data quality assessment.

General Requirements

The following requirements apply to laboratory reports for all types of analyses:

- A laboratory report will include a cover page signed by the laboratory director, the laboratory QA officer, or his/her designee to certify the eligibility of the reported contents and the conformance with applicable analytical methodology.
- Definitions of abbreviations, data flags and data qualifiers used in the report.
- Cross reference of field sample names and laboratory sample identity for all samples in the SDG.
- Completed COC document signed and dated by parties of acquiring and receiving.

- Completed sample receipt document with record of cooler temperature and sample conditions upon receipt at the laboratory. Anomalies such as inadequate sample preservation, inconsistent bottle counts, and sample container breakage, and communication record and corrective actions in response to the anomalies will be documented and incorporated in the sample receipt document. The document will be initialed and dated by personnel that complete the document.
- Case narrative that addresses any anomalies or QC outliers in relation to sample receiving, sample preparation, and sample analysis on samples in the sample delivery group (SDG). The narrative will be presented separately for each analytical method and each sample matrix.
- All pages in the report are to be paginated. Any insertion of pages after the laboratory report is issued will be paginated with starting page number suffixed with letters (e.g., pages inserted between pages 134 and 135 should be paginated as 134A, 134B, etc.)
- Any resubmitted or revised report pages will be submitted to project manager with a cover page stating the reason(s) and scope of resubmission or revision, and signed by laboratory director, QA officer, or the designee.

Specific Requirements

The following presents specific requirements for laboratory reports:

- Sample results: All soil sample results will be reported on a dry-weight basis. The report pages for sample results (namely Form 1s) will, at minimum, include sample results, RLs, unit, proper data flags, preparation, and analysis, dilution factor, and percent moisture (for solid samples).
- Method blank results.
- LCS and LCSD (if matrix spike duplicate analysis is not performed) results with laboratory acceptance criteria for %R and RPD.
- Surrogate spike results with laboratory acceptance criteria for %R.
- MS and MSD results with laboratory acceptance criteria for %R and RPD. In cases where MS/MSD analyses were not performed on a project sample, LCS/LCSD analyses should be performed and reported instead.

B3.8 Data Quality Verification and Validation

Reported analytical results will be qualified by the laboratory to identify QC concerns in accordance with the specifications of the analytical methods. Additional laboratory data qualifiers may be defined and reported by the laboratory to more completely explain QC concerns regarding a particular sample result. All data qualifiers will be defined in the laboratory's narrative reports associated with each case.

Data validation will be performed on all data consistent with United States Environmental Protection Agency Stage 2B requirements. Environmental data validation will be performed using Ecology's TCP Data Validation and Sampling Analysis Plan (SAP)/Quality Assurance Project Plan (QAAP) for data validation for all Formal Cleanup

Sites (Ecology September 23, 2016). Data validation shall be performed at Quality Assurance Level 2 (EPA2) with Third Party Data Validation.

In cases where a systematic QC problem is suspected, such as unusual detections of an analyte or consistent outlying results of a QC parameter, a more detailed review will be performed on laboratory records pertinent to the concerned analysis to further evaluate the extend of the QC issue and the final data quality and usability. The actual level of validation for each data point will be entered in the electrical database submitted to the Ecology Environmental Information Management system (EIMs). Data validation will be conducted following the guidance below:

- EPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, Office of Superfund Remediation and Technical Innovation, U.S. Environmental Protection Agency, January 2010, USEPA 540/R-10/011
- EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, Office of Superfund Remediation and Technical Innovation, U.S. Environmental Protection Agency, June 2008, USEPA-540-R-08-01.

The data validation will examine and verify the following parameters against the method requirements and laboratory control limits specified in Tables C-3 through C-6:

- Sample management and holding times;
- Instrument performance check, calibration, and calibration verification;
- Laboratory and field blank results;
- Detection and reporting limits;
- Laboratory replicate results;
- MS/MSD results;
- LCS and/or standard reference material results;
- Field duplicate results;
- Surrogate spike recovery (organic analyses only);
- Internal standard recovery (internal calibration methods only);
- Inter-element interference check (ICP analyses only);
- Serial dilution (metals only);
- Labeled compound recovery (isotope dilution methods only); and
- Ion ratios for detected compounds (high resolution GC/MS methods only).

Data qualifiers will be assigned based on outcome of the data validation. Data qualifiers are limited to and defined as follows:

- U—The analyte was analyzed for but was determined to be non-detect above the reported sample quantitation limit, or the quantitation limit was raised to the concentration found in the sample due to blank contamination.

- J—The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ—The analyte was not detected above the reported quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- R—The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the analyte cannot be verified.
- DNR—Do not report from this analysis; the result for this analyte is to be reported from an alternative analysis.

In cases of multiple analyses (such as an undiluted and a diluted analysis) performed on one sample, the optimal result will be determined and only the determined result will be reported for the sample.

The scope and findings of the data validation will be documented and discussed in the Data Validation Report(s). The Data Validation Report(s) will be appended to the RI report.

B3.9 Preventative Maintenance Procedures and Schedules

Preventative maintenance in the laboratory will be the responsibility of the laboratory personnel and analysts and ensured by the laboratory project manager. This maintenance includes routine care and cleaning of instruments and inspection and monitoring of carrier gases, solvents, and glassware used in analyses. Details of the maintenance procedures are addressed in the respective laboratory SOPs.

Precision and accuracy data are examined for trends and excursions beyond control limits to determine evidence of instrument malfunction. Maintenance will be performed when an instrument begins to change as indicated by the degradation of peak resolution, shift in calibration curves, decrease in sensitivity, or failure to meet one or another of the method-specific QC criteria.

Maintenance and calibration of instruments used in the field for sampling (e.g., PID for evaluating presence of VOCs in soil samples, and the YSI meter for measuring field parameters during ground water sampling) will be conducted regularly in accordance with manufacturer recommendations prior to use.

B3.10 Performance and System Audits

The project manager has responsibility for reviewing the performance of the laboratory QA program; this review will be achieved through regular contact with the analytical laboratory's project manager. To ensure comparable data, all samples of a given matrix to be analyzed by each specified analytical method will be processed consistently by the same analytical laboratory.

B3.11 Data and Records Management

Records will be maintained documenting all activities and data related to field sampling and chemical analyses.

B3.11.1 Field Documentation

Raw data received from the analytical laboratory will be reviewed, entered into a computerized database, and verified for consistency and correctness. The database will be updated based on data review and independent validation if necessary.

The following field data will be included in the database:

- Sample location coordinates
- Sample type (i.e., ground water or soil)
- Soil or ground water sampling depth interval

Information regarding whether concentrations represent total phase (unfiltered samples) or dissolved phase (filtered samples) will be compiled and stored in the database. Data will be submitted to Ecology's Environmental Information Management (EIM) database once data have been reviewed and validated.

B3.11.2 Analytical Data Management

Raw data received from the analytical laboratory will be reviewed, entered into a computerized database, and verified for consistency and correctness. The database will be updated based on data review and independent validation if necessary.

The following field data will be included in the database:

- Sample location coordinates
- Sample type (i.e., ground water or soil)
- Soil or ground water sampling depth interval

Information regarding whether concentrations represent total phase (unfiltered samples) or dissolved phase (filtered samples) will be compiled and stored in the database. Data will be submitted to Ecology's Environmental Information Management (EIM) database once data have been reviewed and validated.

B4 References

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Washington State Department of Ecology (Ecology), 2004, Collecting and Preparing Soil Samples for VOC Analysis, Implementation Memorandum Number 5, June 17, 2004.

Washington State Department of Ecology (Ecology), 2012, Guidance for Groundwater Monitoring at Landfills and Other Facilities Regulated Under Chapters 173-304, 173-306, 173-350, and 173-351 WAC, Publication No. 12-07-072.

TABLES

Table B-1. Analytical Methods, Sample Containers, Preservation, and Holding Times

Project No. 160092, 4700 Brooklyn Avenue, Seattle, Washington

Sample Matrix	Analytical Parameter	Analytical Method	Sample Container	No. Containers	Preservation Requirements	Holding Time
Soil	Gasoline Range TPH	NWTPH-Gx	Method 5035A, 40-mL vials	4	4°C ±2°C, Freeze within 48 hours to <-7°C	14 days
	Diesel and Motor Oil Range TPH	NWTPH-Dx/SW846 Method 3630 (Silica Gel Cleanup)	4 ounce jar	1	4°C ±2°C	14 days for extraction; 40 days for analysis
	BTEX	Method 8021 B	Method 5035A, 40-mL vials	4	4°C ±2°C, Freeze within 48 hours to <-7°C	14 days
	EPH/VPH	NWEPH/NWVPH	4 Ounce Jar/Method 5035A, 40-mL vials	5	4°C ±2°C, Freeze within 48 hours to <-7°C	14 days
	MTBE, EDC, EDB, Naphthalene	Method 8260	Method 5035A, 40-mL vials	4	4°C ±2°C, Freeze within 48 hours to <-7°C	14 days
	Polychlorinated Biphenyls (PCBs)	Method 8082	4-ounce jar	1	4°C ±2°C	6 months
	Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs)	Method 8270	4-ounce jar	1	4°C ±2°C	6 months
	Cadmium, Chromium, Lead, Nickel, Zinc	Method 6020	4-ounce jar	1	4°C ±2°C	6 months
Water	Gasoline Range TPH	Method NWTPH-Gx	40-mL VOA vials	3	4°C ±2°C, HCl pH < 2	14 days
	Diesel and Motor Oil Range TPH	NWTPH-Dx/SW846 Method 3630 (Silica Gel Cleanup)	500-mL amber glass bottle	1	4°C ±2°C	7 days for extraction, 40 days for analysis
	VOCs (including MTBE)	Method 8260	40-mL VOA vials	3	4°C ±2°C, 1 with HCl pH < 2, 2 without HCl	14 days for analysis
	EPH/VPH	NWEPH/NWVPH	1000-mL amber/40-mL VOA vials	4	4°C ±2°C, HCl pH < 2	7 days for extraction, 40 days for analysis/14 days for anlaysis
	Lead	Method 6020	500-mL HDPE bottle	1	4°C ±2°C, $HN0_3$ pH < 2 (after field filtration)	28 days

Notes:
HCL = hydrochloric acid
TPH = total petroleum hydrocarbons
VOA = volatile organic analysis
BTEX = benzene, toluene, ethylbenzene, xylenes
MTBE = methyl tert-butyl ether

Table B-2. QC Parameters Associated with PARCCS

Project No. 160092, 4700 Brooklyn Ave, Seattle, Washington

Data Quality Indicators	QC Parameters
Precision	RPD values of:
	(1) LCS/LCS Duplicate
	(2) MS/MSD
	(3) Field Duplicates
Accuracy/Bias	Percent Recovery (%R) or Percent Difference (%D) values of:
	(1) Initial Calibration and Calibration Verification
	(2) LCS
	(3) MS
	(4) Surrogate Spikes
	Results of:
	(1) Instrument and Calibration Blank
	(2) Method (Preparation) Blank
	(3) Trip Blank
	(4) Equipment Rinsate Blank (if appropriate)
Representativeness	Results of All Blanks
	Sample Integrity (Chain-of-Custody and Sample Receipt Forms)
	Holding Times
Comparability	Sample-specific Reporting Limits
	Sample Collection Methods
	Laboratory Analytical Methods
Completeness	Data Qualifiers
	Laboratory Deliverables
	Requested/Reported Valid Results
Sensitivity	MDLs and MRLs

Notes:

LCS = laboratory control sample

MDL = method detection limit

MRL = method reporting limit

MS/MSD = matrix spike/matrix spike duplicate

QC = Quality Control

PARCCS = Precision, Accuracy, Representativeness, Comparability, Completeness, Sensistivity

Table B-3. Measurement Quality Objectives for Water Samples

Friedman and Bruya, Inc

Project No. 160092, 4700 Brooklyn Avenue, Seattle, Washington

Analyte Name	MDL[(A)]	MRL	LCS/LCS %R[(A)]	RPD (%)	Surrogate %R[(A)]
Volatile Organic Compounds (VOCs) by SW8260C (µg/L)					
1,1,1,2-Tetrachloroethane	0.040	0.2	80 – 128	≤40	n/a
1,1,1-Trichloroethane	0.041	0.2	79 – 124	≤40	n/a
1,1,2,2-Tetrachloroethane	0.060	0.2	80 – 120	≤40	n/a
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.043	0.2	76 – 124	≤40	n/a
1,1,2-Trichloroethane	0.129	0.2	80 – 120	≤40	n/a
1,1-Dichloroethane	0.053	0.2	80 – 120	≤40	n/a
1,1-Dichloroethene	0.054	0.2	74 – 120	≤40	n/a
1,1-Dichloropropene	0.034	0.2	80 – 120	≤40	n/a
1,2,3-Trichlorobenzene	0.110	0.5	80 -125	≤40	n/a
1,2,3-Trichloropropane	0.131	0.5	80 – 120	≤40	n/a
1,2,4-Trichlorobenzene	0.107	0.5	77 – 127	≤40	n/a
1,2,4-Trimethylbenzene	0.024	0.2	80 – 122	≤40	n/a
1,2-Dibromo 3-Chloropropane	0.366	0.5	79 – 129	≤40	n/a
1,2-Dibromoethane (Ethylene Dibromide)	0.075	0.2	80 – 120	≤40	n/a
1,2-Dichlorobenzene	0.036	0.2	80 – 120	≤40	n/a
1,2-Dichloroethane	0.072	0.2	80 – 121	≤40	n/a
1,2-Dichloropropane	0.035	0.2	80 – 120	≤40	n/a
1,3,5-Trimethyl Benzene	0.015	0.2	80 – 120	≤40	n/a
1,3-Dichlorobenzene	0.036	0.2	80 – 120	≤40	n/a
1,3-Dichloropropane	0.062	0.2	80 – 120	≤40	n/a
1,4-Dichlorobenzene	0.040	0.2	80 – 120	≤40	n/a
2,2-Dichloropropane	0.052	0.2	72 – 133	≤40	n/a
2-Butanone	0.814	5.0	73 – 123	≤40	n/a
2-Chloro Toluene	0.024	0.2	80 – 120	≤40	n/a
2-Chloroethylvinyl Ether	0.250	1.0	62 – 130	≤40	n/a
2-Hexanone	0.902	5.0	80 – 129	≤40	n/a
4-Chloro Toluene	0.016	0.2	80 – 120	≤40	n/a
4-Isopropyl Toluene	0.026	0.2	80 – 124	≤40	n/a
4-Methyl-2-Pentanone	0.974	5.0	80 – 125	≤40	n/a
Acetone	2.057	5.0	64 – 125	≤40	n/a
Acrolein	2.476	5.0	60 – 124	≤40	n/a
Acrylonitrile	0.604	1.0	76 – 123	≤40	n/a
Benzene	0.027	0.2	80 – 120	≤40	n/a
Bromobenzene	0.060	0.2	80 – 120	≤40	n/a
Bromochloromethane	0.061	0.2	80 – 120	≤40	n/a

Table B-3. Measurement Quality Objectives for Water Samples

Friedman and Bruya, Inc

Project No. 160092, 4700 Brooklyn Avenue, Seattle, Washington

Analyte Name	MDL[(A)]	MRL	LCS/LCS %R[(A)]	RPD (%)	Surrogate %R[(A)]
Volatile Organic Compounds (VOCs) by SW8260C (µg/L)					
Bromodichloromethane	0.051	0.2	80 – 122	≤40	n/a
Bromoethane	0.041	0.2	77 – 122	≤40	n/a
Bromoform	0.062	0.2	62 – 149	≤40	n/a
Bromomethane	0.252	1.0	68 – 130	≤40	n/a
Carbon Disulfide	0.037	0.2	77 – 124	≤40	n/a
Carbon Tetrachloride	0.044	0.2	71 – 139	≤40	n/a
Chlorobenzene	0.023	0.2	80 – 120	≤40	n/a
Chloroethane	0.086	0.2	68 – 133	≤40	n/a
Chloroform	0.027	0.2	80 – 120	≤40	n/a
Chloromethane	0.095	0.5	77 – 122	≤40	n/a
cis 1,3-dichloropropene	0.061	0.2	80 – 127	≤40	n/a
cis-1,2-Dichloroethene	0.043	0.2	78 – 120	≤40	n/a
Dibromochloromethane	0.048	0.2	80 – 120	≤40	n/a
Dibromomethane	0.145	0.2	80 – 120	≤40	n/a
Dichlorodifluoromethane	0.052	0.2	68 – 133	≤40	n/a
Ethyl Benzene	0.037	0.2	80 – 120	≤40	n/a
Hexachloro-1,3-Butadiene	0.073	0.5	80 – 135	≤40	n/a
Iodomethane (Methyl Iodide)	0.227	1.0	76 – 123	≤40	n/a
iso-propyl Benzene	0.021	0.2	80 – 120	≤40	n/a
Methylene Chloride	0.485	1.0	71 – 125	≤40	n/a
Methyl-tert-butyl ether	0.073	0.5	79 – 121	≤40	n/a
Naphthalene	0.118	0.5	80 – 128	≤40	n/a
n-Butyl Benzene	0.025	0.2	80 – 125	≤40	n/a
n-Propyl Benzene	0.023	0.2	80 – 120	≤40	n/a
sec-Butyl Benzene	0.024	0.2	80 – 121	≤40	n/a
Styrene	0.045	0.2	80 – 121	≤40	n/a
tert-Butyl Benzene	0.026	0.2	80 – 121	≤40	n/a
Tetrachloroethene	0.047	0.2	80 – 120	≤40	n/a
Toluene	0.040	0.2	80 – 120	≤40	n/a
trans 1,3-Dichloropropene	0.081	0.2	79 – 132	≤40	n/a
trans-1,2-Dichloroethene	0.048	0.2	75 – 120	≤40	n/a
trans-1,4-Dichloro 2-Butene	0.324	1.0	47 – 147	≤40	n/a
Trichloroethene	0.049	0.2	80 – 120	≤40	n/a
Trichlorofluoromethane	0.037	0.2	74 – 135	≤40	n/a
Vinyl Acetate	0.069	0.2	74 – 120	≤40	n/a
Vinyl Chloride	0.069	0.2	74 – 120	≤40	n/a
m,p-xylene	0.052	0.4	80 – 120	≤40	n/a
o-Xylene	0.035	0.2	80 – 120	≤40	n/a

Table B-3. Measurement Quality Objectives for Water Samples

Friedman and Bruya, Inc

Project No. 160092, 4700 Brooklyn Avenue, Seattle, Washington

Analyte Name	MDL[(A)]	MRL	LCS/LCS %R[(A)]	RPD (%)	Surrogate %R[(A)]
Volatile Organic Compounds (VOCs) by SW8260C (µg/L)					
1,2-Dichloroethane-d4	n/a	n/a	80 – 130	≤40	80 – 120
1,2-Dichlorobenzene-d4	n/a	n/a	80 – 120	≤40	80 – 120
Toluene-d8	n/a	n/a	80 – 120	≤40	80 – 120
4-Bromofluorobenzene	n/a	n/a	80 – 120	≤40	80 – 120
Gasoline Range Hydrocarbons by NWTPH-Gx (µg/L)					
Gasoline Range Hydrocarbons	0.057	0.25	80 – 120	≤40	n/a
Bromobenzene	n/a	n/a	77 – 120	≤40	n/a
Diesel and Motor Oil Range Hydrocarbons by NWTPH-Dx with Silica Gel Cleanup (µg/L)					
Diesel Range Hydrocarbons	39	100	61-104	≤40	n/a
Oil Range Hydrocarbons	10	200	60 – 130	≤40	n/a
o-Terphenyl	n/a	n/a	50 – 150	≤40	n/a
Metals					
Lead	0.046	0.1	80 – 120	≤20	n/a

Notes:

[(A)] = Based on current laboratory control criteria. Some values may vary slightly between instruments and can be subject to change as the laboratory updates the charted values periodically.

%R = percent recovery

LCS/LCSD = laboratory control samples and laboratory control sample duplicate

MDL = method detection limit

MRL = method reporting limit

n/a = not applicable

RPD = relative percent difference

µg/L = microgram per liter

(--) = No PSL identified

Table B-4. Measurement Quality Objectives for Soil Samples

Friedman and Bruya, Inc.

Project No. 160092, 4700 Brooklyn Ave, Seattle, Washington

Analyte Name	MDL[(A)]	MRL	LCS/LCS %R[(A)]	RPD (%)	Surrogate %R[(A)]
Volatile Organic Compounds (VOCs) by SW8260C (mg/kg)					
1,1,1,2-Tetrachloroethane	0.000233	0.001	80 – 120	≤40	n/a
1,1,1-Trichloroethane	0.000226	0.001	78 – 133	≤40	n/a
1,1,2,2-Tetrachloroethane	0.000253	0.001	71 – 120	≤40	n/a
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.000287	0.002	72 – 142	≤40	n/a
1,1,2-Trichloroethane	0.000286	0.001	77 – 120	≤40	n/a
1,1-Dichloroethane	0.000203	0.001	65 – 139	≤40	n/a
1,1-Dichloroethene	0.000336	0.001	73 – 138	≤40	n/a
1,1-Dichloropropene	0.000312	0.001	80 – 123	≤40	n/a
1,2,3-Trichlorobenzene	0.000305	0.005	76 – 122	≤40	n/a
1,2,3-Trichloropropane	0.000517	0.002	75 – 120	≤40	n/a
1,2,4-Trichlorobenzene	0.000332	0.005	75 – 130	≤40	n/a
1,2,4-Trimethylbenzene	0.00023	0.001	77 – 125	≤40	n/a
1,2-Dibromo-3-Chloropropane	0.000586	0.005	61 – 128	≤40	n/a
1,2-Dibromoethane (Ethylene Dibromide	0.000176	0.001	79 – 120	≤40	n/a
1,2-Dichlorobenzene	0.000293	0.001	77 – 120	≤40	n/a
1,2-Dichloroethane	0.000191	0.001	77 – 120	≤40	n/a
1,2-Dichloropropane	0.000162	0.001	74 – 120	≤40	n/a
1,3,5-Trimethylbenzene	0.000254	0.001	77 – 126	≤40	n/a
1,3-Dichlorobenzene	0.000227	0.001	76 – 120	≤40	n/a
1,3-Dichloropropane	0.000209	0.001	77 – 120	≤40	n/a
1,4-Dichlorobenzene	0.000232	0.001	75 – 120	≤40	n/a
2,2-Dichloropropane	0.000292	0.001	77 – 137	≤40	n/a
2-Butanone	0.000513	0.005	64 – 120	≤40	n/a
2-Chloroethyl Vinyl Ether	0.000276	0.005	20 – 157	≤40	n/a
2-Chlorotoluene	0.0003	0.001	76 – 120	≤40	n/a
2-Hexanone	0.000439	0.005	62 – 128	≤40	n/a
4-Chlorotoluene	0.000277	0.001	75 – 121	≤40	n/a
4-Isopropyl Toluene	0.000236	0.001	78 – 131	≤40	n/a
4-Methyl-2-Pentanone	0.00042	0.005	70 – 124	≤40	n/a
Acetone	0.000482	0.005	48 – 132	≤40	n/a
Acrolein	0.003809	0.05	60 – 130	≤40	n/a
Acrylonitrile	0.001026	0.005	59 – 124	≤40	n/a
Benzene	0.000296	0.001	80 – 120	≤40	n/a
Bromobenzene	0.000153	0.001	75 – 120	≤40	n/a
Bromochloromethane	0.000323	0.001	69 – 133	≤40	n/a
Bromodichloromethane	0.000254	0.001	80 – 122	≤40	n/a
Bromoethane	0.00044	0.002	74 – 132	≤40	n/a
Bromoform	0.000297	0.001	63 – 120	≤40	n/a
Bromomethane	0.000187	0.001	40 – 172	≤40	n/a
Carbon Disulfide	0.000559	0.001	72 – 146	≤40	n/a

Table B-4. Measurement Quality Objectives for Soil Samples

Friedman and Bruya, Inc.

Project No. 160092, 4700 Brooklyn Ave, Seattle, Washington

Analyte Name	MDL[(A)]	MRL	LCS/LCS %R[(A)]	RPD (%)	Surrogate %R[(A)]
Carbon Tetrachloride	0.000213	0.001	76 – 136	≤40	n/a
Chlorobenzene	0.000219	0.001	80 – 120	≤40	n/a
Chloroethane	0.000462	0.001	53 – 154	≤40	n/a
Chloroform	0.000234	0.001	75 – 126	≤40	n/a
Chloromethane	0.000263	0.001	65 – 129	≤40	n/a
cis-1,2-Dichloroethene	0.00024	0.001	75 – 124	≤40	n/a
cis-1,3-Dichloropropene	0.000226	0.001	80 – 124	≤40	n/a
Dibromochloromethane	0.000266	0.001	77 – 123	≤40	n/a
Dibromomethane	0.000147	0.001	80 – 120	≤40	n/a
Dichlorodifluoromethane	0.000207	0.001	67 – 142	≤40	n/a
Ethyl Benzene	0.000202	0.001	80 – 120	≤40	n/a
Hexachloro-1,3-Butadiene	0.00041	0.005	72 – 135	≤40	n/a
Iodomethane (Methyl Iodide)	0.000215	0.001	34 – 181	≤40	n/a
Isopropyl Benzene	0.000233	0.001	77 – 127	≤40	n/a
Methylene Chloride	0.000635	0.002	61 – 128	≤40	n/a
Methyl-t-butyl ether (MTBE)	0.000231	0.001	68 – 124	≤40	n/a
Naphthalene	0.000429	0.005	71 – 122	≤40	n/a
n-Butylbenzene	0.000262	0.001	75 – 134	≤40	n/a
n-Propyl Benzene	0.000272	0.001	76 – 126	≤40	n/a
s-Butylbenzene	0.00024	0.001	77 – 127	≤40	n/a
Styrene	0.000138	0.001	80 – 122	≤40	n/a
t-Butylbenzene	0.000306	0.001	77 – 125	≤40	n/a
Tetrachloroethene	0.000257	0.001	76 – 131	≤40	n/a
Toluene	0.000151	0.001	78 – 120	≤40	n/a
Volatile Organic Compounds (VOCs) by SW8260C (mg/kg)					
trans-1,2-Dichloroethene	0.000266	0.001	73 – 131	≤40	n/a
trans-1,3-Dichloropropene	0.000216	0.001	80 – 126	≤40	n/a
trans-1,4-Dichloro-2-Butene	0.000437	0.005	62 – 127	≤40	n/a
Trichloroethene	0.000212	0.001	80 – 120	≤40	n/a
Trichlorofluoromethane	0.000266	0.001	57 – 161	≤40	n/a
Vinyl Acetate	0.000381	0.005	54 – 138	≤40	n/a
Vinyl Chloride	0.000235	0.001	74 – 134	≤40	n/a
m,p-Xylene	0.000392	0.001	80 – 123	≤40	n/a
o-Xylene	0.000224	0.001	80 – 120	≤40	n/a
1,2-Dichloroethane-d4	n/a	n/a	80 – 149	≤40	80 – 122
1,2-Dichlorobenzene-d4	n/a	n/a	80 – 120	≤40	80 – 120
Toluene-d8	n/a	n/a	77 – 120	≤40	80 – 120
4-Bromofluorobenzene	n/a	n/a	80 – 120	≤40	80 – 120

Table B-4. Measurement Quality Objectives for Soil Samples

Friedman and Bruya, Inc.

Project No. 160092, 4700 Brooklyn Ave, Seattle, Washington

Analyte Name	MDL[(A)]	MRL	LCS/LCS %R[(A)]	RPD (%)	Surrogate %R[(A)]
Gasoline Range Hydrocarbons by NWTPH-Gx (mg/kg)					
Gasoline Range Hydrocarbons	0.057	0.25	80 – 120	≤40	n/a
Bromobenzene	n/a	n/a	49 – 143	≤40	n/a
Diesel and Motor Oil Range Hydrocarbons by NWTPH-Dx with Silica Gel Cleanup (mg/kg)					
Diesel Range Hydrocarbons	1.28	5	60 – 108	≤40	n/a
Oil Range Hydrocarbons	1.57	10	60 – 130	≤40	n/a
o-Terphenyl	n/a	n/a	50 – 150	≤40	n/a
Polychlorinated Biphenyls (PCBs; mg/kg)					
PCB Arochlors	0.0021	0.1	55-130	≤20	n/a
Carcinogenic Polycyclic Aromatic Hydrocarbons					
benzo[a]pyrene	0.000065	0.01	51-118	≤20	24-168
benzo[a]anthracene	0.000088	0.01	51-115	≤20	24-168
benzo[b]fluoranthene	0.000182	0.01	56-123	≤20	24-168
benzo[k]fluoranthene	0.000194	0.01	54-131	≤20	24-168
chrysene	0.000165	0.01	55-129	≤20	24-168
dibenz[a,h]anthracene	0.00025	0.01	50-141	≤20	24-168
indeno[1,2,3-cd]pyrene	0.000183	0.01	49-148	≤20	24-168
Metals					
Lead	n/a	0.1	80-120	≤20	75-125
Cadmium	0.0198	1	70-130	≤20	n/a
Copper	0.189	1	70-130	≤20	n/a
Nickel	0.0335	1	70-130	≤20	n/a
Zinc	0.089	1	70-130	≤20	n/a

Notes:

[(A)] = Based on current laboratory control criteria. Some values may vary slightly between instruments

%R = Percent recovery

LCS/LCSD = Laboratory control samples and laboratory control sample duplicate

MDL = Method detection limit

mg/kg = milligram per kilogram

MRL = Method reporting limit

n/a = not applicable

RPD = Relative percent difference

Table B-5. Measurement Quality Objectives for Water Samples

Eurofins Lancaster Laboratories

Project No. 160092, 4700 Brooklyn Avenue, Seattle, Washington

Analyte	Groundwater						
	Analytical Method	MDL	LOD	LOQ	LCS	RPD
		(ug/L)			(%)	
Petroleum Hydrocarbons (µg/L)						
Gasoline-Range Hydrocarbons	NWTPH-Gx	50	100	250	75-135	≤ 30
Diesel-Range Hydrocarbons	NWTPH-Dx	45	90	100	32-115	≤ 20
Heavy Oil-Range Hydrocarbons	NWTPH-Dx	100	250	250	--	--
Volatile Organic Compounds (VOCs) by SW8260C (µg/L)						
Benzene	USEPA 8260B	0.5	1	1	78-120	≤ 30
Ethylbenzene	USEPA 8260B	0.5	1	1	78-120	≤ 30
Toluene	USEPA 8260B	0.5	1	1	80-120	≤ 30
Total Xylenes	USEPA 8260B	0.5	1	1	80-120	≤ 30
Methyl tert-butyl ether	USEPA 8260B	0.5	1	1	75-120	≤ 30
Vinyl Chloride	USEPA 8260B	0.5	1	1	63-121	≤ 30
Cis-1,2-Dichloroethene	USEPA 8260B	0.5	1	1	80-120	≤ 30
1,2 Dichloroethane (EDC)	USEPA 8260B	0.5	1	1	66-128	≤ 30
1,2-Dibromoethane (EDB)	USEPA 8011	0.0	0.02	0.03	60-140	≤ 20
Metals						
Lead	USEPA 6010	6.2	15	15	80-120	≤ 20

Notes:

LCS = laboratory control sample (supplied by Eurofin Lancaster Labs)

LOD = limit of detection (supplied by Eurofin Lancaster Labs)

LOQ = limit of quantitation (supplied by Eurofin Lancaster Labs; equivalent to PQLs or RLs)

MDL = method detection limit (supplied by Eurofin Lancaster Labs)

RPD = relative percent difference (supplied by Eurofin Lancaster Labs)

µg/L = Micrograms per liter

-- Not applicable or available

Table B-6. Measurement Quality Objectives for Soil Samples

Eurofins Lancaster Laboratories

Project No. 160092, 4700 Brooklyn Avenue, Seattle, Washington

Analyte	Soil					
	Analytical Method	MDL	LOD	LOQ	LCS	RPD
		(mg/kg)			(%)	
Petroleum Hydrocarbons (mg/kg)						
Gasoline Range Hydrocarbons	NWTPH-Gx	1.000	2.000	5.000	80-120	≤ 30
Diesel-Range Hydrocarbons	NWTPH-Dx	3	6	7	61-115	≤ 20
Heavy Oil-Range Hydrocarbons	NWTPH-Dx	10	20	30	--	--
Volatile Organic Compounds (mg/kg)						
Benzene	USEPA 8260B	0.0005	0.002	0.005	80-120	≤ 30
Ethylbenzene	USEPA 8260B	0.001	0.002	0.005	80-120	≤ 30
Toluene	USEPA 8260B	0.001	0.002	0.005	80-120	≤ 30
Total Xylenes	USEPA 8260B	0.001	0.002	0.005	80-120	≤ 30
Vinyl Chloride	USEPA 8260B	0.001	0.002	0.005	59-120	≤ 30
Cis-1,2-Dichloroethene	USEPA 8260B	0.001	0.002	0.005	8-120	≤ 30
1,2 Dichloroethane (EDC)	USEPA 8260B	0.001	0.002	0.005	70-133	≤ 30
1,2-Dibromoethane (EDB)	USEPA 8260B	0.001	0.002	0.005	80-120	≤ 30
Metals						
Lead	USEPA 6010	0.55	1.5	1.5	80-120	≤ 20

Notes:

LCS = laboratory control sample (supplied by Eurofin Lancaster Labs)

LOD = limit of detection (supplied by Eurofin Lancaster Labs)

LOQ = limit of quantitation (supplied by Eurofin Lancaster Labs; equivalent to PQLs or RLs)

MDL = method detection limit (supplied by Eurofin Lancaster Labs)

RPD = relative percent difference (supplied by Eurofin Lancaster Labs)

mg/kg = milligrams per kilogram

-- Not applicable or not available

APPENDIX C

Administrative Order Docket No. 15705

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

FEB 22 2018

Mr. Eran Fields
FH Brooklyn, LLC
2251 Linda Flora Drive
Los Angeles, CA 90077-1410

Order Docket No.	15705
Site Location	Former Chevron 90129 Station – 4700 Brooklyn Avenue NE, Seattle, WA 98105

Re: Administrative Order

Dear Mr. Fields:

The Department of Ecology (Ecology) has issued the enclosed Administrative Order (Order) requiring FH Brooklyn, LLC to comply with:

- Chapter 90.48 Revised Code of Washington (RCW) – State of Washington Water Pollution Control Act.
- Chapter 173-201A Washington Administrative Code (WAC) – Water Quality Standards for Surface Waters of the State of Washington.
- National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit, Permit Number WAR306191.

If you have questions please contact Evan Dobrowski at 425-649-7276 or edob461@ecy.wa.gov.

Sincerely,

Rachel McCrea

Rachel McCrea
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology

Enclosure: Administrative Order Docket No. 15705

By Certified Mail No.: 9171 9690 0935 0084 1037 93

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

IN THE MATTER OF AN ADMINISTRATIVE ORDER AGAINST FH Brooklyn, LLC Mr. Eran Fields	)))))	ADMINISTRATIVE ORDER DOCKET NO. 15705

To: Eran Fields
FH Brooklyn, LLC
2251 Linda Flora Drive
Los Angeles, CA 90077-1410

Order Docket No.	15705
Site Location	Former Chevron 90129 Station – 4700 Brooklyn Avenue NE, Seattle, WA 98105

The Washington State Department of Ecology (Ecology) has issued this Administrative Order (Order) requiring the FH Brooklyn, LLC to comply with:

- Chapter 90.48 Revised Code of Washington (RCW) – State of Washington Water Pollution Control Act.
- Chapter 173-201A Washington Administrative Code (WAC) – Water Quality Standards for Surface Waters of the State of Washington.
- Construction Stormwater General Permit WAR306191: National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity.

This is an Administrative Order in accordance with General Condition G13 (Additional Monitoring) as set forth in the Construction Stormwater General Permit. RCW 90.48.120(2) RCW authorizes Ecology to issue Administrative Orders to accomplish the purposes of Chapter 90.48 RCW.

ORDER TO COMPLY

FH Brooklyn, LLC is subject to coverage under NPDES Construction Stormwater General Permit WAR306191 for construction activities associated with the construction site known as Former Chevron 90129 Station. FH Brooklyn, LLC reported that the site contains contaminated groundwater and soil which has the potential to discharge in stormwater and dewatering water due to the proposed construction activity. The Construction Stormwater General Permit does not have water quality sampling or benchmarks for the known constituents of concern listed in Table 1; however, the permit requires compliance with the Water Quality Standards for Surface Water of the State of Washington (Water Quality Standards).

The Order establishes Indicator Levels for the Former Chevron 90129 Station. Indicator Levels express a pollutant concentration used as a threshold, below which a pollutant is considered unlikely to cause a water quality violation, and above which it may. Indicator Levels in this Administrative Order were derived from the WAC 173-201A and the analytical method's minimum quantitation level.

For these reasons and in accordance with RCW 90.48.120(2) it is ordered that FH Brooklyn, LLC take the following actions. These actions are required at the location known as Former Chevron 90129 Station, located at 4700 Brooklyn Avenue NE, Seattle, WA 98105. In the event of a permit transfer to another Permittee, compliance with this Administrative Order and the actions listed below is required.

FH Brooklyn, LLC must take the following actions to remain in compliance with NPDES Permit WAR306191:

- Install all pre-treatment and treatment systems prior to any discharge of dewatering water or contaminated construction stormwater to Portage Bay.
- Capture, contain, and treat all contaminated dewatering or contaminated stormwater prior to discharge to the Portage Bay.
- Use an Ecology-approved treatment system and media filtration to treat any dewatering water or stormwater comingled with dewatering water (dewatering water) or contaminated stormwater.
- All captured sediment from the treatment of the dewatering or contaminated stormwater must be transported to an approved disposal facility based on the level of contamination.
- Contaminated soils excavated during construction will be immediately hauled offsite without stock piling to an approved disposal facility based on the level of contamination. When it is not feasible to immediately haul soils offsite, the soils must be placed in a covered area to minimize contact with stormwater.
- The treatment system must have enough capacity to hold the treated dewatering water or stormwater until it has been tested to determine if any of the Indicator Levels listed in Table 1 have been exceeded. No dewatering water or stormwater may be discharge before it has been tested for the parameters listed in Table 1. If any of the Indicator Levels listed in Table 1 are exceeded, you must stop the discharge of treated dewatering water or contaminated stormwater to Portage Bay, until it has been retested to determine that all parameters are equal to or below the Indicator Levels in Table 1. If any of the Indicator Levels are exceeded after being retested, FH Brooklyn, LLC shall install further Ecology-approved treatment systems or shall discharge to the Municipal Sewer under a separate agreement with the Municipality and provide notice to Ecology.
- Once the effectiveness of the treatment system has been determined, FH Brooklyn, LLC may revert to a flow-through treatment system after the minimum two sampling and testing events and upon written approval from Ecology. The flow-through treatment system design must be submitted to Ecology for review prior to use.
- If a flow-through treatment system is adopted, all dewatering water or contaminated stormwater must be sampled weekly while discharging and tested for the parameters listed in Table 1.
- When using a flow-through treatment system, if any of the Indicator Levels listed in Table 1 are exceeded, FH Brooklyn, LLC must stop the discharge of treated dewatering water or stormwater to Portage Bay until it has been retested to determine that all parameters are equal to or below the Indicator Levels in Table 1. If any of the Indicator Levels are exceeded after being retested, FH Brooklyn, LLC shall modify the existing flow-through treatment system to increase its effectiveness or install an Ecology-approved treatment system or truck the contaminated stormwater or groundwater off-site for disposal in an approved manner.

- All dewatering water or contaminated stormwater must be batch sampled prior to discharging and tested for the parameters listed in Table 1. If any of the Indicator Levels listed in Table 1 are exceeded, you must stop the discharge of treated dewatering water or contaminated stormwater to the Portage Bay, until it has been retested to determine that all parameters are equal to or below the Indicator Levels in Table 1. If any of the Indicator Levels are exceeded after being retested, FH Brooklyn, LLC shall install further Ecology-approved treatment systems or shall discharge to the Municipal Sewer under a separate agreement with the Municipality and provide notice to Ecology.
- Sampling for parameters listed in Table 1 must be reported on the required Discharge Monitoring Report (DMR) according to Permit conditions (S5.B Discharge Monitoring Reports).
- If sampling is conducted more frequently than required by this Order, the results of this monitoring must be included in the calculation and reporting of the data that is submitted in the Discharge Monitoring Reports (DMRs).
- Any discharge to waters of the state above the Indicator Levels for parameters listed in Table 1 must be immediately reported to the Department of Ecology.
- All monitoring data must be prepared by a laboratory registered or accredited under the provisions of, *Accreditation of Environmental Laboratories*, Chapter 137-50 WAC.
- All sampling data must be reported monthly on Discharge Monitoring Reports (DMRs) electronically using Ecology's secure online system WQWebDMR, in accordance to permit condition S5.B. If the measured concentration is below the detection level than FH Brooklyn, LLC shall report single analytical values below detection as "less than the detection level (DL)" by entering "<" followed by the numeric value of the detection level (e.g. "<0.1"). All other values above DL must be reported as the numeric value.
- Noncompliance with permit requirements or the provisions of this Order must be immediately reported to the Northwest Regional Office of the Department of Ecology in accordance with Permit Condition S5.F, Noncompliance Notification.
- The Stormwater Pollution Prevention Plan (SWPPP) prepared for FH Brooklyn, LLC shall be fully implemented and amended as needed for the duration of the project.
- If a modification of the Order is desired, a written request shall be submitted to Ecology and if approved, Ecology will issue an amendment to this Order.

Ecology retains the right to make modifications to this Order through supplemental Order, or amendment to this Order, it if appears necessary to further protect the public interest.

This Order does not exempt FH Brooklyn, LLC from any Construction Stormwater General Permit requirement.

Table 1.

FH Brooklyn, LLC must use the specified analytical methods, detection limits (DLs) and quantitation levels (QLs) in the following table for monitoring unless the method used produces measurable results in the sample and EPA has listed it as an EPA-approved method in 40 CFR Part 136. If the FH Brooklyn, LLC uses an alternative method, not specified in the order and as allowed above, it must report the test method, DL, and QL on the discharge monitoring report.

Pollutant & CAS No. (if available)	Sampling Frequency	Sample Type	Indicator Level, µg/L unless otherwise noted	Required Analytical Protocol	Detection Level, µg/L	Quantitation Level, µg/L
PETROLEUM HYDROCARBONS						
BTEX (benzene, toluene, ethylbezene and O,M,P xylenes)	Batch	Grab	2.0 [a]	SW 846 8021/ 8260	1.0	2.0
Gasoline-Range Hydrocarbons (NWTPH-Gx) [b]	Batch	Grab	250 [a]	NWTPH-Gx	250	250
Diesel and Oil-Range Hydrocarbons (NWTPH-Dx) [c]	Batch	Grab	250 [a]	NWTPH-Dx	250	250
CHLORINATED VOLATILE ORGANIC COUMPOUNDS (cVOCs)						
1,2-Dichloroethane (107-06-2)	Batch	Grab	2.0 [a]	624	1.0	2.0
cis-1,2-Dichloroethene (156-59-2)	Batch	Grab	2.0 [a]	624/8260	1.0	2.0
Vinyl chloride (75-01-4)	Batch	Grab	2.0 [a]	624/SM6200B	1.0	2.0
Naphthalene (91-20-3)	Batch	Grab	0.6 [a]	625	0.3	0.6
METALS						
Lead, Total (7439-92-1)	Batch	Grab	27.47 [d]	200.8	0.1	0.5

Construction Stormwater General Permit Benchmarks				
Parameter			**Benchmark**	**Analytical Method**
Turbidity	Weekly	Grab	25 NTU	SM2130 [h]
pH	Weekly	Grab	6.5 - 8.5 SU	SM4500-H^+ B

a	No surface water standard, value is laboratory quantitation level.
b	NWTPH-Gx = Northwest Total Petroleum Hydrocarbons –Volatile petroleum products (includes aviation and automotive gasolines, mineral spirits, Stoddard solvent and naphtha).
c	NWTPH-Dx = Northwest Total Petroleum Hydrocarbons – Semi-volatile ("diesel") for diesel range organics and heavy oils (includes jet fuels, kerosene, diesel-oils, hydraulic fluids, mineral oils, lubricating oils, and fuel oils).
d	Acute – Freshwater Toxic Substances Criteria (WAC 173-201A-240) Based on Hardness of 46.0 mg/L for Hardness Depended Metals. The Indicator Level for hardness dependent metals is expressed as a dissolved metal value. Meeting the Indicator Level using analytical protocol for total or dissolved metal values meets the water quality standard.

FAILURE TO COMPLY WITH THIS ORDER

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do both of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form – by mail or in person (see addresses below). Email is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel Road SW Suite 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Order to:

Evan Dobrowski
WA State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

Phone: (425) 649 – 7276
Email: edob461@ecy.wa.gov

MORE INFORMATION

- **Pollution Control Hearings Board Website:** www.eho.wa.gov/Boards_PCHB.aspx
- **Chapter 43.21B RCW – Environmental Hearings Office – Pollution Control Hearings Board:** http://apps.leg.wa.gov/RCW/default.aspz?cite=43.21B
- **Chapter 371-08 WAC – Practice and Procedure:** http://apps.leg.wa.gov/WAC/default.aspx?cite=371-08
- **Chapter 34.05 RCW – Administrative Procedure Act:** http://apps.leg.wa.gov/RCW/default.aspx?cite=34.05
- **Laws:** www.ecy.wa.gov/laws-rules/ecyrcw.html
- **Rules:** www.ecy.wa.gov/laws-rules/ecywac.html

SIGNATURE

Rachel McCrea

Rachel McCrea
Water Quality Section Manager
Northwest Regional Office
Washington State Department of Ecology

2-22-18

Date

APPENDIX D

Health and Safety Plan

PROJECT-SPECIFIC HEALTH AND SAFETY PLAN

Property Name:	4700 Brooklyn Ave NE		
Project Number:	160092		
Prepared By:	Bob Hanford	Date:	8/18/2017
Reviewed By:	Bob Hanford	Date:	8/18/2017

1 INTRODUCTION

This project-specific health and safety plan (HASP) establishes procedures and practices to protect employees of Aspect Consulting, LLC (Aspect) from potential hazards posed by field activities at the subject site. In this HASP, measures are provided to minimize potential exposure, accidents, and physical injuries that may occur during daily activities and adverse conditions. Contingency arrangements are also provided for emergency situations.

2 EMERGENCY CONTACT INFORMATION

PROPERTY LOCATION	4700 Brooklyn Ave NE Seattle, WA 98105
NEAREST HOSPITAL	UW Medical Center – Emergency Room 2180 NE Pacific St Seattle, WA 98195 **Attached figure shows route to hospital.**
EMERGENCY RESPONDERS	Police, Ambulance, Fire **911**
OTHER CONTACTS	Bob Hanford (mobile) .....(206) 276-9256 Aspect, Seattle Office .....(206) 328-7443 Client Contact .....(310) 903-3141
IN EVENT OF EMERGENCY, CALL FOR HELP AS SOON AS POSSIBLE	Give the following information: ✓ **Where You Are:** address, cross streets, or landmarks ✓ **Phone Number:** you are calling from ✓ **What Happened:** type of accident, injury ✓ **How Many Persons:** need help ✓ **What is Being Done:** for the victims ✓ **You Hang Up Last:** let whomever you called hang up first

In case of serious injuries or other emergency, immediately call Bob Hanford, Aspect Corporate Safety Officer, at (206) 780-7729 or (206)-276-9256. If no response, call Doug Hillman at (206) 328-7443 or Tim Flynn at (206) 780-9370.

3 PERSONNEL ORGANIZATION AND CHAIN OF COMMAND

The Aspect Project Manager assigns the Site Safety Supervisor and other field personnel for this project, and has ultimate responsibility for developing this project-specific HASP and ensuring it is complied with during project execution. The Aspect Site Safety Supervisor has responsibility and authority for Aspect employees' safety during site activities. Other Aspect personnel on-site have the responsibility to comply with this project-specific HASP in coordination with the Site Safety Supervisor.

Aspect Personnel			
Role	**Name**	**Office Phone**	**Mobile/Cell Phone**
Project Manager	Adam Griffin	206-780-7746	865-696-7658
Site Safety Supervisor	Bob Hanford	206-780-7729	206-276-9256

Aspect will inform its subcontractors working on-site of potential fire, explosion, health, safety or other hazards associated with planned site activities, and can make available to them this project-specific HASP. **However, all subcontractors are solely responsible for preparation of their own HASP, and for the safety of their employees.**

4 SITE CONTROL PLAN

4.1 Property Description

Property Name:	Chevron	
Property Location or Address:	4700 Brooklyn Ave NE, Seattle 98105	
Owner:	Eran Fields	
Current Property Use: **Past Use of Property (if different):**	Commercial, retail Service station	
Designated Hazardous Waste Site?	(yes or no) NO	If yes, specify federal, state, or other:
Industrial Site?	NO	
Topography:	flat	
Surround Land Use/Nearest Population:	Residential and commercial	
Drinking Water/Sanitary Facilities:	On-site	
Site Map:	In Work Plan	

4.2 Site Access Control

Describe controls to be used to prevent entry by unauthorized persons:

- The work area will be fenced and closed to the public.
- Traffic cones, barriers, and caution tape, as needed.

Describe how exclusion zones and contamination reduction zones will be designated:

- The area immediately adjacent to the excavation will be considered an exclusion zone.
- Aspect field personnel will remain vigilant about preventing unauthorized persons from approaching the exclusion zone.

4.3 Worker Hygiene Practices

Aspect personnel will use the following hygiene practices while working on-site:

- No person will eat, drink, chew gum or tobacco in potentially contaminated areas. Drinking of replacement fluids for heat stress control will be permitted only in areas that are free from contamination, except in emergency situations.
- Smoking is prohibited except in designated areas of the site.
- Long hair will be secured away from the face so that it does not interfere with any activities.
- All personnel leaving potentially contaminated areas will wash their hands and face prior to entering any eating areas.
- Personnel leaving potentially contaminated areas will shower (including washing hair) and change to clean clothing as soon as practical after leaving the property.

4.4 Emergency Communications

Aspect workers on-site will have a mobile (cell) phone on-site that will be used for communications should an emergency arise. Phone numbers for Aspect site personnel are listed in Section 3: Personnel Organization and Chain of Command.

4.5 Nearest Medical Assistance

FIRST CALL 911. The route from the site to the nearest hospital is shown in the attached figure.

5 SITE WORK PLAN

Proposed Work Activities On Site:	Soil excavation, soil stockpiling. Loading truck and trailer combinations. Dewatering, water treatment and discharge to sewer. Soil sampling Excavation backfill and site grading
Objectives of Site Activities:	Remove petroleum contaminated soil, backfill and restore grade site.
Proposed Work Dates:	*2018*
Will On-site Personnel Potentially be Exposed to Hazardous Substances?	If yes, describe: The property has been a service station for nearly 100 years. Three former USTs have a confirmed petroleum release Petroleum hydrocarbons and aromatic volatile organic compounds (BTEX)
Do Personnel Conducting Site Activities have Training in Accordance with 296-843-200 WAC?	Yes

6 DECONTAMINATION

Goals	Procedures
To prevent the distribution of contaminants outside the exclusion zone or cross-contamination of samples, the following procedures will be used to decontaminate sample equipment.	Decontamination process involving Alconox wash, tap water rinse, and deionized water rinse (with air dry).
To prevent the distribution of contaminants outside the exclusion zone, unnecessary vehicles will not be allowed inside the exclusion zone. For vehicles required in the exclusion zone (e.g., excavator), the following decontamination procedures will be used to prevent contamination from leaving the exclusion zone:	Contractor is responsible for cleaning all equipment prior to leaving the contamination reduction zone.
To minimize or prevent worker exposure to hazardous substances, all personnel working in the exclusion zone and contamination reduction zones will comply with the following decontamination procedures:	Wash boots and rain gear that have come into contact with soil or groundwater with Alconox/tap water and air dry. Dispose of disposable personal protective equipment (PPE such as gloves, Tyvek) into Department of Transportation (DOT) approved and appropriately labeled 55-gallon drums. To prevent distribution of contaminants outside the exclusion zone, do not allow unnecessary vehicles inside the exclusion zone.
Excavated Soil	Place soil from each location on visqueen with bermed edges, and cover with visqueen weighted to minimize chance for removal by wind; appropriate disposition of the cuttings will be based on soil quality data collected for each location.

7 HAZARD ANALYSIS

The potential hazards and corresponding control measures for planned site work activities are as follows:

Work Activity	Primary Potential Hazards	Control Measures
Remedial excavation	Getting hit by equipment, especially from overhead.	Stay back from equipment and stay alert. Modified Level D PPE (with hard hat, traffic vest, steel-toe boots).
	Excessive noise.	Wear hearing protection.
	Chemical exposure (skin contact, ingestion, inhalation).	Modified Level D PPE. Air monitoring.
Sampling	Getting hit by excavator.	Wear traffic vest. Stay back from excavator and maintain eye contact with operator.
	Falling into open excavation, engulfment.	Do not enter excavation >4 feet deep unless properly shored or sloped. Stay back from unstable slopes. Sample from excavator bucket where needed.
	Chemical exposure (skin contact, ingestion, inhalation).	Modified Level D PPE. Air monitoring.
All	Getting hit by other trucks working on the property.	Wear traffic vest. Stay back from roads and stay alert.
	Heat stress	Take breaks, seek shade, and increase fluid intake.

Potentially Hazardous Chemicals Known or Suspected at the Property and Permissible Exposure Limits (air)					
Substance	**Medium**	**OHSA PEL**	**OSHA STEL**	**IDLH**	**Carcinogen or Other Hazard**
Gasoline-Range Petroleum	Soil, GW	10 ppmv	15 ppmv	250 ppmv	T
Diesel- and Oil-Range Petroleum	Soil, GW	1 ppmv	5 ppmv	500 ppmv	T
Benzene	Soil, GW	1 ppmv	5 ppmv	500 ppmv	C
Toluene	Soil, GW	200 ppmv	--	500 ppmv	T
Ethylbenzene	Soil, GW	100 ppmv	--	800 ppmv	T
Xylenes	Soil, GW	100 ppmv	150 ppmv	900 ppmv	T
Heavy Metals, lead	Soil, GW	Pb: 0.05 mg/m^3	Pb: --	Pb: 0.05 mg/m^3	

Notes:
-- = none established
C = carcinogen
cPAH = carcinogenic polycyclic aromatic hydrocarbon
GW = groundwater
IDLH = immediately dangerous to life or health
N/A = not applicable/not available
OHSA = Occupational Safety and Health Administration
T = toxic
PCB = polychlorinated biphenyl
PEL = permissible exposure level (8-hour time-weighted average)
STEL = short-term exposure level

Chemicals Known or Suspected On-site (check box)			
Chemical Class	**Known**	**Possible**	**Unlikely**
Corrosive (if expected, specify)			x
Ignitable (if expected, specify)		x	
Reactive			x
Volatile		x	
Radioactive			x
Explosive			x
Biological Agent			x
Particulate or Fibers			x
If known or likely, describe:			

8 PERSONAL PROTECTIVE EQUIPMENT

Based on the hazards identified above, the following personal protective equipment (PPE) will be required for the following field activities. This section specifies both an initial level of protection and a more protective (contingency) level or protection, in the event conditions should change. The contingency defines the PPE that will be available on-site.

Work Activity	Level of Protection	
	Initial	Contingency
Excavating	D	Mod. D or C
Sample handling	D	Mod. D or C
Other activities (list):		

Each level of protection will incorporate the following equipment (specify type of protective clothing, boots, gloves, respiratory cartridges or other protection, safety glasses, hardhat, and hearing protection):

Level of Protection	Specific PPE
Level D	Work clothing, traffic vest, rubber (nitrile) gloves, steel toe and shank boots, safety glasses, hearing protection, and hardhat.
Modified D	Level D plus Tyvek coveralls or rain gear, and neoprene outer gloves.
Level C	Level D plus air-purifying respirator with combination organic vapor/HEPA dust cartridges. Level C protection must be approved by Corporate Health and Safety Officer and proper training certificates in place. Medical monitoring and fit test certificates must be on site for respirator use.

NOTE: Project personnel are not permitted to deviate from the specified levels of protection without the prior approval of the Site Safety Supervisor. A traffic vest is not needed if work clothes are suitably visible (e.g., orange/yellow rain gear or white/yellow chemical protective clothing).

9 AIR MONITORING

Air monitoring will be conducted periodically to identify potentially hazardous environments and determine reference or background concentrations. Air monitoring can be used to define exclusion zones. Air monitoring can also be conducted to evaluate relative concentrations of volatile organic chemicals in samples. Aspect will make air monitoring data available to the contractor but contractor is responsible for their own monitoring and their employees safety.

The following equipment will be used to monitor air quality in the breathing zone during work activities:

Monitoring Instrument	Calibration Frequency	Parameters of Interest	Sampling Frequency
PID	Daily	Volatile organic compounds	During collection of each soil sample during drilling. During excavation if workers smell gasoline odor. During routine monitoring of remediation equipment.
Detector tube (*specify chemical)*	As required	Benzene	As needed based on PID monitoring

Use the following action levels to determine the appropriate level of personal protection to be used during field activities:

Monitoring Instrument	Reading in Breathing Zone	Action	Comments
PID	10 PID units above background for 5 minutes	Confirm with detector tube (*specify chemical*) or upgrade to Level C (air-purifying respirator with organic vapor cartridge).	Alternatively, use engineering controls (ventilation) or leave location and return at a later time.
Detector tube (*specify chemical)*	> PEL	Upgrade to Level C (air-purifying respirator with organic vapor cartridge).	Leave location pending further evaluation by Aspect Corporate Safety Officer.
PID	100 PID units above background for 5 minutes	Leave location pending further evaluation by Aspect Corporate Safety Officer.	

10 SAFETY EQUIPMENT

The following safety equipment will be on-site during the proposed field activities:

Other Required Items (check items required)	
First aid kit	x
Eyewash (e.g., bottled water)	
PID	x
Drinking water	x
Fire extinguisher	x

Other Required Items (check items required)	
Brush fan	
Wind sox	
Other:	

11 SPILL CONTAINMENT

Will the proposed field work include the handling of bulk chemicals?	Yes	No x
If yes, describe spill containment provisions for the property:		

12 CONFINED SPACE ENTRY

Will the proposed field work include confined space entry?	Yes	No x
If yes, attach to this plan the confined space entry checklist and permit.		

13 ASPECT TRAINING AND MEDICAL MONITORING

Aspect employees who perform site work are responsible for understanding potential health and safety hazards of the site. All Aspect site workers will have health and safety training for hazardous waste operations, in accordance with 296-843-200 WAC. In addition, Aspect requires medical monitoring for all employees potentially exposed to chemical hazards in concentrations in excess of the permissible exposure limit (PEL) for more than 30 days per year, as required under 296-843-210 WAC. Employees who use respirators for their work will have a respirator medical evaluation as required under Chapter 296-842-WAC.

14 DISCLAIMER

Aspect Consulting, LLC does not guarantee the health or safety of any person entering this property. Because of the potentially hazardous nature of this property and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards that may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury and illness at this property. The health and safety guidelines in this plan were prepared specifically for this site and should not be used on any other property without prior evaluation by trained health and safety personnel.

FIELD SAFETY PLAN CONSENT AGREEMENT

Aspect Consulting Employees

I have reviewed the project-specific health and safety plan, dated *August 18, 2017* for the planned remedial activities at the 4700 Brooklyn Ave. project fieldwork. I understand the purpose of the plan and I consent to adhere to its procedures and guidelines while conducting activities on site that are described in the plan.

Employee Printed Name	Signature	Date

Site Visitors

I have been briefed on the contents of the project-specific health and safety plan. I am responsible for my own health and safety.

Visitor Printed Name and Organization/Company	Signature	Date

FIELD SAFETY MEETING MINUTES

Site Name _____**Project No.** _____

Meeting Location _____

Meeting Date _____ **Time** _____ **Conducted by**_____

Pre-field Work Orientation_____ **Weekly Safety Meeting**_____ **Other**_____

Subject Discussed _____

_____

_____

_____

Site Safety Supervisor Comments _____

_____

_____

_____

Participants

Printed Name (and company if subcontractor)	Signature

Route to Hospital

Directions from 4700 Brooklyn to UW Emergency Room

A 4700 Brooklyn

B 2180 NE Pacific St Seattle, WA 98195

Drive 1 mi, 8 minutes

A 4700 Brooklyn Ave NE, Seattle, WA 98105, USA

Head south on **Brooklyn Ave NE** toward **NE 47th St**

135 ft

Turn **left** at the 1st cross street onto **NE 47th St**

551 ft

Turn **right** onto **15th Ave NE**

0.703 mi

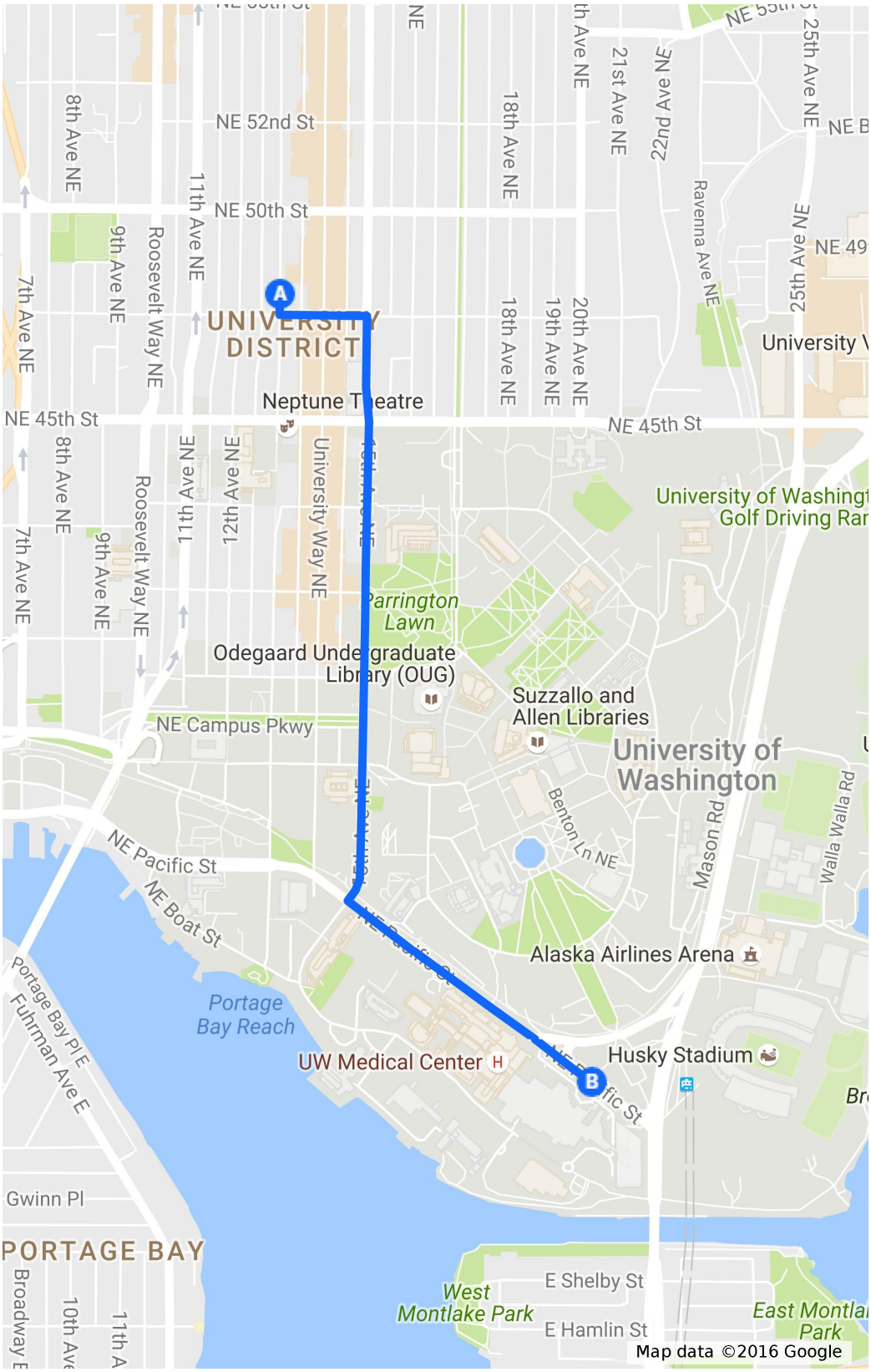
Turn **left** onto **NE Pacific St**

0.276 mi

Continue straight to stay on **NE Pacific St**Destination will be on the right

459 ft

B 2180 NE Pacific St, Seattle, WA 98195, USA



APPENDIX E

SEPA Checklist and Determination of Non-Significance

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [help]

1. Name of proposed project, if applicable: [help]
   4700 Brooklyn Ave NE Interim Action

2. Name of applicant: [help]
   FH Brooklyn, LLC

3. Address and phone number of applicant and contact person: [help]

2251 Linda Flora Drive
Los Angeles, CA 91403
310-903-3141
Contact Person: Eran Fields

4. Date checklist prepared: [help]
Jan. 17, 2017

5. Agency requesting checklist: [help]
State of Washington Department of Ecology (Ecology)

6. Proposed timing or schedule (including phasing, if applicable): [help]
July 2017

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]
Yes. Construction of an apartment building is planned upon completion of this interim cleanup action. A separate SEPA checklist for construction of an apartment building was prepared in October 2015 for City of Seattle DPD and has received a Determination of Non-Significance. With the recent rezoning of this Site location, a SEPA checklist updated with the new building design may be submitted, if neccesary.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]
Remedial Investigation Work Plan, 4700 Brooklyn Avenue NE, Seattle, WA, November 4, 2016 (Preliminary Draft). This document provides a summary of previous environmental investigations and cleanup actions, and describes scope for additional remedial investigation completed in November 2016.

On-Property Remedial Investigation Data Report, 4700 Brooklyn Avenue NE, Seattle, WA, January 17, 2017 (FINAL). This document provides the results of environmental investigations described in the Work Plan and serve as the primary basis for the planned Interim Removal Action.

Interim Action Work Plan, 4700 Brooklyn Avenue NE, Seattle, WA, FINAL Expected June 2017. This document will provide design details associated with the Interim Removal Action.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]
No.

10. List any government approvals or permits that will be needed for your proposal, if known. [help]
The interim cleanup action will be conducted under Agreed Order No. 13815 between Ecology and PLPs: FH Brooklyn LLC and Chevron Environmental Management Company. The Agreed Order requires that an Interim Action Work Plan (IAWP) be prepared and submitted for both Ecology and public review. Ecology must approve the IAWP before the interim cleanup action can be implemented.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

Releases from a gasoline service station, which operated on the property for nearly 100 years, have contaminated the subsurface of this 0.38-acre property. The purpose of the interim cleanup action is to remove on-property soil and ground water contamination. Shoring walls will be installed around the property perimeter, and dewatering will lower the ground water table (typically observed at depths of 15 to 19 feet below grade) so that contaminated soils can be excavated and transported off site for treatment/disposal. Extracted ground water will be pretreated on site and discharged to sanitary sewer. The excavation will be backfilled with clean fill to the sub-grade necessary for construction.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

Northeast corner of Brooklyn Avenue NE and NE 47th Street in Seattle, Washington.
PIN #8816400985
University Heights Add Plat Block: 7 Plat Lot: 16-19

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other Relatively flat

b. What is the steepest slope on the site (approximate percent slope)? [help]

1.25%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

Shallow soils consist of fine to medium sand with silt and occasional gravel, grading from loose to dense with depth. Stiff to hard gray silt has been logged at depths of 27 to 33 feet below ground surface (bgs).

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

No.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

The excavation will be extended to approximately 25 ft bgs, necessary to remove all soils with contaminant concentrations exceeding Washington State Model Toxics Control Act (MTCA) Method A cleanup levels. An estimated total 25,000-30,000 tons of soil will be excavated and transported off-site. Less than 5,000 tons of soil will be imported for fill – the source of fill is not finalized at this time and is subject to geotechnical and environmental tests to verify suitability.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

No. Erosion control Best Management Practices (BMPs) will be in place. Further all excavation will occur below the surrounding grade of the Site vicinity.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

Zero percent after completion of the interim cleanup action. 100% after redevelopment. (Refer to Item A7.)

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

Establishing a quarry spall construction entrance.
Installing siltation control fencing on the downhill side of work areas.
Covering soil stockpiles with anchored plastic sheeting.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

During construction there will be emissions from standard construction equipment and from excavated contaminated soils (volatile petroleum hydrocarbons).

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

No.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

To the extent possible, excavated contaminated soils will be direct-loaded into dump trucks and immediately removed from the site. Air monitoring will be conducted, and additional measures (e.g., vapor suppression foam) will be used if needed to control volatile petroleum hydrocarbon emissions.

3. **Water** [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

No.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

No.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

Not applicable.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

No.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

No.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

No.

b. Ground Water:

1) Will ground water be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to ground water? Give general description, purpose, and approximate quantities if known. [help]

During construction, ground water will be withdrawn from perimeter well points and sump pumps for the purpose of lowering the ground water table so that soils can be excavated. The water will be pretreated onsite and discharged to sanitary sewer under a King County Industrial Waste (KCIW) discharge authorization. No water will be discharged to ground water.

An Individual Authorization KCIW permit will be used for this project. The permit requires detailed project information including the process generating the wastewater, contaminants in the water, the planned pretreatment processes, frequency of discharge, discharge point and maximum daily discharge. A maximum discharge of 65 gallons per minute (gpm) is the limit for the sanitary sewer line to be used during the project. The pre-treatment will include an oil/water separator, bag filter and activated carbon prior to discharge.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

Not applicable.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

Any water collecting in the excavation (including storm water) will be pretreated onsite and discharged to sanitary sewer.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

No. The combination of perimeter well points and sump pumps in the excavation will ensure that waste liquids are captured and routed to the onsite treatment system.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

No.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

As noted above, the combination of perimeter well points and sump pumps in the excavation will capture contaminated ground water and storm water falling in the excavation, and route them to an onsite pre-treatment system and sanitary sewer discharge.

4. **Plants** [help]

a. Check the types of vegetation found on the site: [help]

____deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
____shrubs
____grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered? [help]

None.

c. List threatened and endangered species known to be on or near the site. [help]

Not applicable.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

Not applicable to interim cleanup action.

e. List all noxious weeds and invasive species known to be on or near the site. [help]

Not applicable.

5. **Animals** [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

Numerous bird species are present in the vicinity of the Site including songbirds, migratory birds, falcons and eagles.

b. List any threatened and endangered species known to be on or near the site. [help]

None.

c. Is the site part of a migration route? If so, explain. [help]

No.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

None.

e. List any invasive animal species known to be on or near the site. [help]

None.

6. **Energy and Natural Resources** [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

Not applicable to interim cleanup action.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

Not applicable to interim cleanup action.

7. **Environmental Health** [help]

1. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal?
   If so, describe. [help]
   Potential for inhalation exposure to volatile petroleum hydrocarbons.
   Potential for direct contact exposure to petroleum hydrocarbons (construction workers).
   Risk of fire/explosion.

1) Describe any known or possible contamination at the site from present or past uses. [help]

The site operated as a retail gas station since before 1920 through October 2016. Site soil and ground water are known to be contaminated with petroleum hydrocarbons including separate-phase product (e.g., weathered gasoline). The January 17, 2017 On-Property Remedial Investigation Data Report (Aspect, 2017) describes the current contamination present at the Site.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

The site operated as a retail gas station since before 1920 through October 2016. Site soil and ground water are known to be contaminated with petroleum hydrocarbons including separate-phase product (e.g., weathered gasoline). There are no other known hazardous chemicals/conditions that might affect project development and design.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

Separate-phase product (e.g., weathered gasoline) may be extracted from the perimeter well points along with ground water. The pretreatment system will be designed to segregate and safely store separate-phase product pending offsite transport and disposal/recycle.

4) Describe special emergency services that might be required. [help]

911 for construction-related injuries.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

Air monitoring will be conducted to ensure protection against both unacceptable inhalation exposures and fire/explosion potential (i.e., lower explosive limit [LEL] monitoring).

All persons performing Site activities where they may contact hazardous materials, including petroleum hydrocarbon-impacted soil or ground water, will have completed Hazardous Waste Operations and Emergency Response (HAZWOPER) training in accordance with the Occupational Safety and Health Administration Part 1910.120 of Title 29 of the Code of Federal Regulations, and be in possession of a current HAZWOPER certification card.

All work will be performed in accordance with the contractor's site-specific health and safety plan (HASP). The HASP includes guidelines to reduce the potential for injury, as well as incident preparedness and response procedures, emergency response and evacuation procedures, local and project emergency contact information, appropriate precautions for potential airborne contaminants and Site hazards, and expected characteristics of generated waste. The general contractor will operate under its own HASP, as will any subcontractor performing site activities where hazardous materials may be contacted.

A safety meeting will be conducted prior to the start of each workday to inform workers of changing work conditions, and to reinforce key safety requirements.

1. Noise [help]

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [help]

General traffic.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [help]

Short-term construction noise. Construction will be limited to 7am-7pm on weekdays and between 9am and 7 pm on weekends per the City-approved Construction Management Plan.

3) Proposed measures to reduce or control noise impacts, if any: [help]

Construction will be limited to 7am-7pm on weekdays and between 9am and 7 pm on weekends per the City-approved Construction Management Plan.

8. **Land and Shoreline Use** [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The site is currently vacant. A Safeway is on adjacent property to the north, with associated surface parking and an alley.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

No.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

Not applicable.

c. Describe any structures on the site. [help]

1-story convenience store and gas station (no longer in operation).

d. Will any structures be demolished? If so, what? [help]

Yes; convenience store and gas station

e. What is the current zoning classification of the site? [help]

Seattle Mixed U-District (SM-U 75-240)

f. What is the current comprehensive plan designation of the site? [help]

Mixed Residential and Commerical

g. If applicable, what is the current shoreline master program designation of the site? [help]

Not applicable.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

Not applicable.

i. Approximately how many people would reside or work in the completed project? [help]

Not applicable to interim cleanup action.

j. Approximately how many people would the completed project displace? [help]

None

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

No measures neccesary

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

Not applicable to interim cleanup action.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [help]

Not applicable.

9. **Housing** [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

Not applicable to interim cleanup action.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

Not applicable to interim cleanup action.

c. Proposed measures to reduce or control housing impacts, if any: [help]

Not applicable to interim cleanup action.

10. **Aesthetics** [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

Not applicable to interim cleanup action.

b. What views in the immediate vicinity would be altered or obstructed? [help]

Not applicable to interim cleanup action.

b. Proposed measures to reduce or control aesthetic impacts, if any: [help]

Not applicable to interim cleanup action.

11. **Light and Glare** [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

Not applicable to interim cleanup action.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

Not applicable to interim cleanup action.

c. What existing off-site sources of light or glare may affect your proposal? [help]

Not applicable to interim cleanup action.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

Not applicable to interim cleanup action.

12. **Recreation** [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

Not applicable to interim cleanup action.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

Not applicable to interim cleanup action.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

Not applicable to interim cleanup action.

13. **Historic and cultural preservation** [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. [help]

No.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

No.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

Consultation with the State Department of archaeology and historic preservation (DAH) including a querry of the online database was performed. Historic maps and available GIS data was reviewed to determine no potential impacts to cultural and historic resources would result from this project.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

Not applicable.

14. **Transportation** [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

Site is approximately seven blocks from two separate entrances to Interstate I-5 (i.e., at NE 45th Street and NE 50th Street).

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

The Site is served by Seattle public buses however the project will not impact any transit stops. The sidewalks will be closed during the project; however safe pedestrian access and pathways will be maintained throughout the project.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

Not applicable to interim cleanup action.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

Widening of the alley.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help]

Rail may be used to haul excavated soils from transfer station to landfill.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

Approximately 20 vehicular trips per day will be associated with the interim cleanup action. An estimated 10 of these will be trucks hauling contaminated soil from the property to the disposal locations.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

Not applicable.

h. Proposed measures to reduce or control transportation impacts, if any: [help]

A traffic control plan will be implemented to minimize transportation impacts during the interim cleanup action. The traffic control plan will be submitted to the City for review.

15. **Public Services** [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

Not applicable to interim cleanup action.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

The Site is served by Seattle public buses however the project will not impact any transit stops. The sidewalks will be closed during the project; however safe pedestrian access and pathways will be maintained throughout the project.

16. **Utilities** [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

Electricity, natural gas, water, refuse service, telephone, and sanitary sewer are currently available.

c. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

Interim cleanup action will use sanitary sewer for discharge of pretreated water. An Individual Authorization KCIW permit will be used for this project. The permit requires detailed project information including the process generating the wastewater, contaminants in the water, the planned pretreatment processes, frequency of discharge, discharge point and maximum daily discharge. A maximum discharge of 65 gallons per minute (gpm) is the limit for the sanitary sewer line to be used during the project. The pre-treatment will include an oil/water separator, bag filter and activated carbon prior to discharge.

C. Signature [help]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Eran

Name of signee Eran Fields

Position and Agency/Organization Managing Member /FH Brooklyn, LLC of Manager

Date Submitted: 04/05/2017

D. supplemental sheet for nonproject actions [help]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

A short-term increase in volatile petroleum hydrocarbon emissions to air will occur as contaminated soil is excavated. There will also be diesel emissions from construction equipment and trucks, as well as the potential for dust generation.

Proposed measures to avoid or reduce such increases are:

To the extent possible, excavated contaminated soils will be direct-loaded into dump trucks and immediately removed from the site. Air monitoring will be conducted, and additional measures (e.g., vapor suppression foam) will be used if needed to control volatile petroleum hydrocarbon emissions. Dust control measures (e.g., water spraying) will also be implemented if necessary. Construction activities will comply with all rules and regulations of air emissions reduction standards.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Not applicable.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

None.

3. How would the proposal be likely to deplete energy or natural resources?

Not applicable.

Proposed measures to protect or conserve energy and natural resources are:

None.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Not applicable.

Proposed measures to protect such resources or to avoid or reduce impacts are:

None.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Not applicable.

Proposed measures to avoid or reduce shoreline and land use impacts are:

None.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

The Site is served by Seattle public buses however the project will not impact any transit stops. The sidewalks will be closed during the project; however safe pedestrian pathways will be maintained throughout the project.

Proposed measures to reduce or respond to such demand(s) are:

None.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The interim cleanup action is being conducted for the express purpose of removing subsurface contamination in accordance with MTCA, thereby addressing protection of the environment.

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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office 3190 160th SE Bellevue, Washington 98008-5452 (425) 649-7000

STATE ENVIRONMENTAL POLICY ACT
DETERMINATION OF NONSIGNIFICANCE

CHEVRON 90129 MTCA CLEANUP PROJECT

Date of Issuance: December 15, 2017

Lead agency: Department of Ecology, Toxics Cleanup Program, Northwest Regional Office

Agency Contact: Dale Myers, damy461@ecy.wa.gov, (425) 649-4446

Description of proposal:

Releases from a gasoline service station, which operated on the property for nearly 100 years, have resulted in soil and groundwater contamination at this 0.38-acre property. An interim cleanup action will be conducted under Agreed Order No. 13815 between Ecology and PLPs: FH Brooklyn LLC and Chevron. The purpose of the interim cleanup action is to clean up on-property soil and groundwater contamination. A shoring wall will be installed at the property boundary to excavate all soils exceeding MTCA method A cleanup levels. Dewatering is necessary to lower the groundwater table (observed at depths of 15 to 19 feet below grade) so that contaminated soils can be excavated. Excavated soils will be characterized and transported off site for reuse, treatment, and/or disposal. Water (groundwater and stormwater) extracted from the excavation will be pretreated on site and discharged to sanitary sewer. The excavation will be backfilled to the depth necessary for subgrade for redevelopment of the property.

Location of proposal: 4700 Brooklyn Ave NE, Seattle Washington

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Applicant/Proponent:

Eran Fields
FH Brooklyn, LLC
2251 Linda Flora Drive
Los Angeles, CA 91403
(310) 903-3141

Ecology, as the lead agency, has determined that this proposal will not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030(2)(c).

This determination is based on a review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public upon request or at the Site web page https://fortress.wa.gov/ecy/gsp/Sitepage.aspx?csid=10632

The comment period for this DNS corresponds with the comment period on the Draft Interim Action Work Plan that will end on January 22, 2018.

Responsible official:

Responsible official:
Robert W. Warren
Section Manager
Northwest Regional Office
Toxics Cleanup Program
(425)-649-7054

Signature _____ Date 12/8/17

This SEPA decision may be appealed in conjunction with an appeal on the underlying agency action.