COMPLIANCE MONITORING PLAN

Mount Baker Properties Site
S. McClellan Street and Martin Luther King Jr. Way S.
Seattle, Washington

PPCD No. 16-2-29584-3 SEA

Facility Site ID #96127971, Cleanup Site ID #13054

Prepared for: Mt. Baker Housing Association

Project No. 160324 • July 15, 2020 • AGENCY REVIEW DRAFT

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Aspect CONSULTING

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Acronyms and Abbreviations

amsl	above mean sea level
Aspect	Aspect Consulting, LLC
BTEX	benzene, ethylbenzene, toluene and xylenes
CAP	Cleanup Action Plan
CAR	Cleanup Action Report
CMMP	Contaminated Media Management Plan
CMP	Compliance Monitoring Plan
COC	contaminant of concern
CSSA	Chlorinated Solvent Source Area
CUL	Cleanup level
Ecology	Washington State Department of Ecology
EDR	Engineering Design Report
HASP	Health and Safety Plan
ICP	Institutional Controls Plan
ISCR	*in situ* chemical reduction
MBHA	Mt. Baker Housing Association
µg/L	micrograms per liter
ug/m3	micrograms per cubic meter
mg/kg	milligrams per kilograms
MNA	monitored natural attenuation
MTCA	Model Toxics Control Act
PCE	tetrachloroethylene
PHSA	Petroleum Hydrocarbon Source Area
PPCD	Prospective Purchaser Consent Decree
RI/FS	Remedial Investigation/Feasibility Study
SAP	Sampling Analysis Plan
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
VOC	volatile organic compound
WAC	Washington Administrative Code

1 Introduction

This Compliance Monitoring Plan (CMP), prepared by Aspect Consulting, LLC (Aspect) on behalf of Mt. Baker Housing Association (MBHA), describes the compliance monitoring required by the Washington State Department of Ecology's (Ecology) Cleanup Action Plan (CAP) for the Mount Baker Properties Site (the Site). The Site is located along South McClellan Street and Martin Luther King (MLK) Jr. Way South in Seattle, Washington (Figure 1).

The Mount Baker Properties Site consists of two parcels (King County tax parcels 00360-008 and 000360-0055) separated by South McClellan Street. The parcel on the north side of South McClellan Street is referred to herein as Maddux North, and the parcel on the south side of South McClellan Street is referred to herein as Maddux South. . Contaminated soil and groundwater at the Site are a result of releases from the former Mount Baker Cleaners dry cleaner, which historically operated in the eastern portion of the Maddux North, and former Phillips 66 gas station, which historically operated on Maddux South.

The Site is shown relative to surrounding physical features on Figure 1. Figure 2 shows historical Site features and includes the extent of the Model Toxics Control Act (MTCA) Site boundary, defined as the inferred extent of the dissolved-phase groundwater plume.

The Mount Baker Properties Site is being cleaned up in accordance with the terms of Prospective Purchaser Consent Decree (PPCD) No. 16-2-29574-3. Based on the evaluation of remedial alternatives relative to MTCA criteria in the Remedial Investigation and Feasibility Study (RI/FS; Aspect, 2019), Ecology's CAP selected a final cleanup action consisting of five elements (Aspect, 2020a):

- Excavation and permitted disposal of chlorinated solvent-contaminated soil on the former parcel where Mount Baker Cleaners operated to an elevation of 60 feet above mean sea level (amsl).
- Excavation and permitted disposal of chlorinated solvent-contaminated soil on the west-adjacent McClellan parcel to a depth of 15 feet below ground surface (bgs).
- Excavation and permitted disposal of petroleum hydrocarbon-contaminated soil on the Former Phillips 66 parcel.
- Installation of a passive venting system and chemical vapor barrier on Maddux North and Maddux South buildings to mitigate any potential for vapor intrusion.
- Continued groundwater sampling to monitor natural attenuation of the groundwater plume post source removal.

- Contingency *in situ* chemical reduction (ISCR) implementation in South McClellan Street if the groundwater plume requires additional remediation post source removal.

The fourth amendment to the PPCD requires the following deliverables:

- The Health and Safety Plan (HASP; Aspect, 2020b) describes the measures used to protect the health and safety of Aspect personnel during the remedial activities.
- The Engineering Design Report (EDR; Aspect, 2020c) describes the engineering concepts and design criteria for the construction activities associated with implementing the CAP. Construction activities will be completed by MBHA's contractor (Contractor).
- The Institutional Controls Plan (ICP; Aspect, 2020d) describes the measures to be undertaken to limit or prohibit activities that may interfere with the integrity of the cleanup action.
- This CMP, which describes the monitoring to be performed during construction and during operations and maintenance to meet the requirements of Washington Administrative Code (WAC) 173-340-410. This CMP includes the procedures for soil compliance monitoring, groundwater compliance monitoring, vapor intrusion compliance monitoring, reporting, and a Sampling and Analysis Plan / Quality Assurance Procedures Plan (SAP/QAPP; Appendix A).

2 Cleanup Action Implementation

The primary source of contaminants at the Site requiring remedial action is the chlorinated solvent-contaminated soil in the chlorinated solvent source area (CSSA) and petroleum hydrocarbon-contaminated soil in the petroleum hydrocarbon source area (PHSA; Aspect, 2019). The leaching to groundwater creates a dissolved-phase groundwater plume, referred to as the groundwater plume.

The selected cleanup action, which focuses on excavation and off-Site disposal, represents the most permanent and effective source removal in accordance with MTCA. The excavation of contaminated soils (including potential free-phase tetrachloroethylene [PCE] on the Mount Baker Cleaners parcel) is expected to dramatically improve groundwater quality in South McClellan Street and MLK Jr. Way South Rights-of-Way (ROW).

Compliance monitoring, as established in WAC 173-340-410, is comprised of three types of monitoring:

- Protection monitoring to ensure the safety of human health and the environment during the cleanup action
- Performance monitoring to confirm the cleanup action has attained the cleanup standards
- Confirmation monitoring to confirm the long-term effectiveness of the cleanup action

Soil compliance monitoring will be performed during the remedial excavations to ensure that the excavations (a) are conducted in a manner which protects the safety of human health and the environment, (b) achieves the cleanup levels to the extents practicable, and (c) characterizes any remaining soil contamination which does not achieve the cleanup levels due to practicable limitations. Soil compliance monitoring will be performed through the collection of soil samples and subsequent laboratory analytical testing.

Excavation of contaminated soils is expected to dramatically improve groundwater quality at the Site, particularly immediately downgradient of the CSSA. This source removal will allow for monitored natural attenuation (MNA) of the groundwater plume. Contingency ISCR for groundwater would be considered if monitoring results indicate that MNA is not capable of achieving cleanup levels in a reasonable restoration time frame.

Groundwater compliance monitoring will begin after remedial excavation to ensure that the cleanup action results in the improvement of groundwater quality to meet the cleanup levels. Groundwater compliance monitoring will consist of performance monitoring to track the reduction in contaminant concentrations post-remedial excavations, and once groundwater has reached cleanup levels, confirmation monitoring to demonstrate long-term compliance with the cleanup levels.

Groundwater MNA monitoring and evaluation will also be used to determine if it will be necessary to trigger a contingency action for remediation of the groundwater plume.

After the first 5 years of MNA monitoring, the restoration time frame estimate will be updated. If the estimate is deemed unreasonably long, (i.e., more than 30 years), and/or natural attenuation has not met performance objectives, the process for triggering the ISCR contingency action outlined in Section 4.5 will be implemented.

Vapor intrusion compliance monitoring will be performed post redevelopment of the Maddux North and Maddux South projects. The Maddux North and Maddux South projects include the installation of chemical vapor barriers, and subslab vent piping to mitigate vapor intrusion. Compliance monitoring will consist of confirmation monitoring of subslab soil gas. If confirmation monitoring of subslab soil gas indicates the potential for vapor intrusion, performance monitoring of indoor air may be triggered to verify the effectiveness of the vapor mitigation systems.

2.1 Cleanup Levels

The CAP establishes the MTCA Method A cleanup levels (CULs) for soil and groundwater and the MTCA Method B screening levels for subslab soil as the CULs for soil gas at the Site. These CULs are shown in Table 1.

Table 1. Site Cleanup Standards

Contaminant of Concern	Cleanup Level and Media		
	Soil (mg/kg)	**Groundwater (µg/l)**	**Soil Gas (µg/m³)**
Tetrachloroethylene (PCE)	0.05	5	320
Trichloroethylene (TCE)	0.03	5	11
Dicholroethene (DCE)	N/A	16	N/A
Vinyl Chloride (VC)	N/A	0.2	N/A
Gasoline-range petroleum hydrocarbons (GRO)	30	800	N/A
Diesel- and heavy-oil range petroleum hydrocarbons (DRO/ORO)	2,000	500	N/A
Benzene	0.03	5	11
Toluene	7	1,000	N/A
Ethylbenzene	6	700	N/A
Xylenes, Total	9	1,000	N/A
MTCA Point of Compliance	Throughout the soil column to 15 feet bgs	Throughout the Site[(a)]	Throughout the Site

Notes: mg/kg = milligrams per kilogram, ug/L; micrograms per liter; ug/m³ = micrograms per cubic meter; bgs = below ground surface (a) – From WAC 173-340-720(8)(b): The standard point of compliance shall be established throughout the site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the site.

3 Soil Compliance Monitoring

Aspect is the engineer of record for the remedial excavations and will be responsible for ensuring completion of the removals in accordance with the final CAP and EDR (Aspect, 2020a and 2020c). Aspect is also the geotechnical engineer of record and responsible for shoring inspections. The general contractor is W.G. Clark and their subcontractors (referred to collectively as Contractor herein). The Contractor is responsible for adhering to requirements outlined in the Contaminated Materials Management Plan (CMMP) provided in Appendix E of the EDR.

During the remedial excavations at both the CSSA and PHSA, Aspect will conduct the following construction and monitoring activities in the role of environmental consultant:

- Oversee mobilization and site preparation, including monitoring well decommissioning
- Oversee soil excavation, loading, and stockpiling, including direction of soil and debris segregation
- Oversee soil sampling and analysis to designate overburden soils as contaminated soil or not
- Oversee soil sampling and analysis within the excavations to verify that contaminated soil has been removed (to the extents practicable)
- Oversee excavation dewatering and treatment/disposal of the water
- Oversee loading and off-site disposal of contaminated soils and debris, including compilation of certificates of disposal as documentation

The following sections discuss the soil compliance monitoring for the Site.

3.1 Chlorinated Solvent Source Area

Figure 3 shows the anticipated soil excavation area in the CSSA. Soil in the CSSA has been designated into two categories for waste profiling and disposal: dangerous waste (DW) and contained-in (CI) soil. Aspect is responsible for directing soil segregation activities. Soil performance monitoring for the cleanup action in the CSSA consists of:

- Verifying removal of all dangerous waste (DW) soil
- Sidewall soil performance sampling as shoring is installed
- Bottom confirmation sampling once the remedial excavation has reached the planned excavation extents
- Air protection monitoring for fugitive emissions of volatile contaminants

3.1.1 Dangerous Waste Removal Performance Monitoring

The limits of DW soil in the CSSA have been defined as shown in the Contained-In Determination letter issued by Ecology (Aspect, 2020c; Appendix B). Once the DW soil has been removed, confirmation samples will be obtained from the limits of the DW excavation and submitted for analytical testing of PCE using the Toxicity Characteristic

Leaching Procedure (TCLP) in accordance with the SAP/QAPP (Appendix A). A minimum of five soil samples will collected from the sidewalls and bottom of the DW soil excavation for laboratory analysis in accordance with the SAP/QAPP. If chlorinated-solvent contaminated soil which exceeds the DW criteria is still present at the limits of the DW excavation, that area will be overexcavated by at least 1 foot, and the new limits of the DW excavation will be sampled to ensure DW soil has been removed.

3.1.2 Excavation Sidewall Performance Monitoring

As the excavation advances downward, sidewall samples will be collected prior to the installation of the horizontal shoring elements (lagging). Sidewall samples will be collected at a horizontal spacing of approximately 16 feet and at 5-foot-depth intervals (e.g., 0 to 5 feet, 5 to 10 feet, etc.) across the full extent of excavation sidewalls, with the exception of the western sidewall where chlorinated solvent-contaminated soil is not present. Sample naming conventions are presented in the SAP/QAPP (Appendix A).

3.1.3 Excavation Bottom Confirmation Monitoring

Once the vertical limits of the CSSA excavation have been reached, excavation bottom confirmation soil samples will be collected for laboratory analysis to confirm compliance with the cleanup levels (Section 2.1). The soil samples will be collected from within the excavation using the excavator bucket or by hand if safely accessible to a worker in accordance with the SAP/QAPP (Appendix A). Excavation bottom samples will be collected on a systematic 16-foot grid. The sampling grid boundary will correspond to the CSSA remedial excavation areas, and the bottom elevations depicted on Figure 3. Within each 16-foot grid area, Aspect will field-screen the soil for evidence of contamination. Soil samples will be obtained based on field screening observations at the bottom elevations, as follows:

- If field screening indications of contamination are observed at the planned bottom elevation, samples will be collected for laboratory analysis described in the SAP/QAPP (Appendix A) at up to five locations within the 16-foot grid to evaluate the lateral extent of the potentially contaminated soil within the 16-foot grid. Each of these five locations will be submitted as a discrete sample for laboratory analysis.
- If there are no indications of contamination within the entire 16-foot grid area, a single soil sample will be collected for analysis from the approximate center of the square area (one sample per 16-foot by 16-foot square) to document that the cleanup levels have been met at depth.

If a bottom excavation sample exceeds the cleanup levels, the excavation in that area will be advanced by at least 1 foot, if practicable. The shoring has been designed based on the anticipated depth necessary to reach compliance with the cleanup levels. Overexcavation will be conducted to the extent practicable based on shoring design and other practical limitations. If contaminated soil cannot be safely or practicably overexcavated, it will be left in place and documented in the Cleanup Action Report (CAR). In areas where overexcavation is practicable and performed, a new bottom soil sample will be collected for performance monitoring.

The soil sampling and chemical analysis described above will be conducted in accordance with the SAP/QAPP (Appendix A). Aspect will submit excavation verification soil samples to Fremont Analytical, Inc. of Seattle, Washington, which is a state-accredited laboratory. Typically, 24-hour turnaround times will be requested so as to not delay the cleanup progress.

3.1.4 Air Emissions Protection Monitoring

The Contractor is responsible for monitoring and controlling emissions of volatile contaminants in air during soil excavation conducted as part of the cleanup action. The soil remedial excavation is expected to occur over a month-long period and will be dynamic in terms of work activities, locations, and conditions. The action levels requiring enhanced personal protection equipment (PPE) and/or mitigation measures is presented in the Air Monitoring Plan (AMP), which is an attachment to the HASP (Aspect, 2020b). It is important to note that the HASP was developed for the safety of Aspect workers and their subcontractors. The Contractor is ultimately responsible for conducting air emissions protection monitoring, but the action levels presented in the AMP will be used by the Contractor as well. By meeting action levels within the work zone throughout the brief project duration, protection of on-site workers and off-site receptors will be achieved.

Air monitoring will be performed using a combination of photoionization detectors (PIDs), Dräger ® tubes, and/or a portable gas chromatograph. Air monitoring will be conducted from within the remedial excavation and at the perimeter of the excavation to assess fugitive air emissions from the CSSA. Excavation monitoring will be performed at any point workers are present within the excavation, and perimeter monitoring will be performed at 1-hour intervals at any point when active excavation is occurring. More frequent monitoring can be conducted at specific locations if exceedances of action levels are detected.

3.2 Petroleum Hydrocarbon Source Area

Figure 3 shows the anticipated soil excavation area in the PHSA. The soil compliance monitoring for the remedial excavation in the PHSA consists of:

- Sidewall soil performance sampling as shoring is installed
- Bottom confirmation sampling once the remedial excavation has reached the planned excavation extents
- Air protection monitoring for fugitive emissions of volatile contaminants

Aspect is responsible for directing soil segregation activities. During excavation, field screening techniques will be used to distinguish between excavated soil that is inferred to be impacted or contaminated by petroleum hydrocarbons and soil that is inferred to be non-impacted. The expected limits of non-impacted, impacted, and contaminated soil are shown in the CMMP. Soils will be stockpiled into the three expected categories for analytical testing. The stockpiles will be maintained in a bermed, lined/sealed stockpile area and covered when not in use.

3.2.1 Excavation Sidewall Performance Monitoring

As the excavation advances downward, sidewall samples will be collected prior to the installation of the horizontal shoring elements (lagging). Sidewall samples will be collected at a horizontal spacing of approximately 16 feet and at 5-foot-depth intervals (e.g., 0 to 5 feet, 5 to 10 feet, etc.) across the full extent of excavation sidewalls. Sample naming conventions are presented in the SAP/QAPP (Appendix A). Sidewall samples exceeding the cleanup levels will be left in place and documented in the CAR.

3.2.2 Excavation Bottom Confirmation Monitoring

Once the planned vertical limits of the PHSA excavation have been reached, excavation bottom confirmation soil samples will be collected for laboratory analysis to confirm compliance with the cleanup levels (Section 2.1). The soil samples will be collected from within the excavation using the excavator bucket or by hand if safely accessible to a worker in accordance with the SAP/QAPP (Appendix A). Excavation bottom samples will be collected on a systematic 16-foot grid (one sample per 16-foot by 16-foot square) to document that the cleanup levels have been met at depth. The sampling grid boundary will correspond to the PHSA remedial excavation areas, and the bottom elevations depicted on Figure 3. If a bottom excavation sample exceeds the cleanup levels, the excavation in that area will be deepened by at least 1 foot, if practicable. The shoring has been designed based on the anticipated depth necessary to reach compliance with the Site cleanup levels. Overexcavation will be implanted to the extent practicable based on shoring design and other practical limitations. If contaminated soil cannot be safely or practicably overexcavated, it will be left in place and documented in the CAR. In areas where overexcavation is practicable and performed, a new bottom soil sample will be collected for compliance monitoring.

The soil sampling and chemical analysis described above will be conducted in accordance with the SAP/QAPP (Appendix A). Aspect will submit excavation verification soil samples to Fremont Analytical, Inc. of Seattle, Washington, which is a state-accredited laboratory. Typically, 24-hour turnaround times will be requested so as to not delay the cleanup progress.

3.2.3 Air Emissions Protection Monitoring

The Contractor is responsible for monitoring and controlling air emissions of petroleum hydrocarbons during soil excavation conducted as part of the cleanup action. The soil remedial excavation is expected to occur over a month-long period and will be highly dynamic in terms of work activities, locations, and conditions. The action levels requiring enhanced PPE and/or mitigation measures is presented in the AMP, which is an attachment to the HASP (Aspect, 2020b). It is important to note that the HASP was developed for the safety of Aspect workers and their subcontractors. The Contractor is ultimately responsible for conducting air emissions protection monitoring, but the action levels presented in the AMP will be used by the Contractor as well. By meeting action levels within the work zone throughout the project duration, protection of on-site workers and off-site receptors will be achieved.

Air monitoring will be performed using a combination of PIDs, Dräger ® tubes, and/or a portable gas chromatograph. Air monitoring will be conducted from within the remedial excavation work and at the perimeter of the excavation to assess fugitive air emissions from the PHSA. Excavation monitoring will be performed at any point workers are present within the excavation, and perimeter monitoring will be performed at 1-hour intervals at any point when active excavation is occurring. More frequent monitoring can be conducted at specific locations if exceedances of action levels are detected.

4 Groundwater Compliance Monitoring

Monitored natural attenuation (MNA) of groundwater is a primary element of the CAP at the Site. Excavation of the CSSA and PSSA will remove the source of contamination to groundwater and accelerate the MNA of the groundwater plume. The selected cleanup calls for groundwater compliance monitoring consisting of MNA of the groundwater plume until cleanup levels are reached.

If groundwater compliance monitoring indicates that cleanup levels will not be reached in a reasonable restoration time frame, contingency actions will be implemented to accelerate MNA and reduce the restoration time frame.

The following subsections describe the elements of groundwater compliance monitoring, including the procedures for replacing monitoring wells, performance monitoring of groundwater quality following the CSSA and PHSA remedial excavations, confirmation monitoring once cleanup levels are achieved, and the triggers for contingency cleanup actions of groundwater at the Site.

4.1 Replacement Monitoring Wells

New groundwater monitoring wells will be installed to replace monitoring wells which were decommissioned to allow for remedial excavations, construction, and redevelopment. Installation, development, and survey of new groundwater monitoring wells will be completed in accordance with the procedures detailed in the SAP/QAPP. The purpose of each monitoring well is included in Table 2 below, and their locations are shown on Figure 4.

Table 2. Replacement Monitoring Wells

Replacement Monitoring Well	Purpose
AMW-25	Evaluate groundwater quality and elevation in the CSSA after source removal.
AMW-26	Compliance groundwater monitoring at the downgradient edge of the CSSA
AMW-27	Compliance groundwater monitoring in the vicinity of the highest historical concentrations of petroleum hydrocarbons and the downgradient edge of the gasoline-range remedial excavation.
AMW-28	Compliance groundwater monitoring at the downgradient edge of the PHSA
AMW-29	Compliance groundwater monitoring at the downgradient edge of the oil-range remedial excavation.

Several monitoring wells in the ROWs surrounding each redevelopment are necessary for groundwater compliance monitoring (i.e., HC-MW-3, HC-MW-5, AMW-6, AMW-19, and MW-5). The Contractor will protect these monitoring wells in-place during the remedial excavations, construction, and redevelopment associated with the Maddux

North and Maddux South projects. If these wells are damaged and deemed unusable, they will be over-drilled by a licensed driller, and a replacement monitoring well will be constructed. In these instances, the replacement monitoring wells will be named with the suffix “R”. In the event that the wells being monitored are damaged or must otherwise be replaced during the monitoring program (such as ROW work by the City of Seattle), new monitoring wells will be installed by a state-licensed resource protection well driller using a hollow-stem auger rig and will be constructed in accordance with WAC 173-160-420. The replacement wells will be installed as close as practicable to the original well and will be labeled sequentially using the prefix “AMW-“.

4.2 Groundwater Performance Monitoring

Groundwater sampling and analysis procedures for the groundwater performance monitoring program are presented in the SAP/QAPP (Appendix A). Each of the groundwater monitoring wells listed in Table 3 below will be sampled semi-annually during the first year post-remedial excavation. After the first year of groundwater sampling, the data will be evaluated, and the monitoring program will be reevaluated to determine which wells will be removed from the sampling network and which wells can be sampled on a reduced frequency for 4 additional years. Groundwater will be monitoring for 5 years to evaluate MNA and to support estimation of the restoration time frame.

The sampling frequency is based on historical groundwater analytical results. Monitoring wells which have not historically exceeded the cleanup levels (typically side and upgradient of the groundwater plume) will be monitored on an annual basis; monitoring wells which historically exceeded cleanup levels will be monitored on a semiannual basis.

All monitoring wells will be gauged during each sampling event to provide a view of groundwater elevation, gradient, and flow direction. The analyses for each well are based on historical data and their position relative to the CSSA and PHSA. A list of monitoring wells, sampling frequency during the initial 5-year monitoring period (which coincides with the Ecology review period), and the analyses for each well are shown in Table 3.

Table 3. Groundwater Monitoring

Monitoring Well	Analyses
AMW-03	cVOCs
AMW-06	cVOCs
AMW-07	cVOCs
AMW-08	cVOCs
AMW-09	cVOCs
AMW-11	cVOCs
AMW-14	cVOCs

Monitoring Well	Analyses
AMW-15	cVOCs
AMW-16	cVOCs, GRO, DRO/ORO, BTEX
AMW-17	cVOCs, GRO, DRO/ORO, BTEX
AMW-18	cVOCs
AMW-19	cVOCs
AMW-20	cVOCs, GRO, DRO/ORO, BTEX
AMW-22	cVOCs
AMW-23	cVOCs
AMW-24	cVOCs
AMW-25	cVOCs
AMW-26	cVOCs
AMW-27	cVOCs, GRO, DRO/ORO, BTEX
AMW-28	cVOCs, GRO, DRO/ORO, BTEX
AMW-29	cVOCs, GRO, DRO/ORO, BTEX
HC-MW-01	cVOCs
HC-MW-02	cVOCs
HC-MW-03	cVOCs
HC-MW-04	cVOCs
HC-MW-05	cVOCs
HC-MW-06	cVOCs
HC-MW-07	cVOCs
MW-05	cVOCs
MW-06	cVOCs, GRO, DRO/ORO, BTEX
MW-07	cVOCs
MW-10	cVOCs, GRO, DRO/ORO, BTEX

Notes: cVOCs = chlorinated volatile organic compounds; GRO = Gasoline-range petroleum hydrocarbons; DRO/ORO = diesel- and heavy-oil range petroleum hydrocarbons; BTEX = benzene, ethylbenzene, toluene and xylenes

4.3 Groundwater Confirmation Monitoring

During the groundwater performance monitoring period, it is expected that certain wells will achieve cleanup levels within the initial 5-year review period. A monitoring well will be defined as having met cleanup levels once four consecutive rounds of samples indicate concentrations of contaminants being monitored have achieved cleanup levels. Once this confirmation monitoring has been achieved, Ecology approval will be sought to discontinue monitoring at that well. At any point during the performance monitoring, more frequent sampling could be conducted to expedite confirmation monitoring and determination for four consecutive “clean” samples. However, samples can be collected no more frequently than quarterly for this purpose.

4.4 Monitoring Well Decommissioning

All monitoring wells that are not being monitored under this CMP will be properly decommissioned by a licensed driller in accordance with the requirements of WAC 173-160-460. This includes wells in the monitoring program that, in the future, are determined by Ecology to comply with cleanup levels and therefore are removed from the monitoring program.

4.5 Contingency Action

The CAP (Aspect, 2020a) includes the use of contingency actions to achieve cleanup levels, if necessary. The contingency action will be triggered based on the following:

- If a 25 percent or less reduction in groundwater concentrations is observed after 5 years of MNA monitoring and evaluation, MBHA will prepare a work plan and schedule to implement the ISCR contingency action. Upon Ecology’s approval of the work plan, MBHA will implement the work plan according to the schedule.
- If groundwater concentrations have reduced between 25 and 50 percent after 5 years of MNA monitoring and evaluation, MBHA will consult with Ecology to determine if implementation of the contingency action is needed. If Ecology determines the contingency action is needed, MBHA will prepare a work plan and schedule for the contingency action. Upon Ecology’s approval of the work plan, MBHA will implement the work plan according to the schedule.
- If groundwater concentrations have reduced by 50 percent or greater after 5 years of MNA monitoring and evaluation, then MBHA will continue MNA monitoring and re-evaluate the need for a contingency action after 5 years.

The use of the ISCR technology was determined to be the most appropriate technology in the RI/FS (Aspect, 2019) and CAP (Aspect, 2020a). It is assumed that, if needed, ISCR would be implemented through a series of injection transects oriented perpendicular to groundwater flow and designed to reduce the overall restoration time frame. The contingency action would be selected and designed based on the on the results of groundwater performance monitoring and presented to Ecology in an EDR Addendum for approval for implementation.

5 Vapor Intrusion Compliance Monitoring

After redevelopment, verification monitoring of the vapor mitigations systems will be performed for both the Maddux North and Maddux South buildings.

5.1 Subslab Soil Gas Confirmation Sampling

Aspect will oversee installation of subslab soil gas probes, to be integrated with the chemical vapor barriers, during the construction of each building. Subslab soil gas probe locations have been determined based on the practical limitations of each building's layout and are presented on the architectural drawings for the base floor in each building (Appendix B). Three subslab soil gas probes will be installed in Maddux North, and two in Maddux South. Subslab soil gas samples will be analyzed for chlorinated volatile organic compounds (cVOCs) at the Maddux North building and cVOCs, air-phase hydrocarbons, naphthalene, and benzene, ethylbenzene, toluene, and xylenes (BTEX) at the Maddux South building, in accordance with the SAP/QAPP (Appendix A) and Ecology's guidance (Ecology, 2009).

Subslab soil gas sampling will be conducted on a semiannual frequency, coinciding with the groundwater sampling events, for two years. The analytical results of subslab soil gas sampling will be compared to screening levels in the CAP (Aspect, 2020a). If concentrations exceed the screening levels during an event, indoor air sampling will be conducted.

5.2 Contingency Indoor Air Performance Monitoring

If subslab soil gas sampling indicates a potential for vapor intrusion into either building with concentrations detected at least five times the screening levels, indoor air samples will be collected for that building at two locations. The locations within each building will be chosen based on representativeness for both the exceeded subslab soil gas screening location and potential resident exposure. If indoor air sampling is required, two rounds will be conducted on a semiannual basis. Indoor air sampling will be performed in accordance with the SAP/QAPP (Appendix A) and Ecology's guidance (Ecology, 2009). Sampling times will be approximately 8 hours, and the indoor air samples will be analyzed for those contaminants which exceeded the subslab soil gas screening levels. An ambient (outdoor) air sample will be collected coincident with each indoor air sampling event. The ambient air sample will be collected at an upwind location, separated to the maximum extent practicable from any building or vehicle exhaust sources.

The corrected indoor air sample concentrations will be compared to the MTCA Method B cleanup levels for each contaminant. If indoor air concentrations exceed the MTCA Method B cleanup levels, the passive subslab venting system will be upgraded to an active subslab depressurization system in accordance with the ICP (Aspect, 2020d).

6 Reporting

This section discusses the reporting requirements for the individual pieces of the CMP.

6.1 Cleanup Action Report (CAR)

Aspect will prepare a CAR documenting the constructed elements of CAP implementation after completion of earthwork activities and removal of all contaminated soils, and the construction of the vapor mitigation system The CAR will provide documentation of the activities for Ecology review in accordance with Amendment No. 4 of the PPCD. At a minimum, the report will include the following:

- A description of cleanup activities conducted, including deviations from the CAP, EDR, and Section 3 of the CMP
- Maps illustrating the as-built excavation area and other pertinent information
- Detailed performance and confirmation monitoring information, including sample locations, analytical methods, data quality review, and results
- If the soil cleanup levels could not be achieved due to practical limitations (e.g., could not be overexcavated without compromising the shoring design), discussion of why it was not, and how it was addressed in consultation with Ecology
- Documentation of contaminated soil disposal, including quantities of soil removed and disposed, and landfill certificates of disposal

The CAR will be submitted to Ecology as a draft for review. Ecology comments will be incorporated, and a final CAR prepared. The data collected during the cleanup will be uploaded to Ecology’s Environmental Information Management (EIM) database in accordance with the PPCD.

6.2 Annual Compliance Monitoring Report

At the conclusion of the first year of the compliance monitoring program, the collective data from groundwater performance monitoring and vapor intrusion confirmation monitoring will be summarized in an Annual Compliance Monitoring Report, which will be submitted for review by Ecology. Once a year thereafter, the Annual Compliance Monitoring Report will summarize the groundwater performance and/or confirmation monitoring. The annual report will include:

- **Description of Field Activities.** A brief summary of the activities completed during the monitoring events. Justification will be given for any procedures that deviate from this CMP.
- **A Site Map.** The site map will illustrate relevant features and sampling locations.
- **Data Quality Review.** The reported results and the associated quality assurance results will be reviewed with respect to data usability, as described in the SAP/QAPP (Appendix A).

- **Analytical Results.** The analytical results will be tabulated and compared relative to respective screening and/or cleanup levels.
- **Recommendations.** Based on the results above, recommendations for the next year of monitoring will be outlined. These could include a change to monitoring frequency, adding additional monitoring wells or increasing the sampling frequency based on analytical results, and/or removing a monitoring well(s) from the CMP because it complies with cleanup levels. If needed, recommendations to implement a contingency action, for either groundwater or vapor intrusion (Sections 4.5 and 5.2, respectively), will also be documented in the Annual Compliance Monitoring Report, although this information would be communicated to Ecology earlier as appropriate.

7 References

Aspect Consulting, LLC (Aspect), 2017, Remedial Investigation Work Plan, Mount Baker Housing Association, dated October 27, 2017.

Aspect Consulting, LLC (Aspect), 2019, Remedial Investigation and Feasibility Study, Mount Baker Properties Site, dated December 31, 2019.

Aspect Consulting, LLC (Aspect), 2020a, Cleanup Action Plan, Mount Baker Properties Site, dated January 6, 2020.

Aspect Consulting, LLC (Aspect), 2020b, Draft Health and Safety Plan, Mount Baker Properties Site, dated July 7, 2020.

Aspect Consulting. LLC (Aspect), 2020c, Draft Engineering Design Report, Mount Baker Properties Site, dated July 15, 2020.

Aspect Consulting, LLC (Aspect), 2020d, Draft Institutional Controls Plan, Mount Baker Properties Site, dated July 2020.

Washington State Department of Ecology (Ecology), 2009, Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, Toxics Cleanup Program, Review Draft, October 2009, revised April 2018.

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

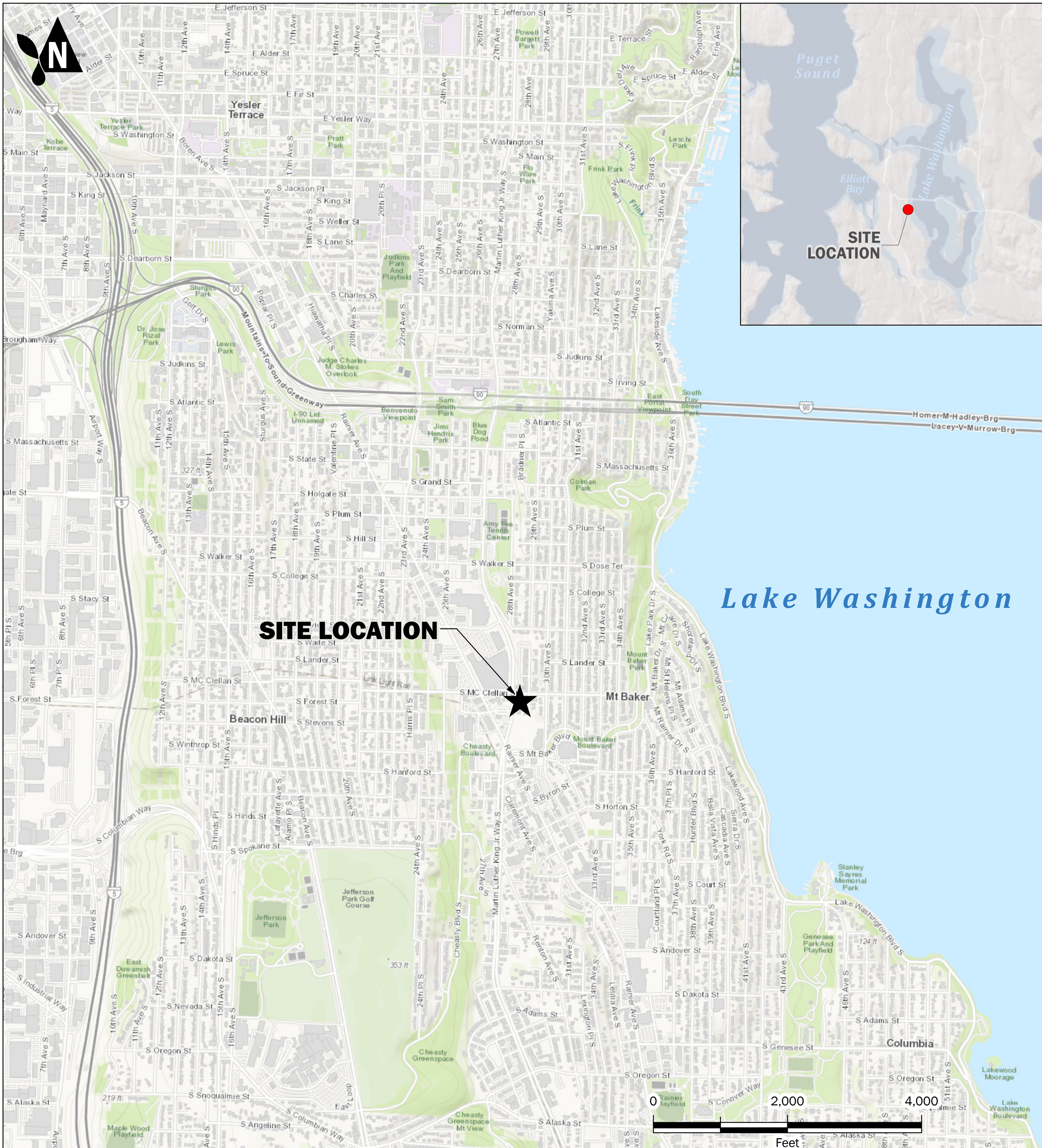
8 Limitations

Work for this project was performed for Mt. Baker Housing Association (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.

Please refer to Appendix C titled "Report Limitations and Guidelines for Use" for additional information governing the use of this report.

FIGURES



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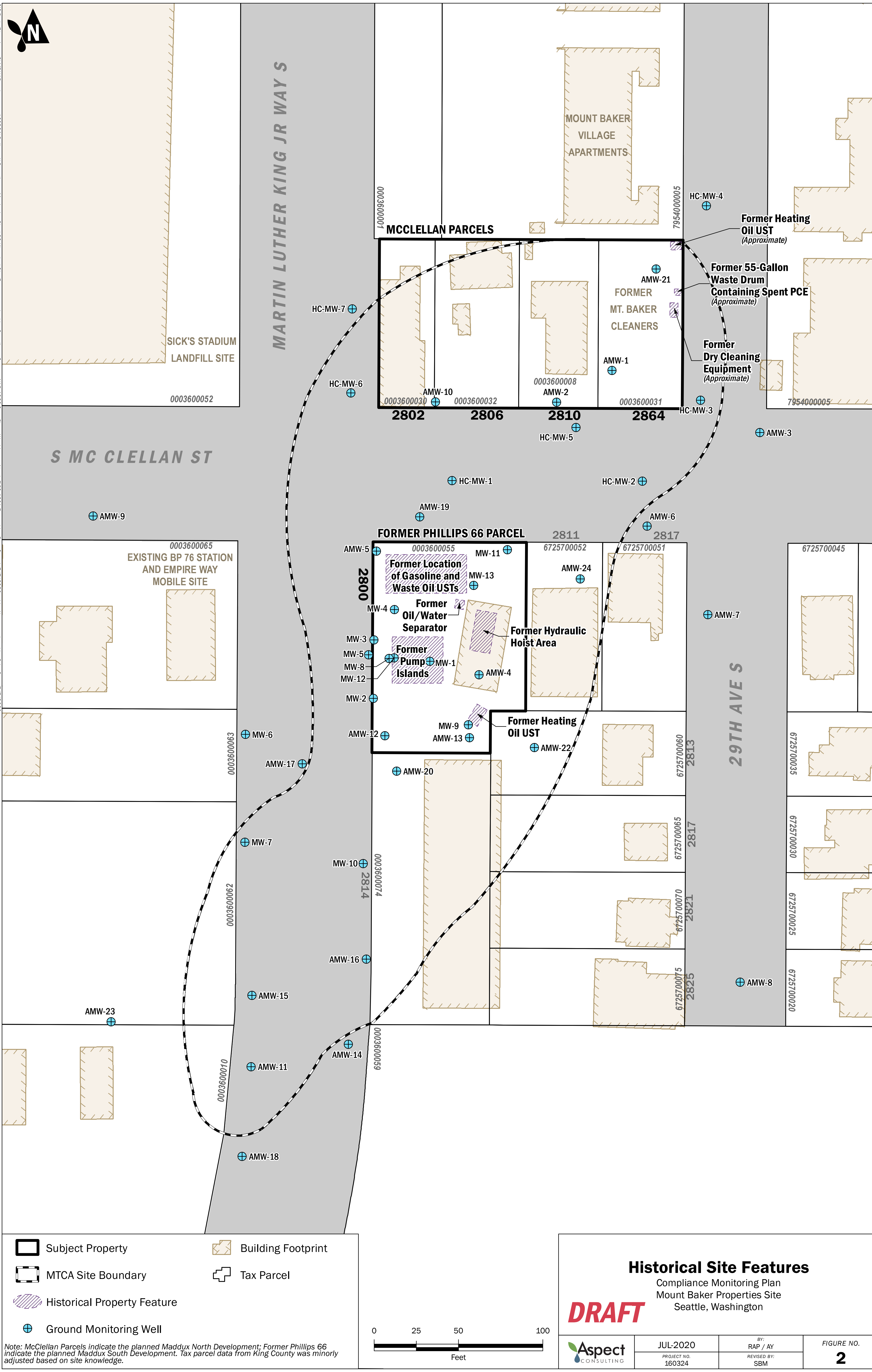
Site Location

Compliance Monitoring Plan
Mount Baker Properties Site
Seattle, Washington

Aspect CONSULTING	JUL-2020	BY: JAS / EAC	FIGURE NO.
	PROJECT NO. 160324	REVISED BY: KB / RAP / SBM	1

GIS Path: T:\projects_8\MBHADevelopment_160324\Delivered\Compliance Monitoring Plan\01 Site Location.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 7/6/2020 || User: smortensen || Print Date: 7/6/2020

Basemap Layer Credits || Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Note: McClellan Parcels indicate the planned Maddux North Development; Former Phillips 66 indicate the planned Maddux South Development. Tax parcel data from King County was minorly adjusted based on site knowledge.

Historical Site Features

Compliance Monitoring Plan
Mount Baker Properties Site
Seattle, Washington

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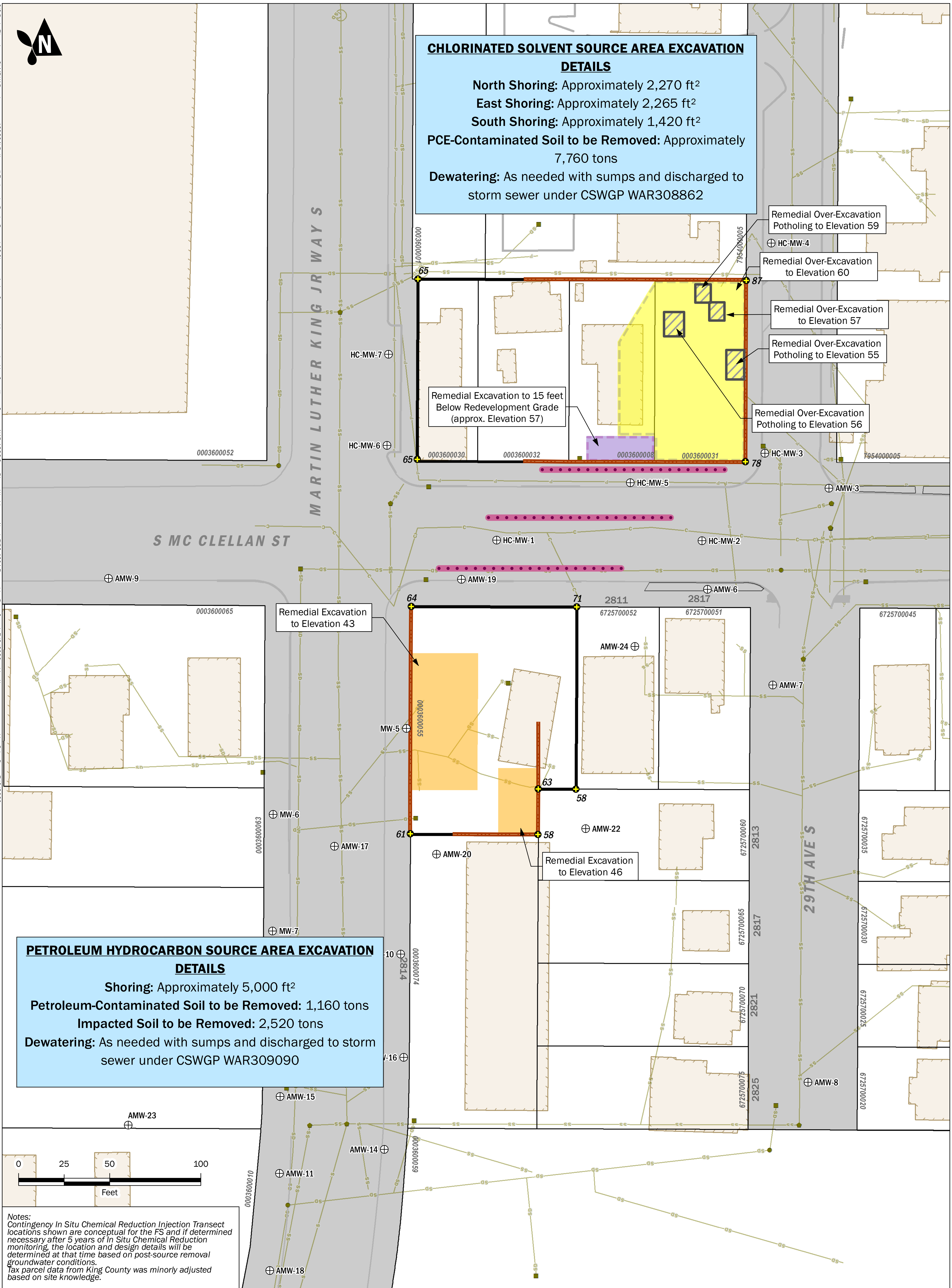
Aspect CONSULTING

JUL-2020	BY: RAP / AY	FIGURE NO.
PROJECT NO. 160324	REVISED BY: SBM	2



Notes:
Contingency In Situ Chemical Reduction Injection Transect locations shown are conceptual for the FS and if determined necessary after 5 years of In Situ Chemical Reduction monitoring, the location and design details will be determined at that time based on post-source removal groundwater conditions.
Tax parcel data from King County was minorly adjusted based on site knowledge.

- Contingency *In Situ* Chemical Reduction Transect
- Chlorinated Solvent Remedial Excavation to Elevation 57
- Chlorinated Solvent Remedial Excavation to Elevation 60
- Petroleum Hydrocarbon Source Area Remedial Excavation
- Area Targeted for Over-Excavation
- Shoring
- Groundwater Monitoring Well
- Elevation, ft NAVD88 *Estimated from King County LiDAR, 2016*
- Subject Property
- Building Footprint
- Tax Parcel
- Power Line
- Storm Drain Line
- Sanitary Sewer Line
- Communication Line
- Catch Basin
- Storm Manhole
- Sanitary Manhole

Cleanup Action Conceptual Layout

Compliance Monitoring Plan
Mount Baker Properties Site
Seattle, Washington

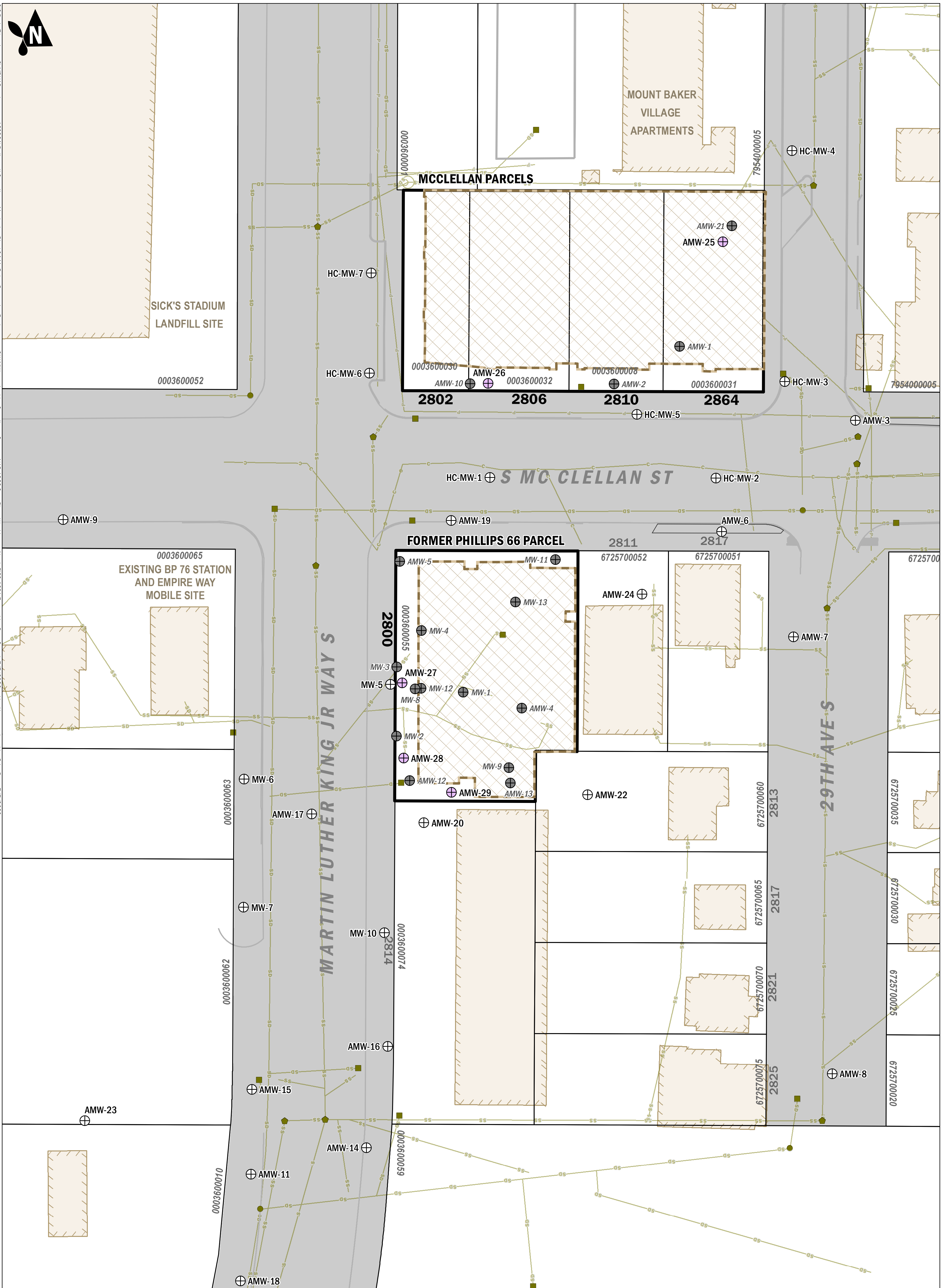
DRAFT

Aspect CONSULTING

JUL-2020	BY: AY / RAP	FIGURE NO.	
PROJECT NO. 160324	REVISED BY: SBM	3	

GIS Path: T:\projects_8\MBHADevelopment_160324\Delivered\EngineeringDesignReport\02 Cleanup Action Conceptual Layout.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 7/6/2020 || User: smortensen || Print Date: 7/6/2020

GIS Path: T:\projects_8\MBHADevelopment_160324\Delivered\Compliance Monitoring Plan\04 Mt Baker Properties Replacement GW MWs.mxd || Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet || Date Saved: 7/7/2020 || User: pepin || Print Date: 7/7/2020



Groundwater Monitoring Well

Proposed Groundwater Monitoring Well

Decommissioned Groundwater Monitoring Well

Subject Property

Proposed Building Footprint

Building Footprint

Tax Parcel

Note: Tax parcel data from King County was minorly adjusted based on site knowledge.

0 22.5 45 90
Feet

Monitored Natural Attenuation Groundwater Monitoring Well Network

Compliance Monitoring Plan
Mount Baker Properties Site
Seattle, Washington

DRAFT

Aspect CONSULTING

JUL-2020	BY: KB / RAP	FIGURE NO.
PROJECT NO. 160324	REVISED BY: AY / RAP / SBM	4

APPENDIX A

Sampling and Analysis Plan/ Quality Assurance Project Plan

Contents

List of Tables

List of Attachments

A.1 Introduction

Aspect Consulting, LLC (Aspect) prepared this Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) for the Mount Baker Properties Site (Site) located along South McClellan Street and Martin Luther King (MLK) Jr. Way South in Seattle, Washington. This SAP/QAPP is Appendix A to the Compliance Monitoring Plan (CMP).

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 (Washington Administrative Code [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.

Compliance monitoring activities to be performed under this SAP/QAPP are on behalf of the Mt. Baker Housing Association (MBHA) according to the Prospective Purchaser Consent Decree (PPCD) between the Washington State Department of Ecology (Ecology) and MBHA (PPCD No. 16-2-29584-4 SEA). It is the responsibility of Aspect and subcontracted personnel (analytical laboratory and any others) performing the sampling and analysis activities to adhere to the requirements of this SAP/QAPP.

The cleanup action at the Site includes three different excavation areas, which are shown on Figure 3 in the CMP. The chlorinated solvent source area (CSSA) is on the Mt. Baker Cleaners parcel (shown in yellow) and contains tetrachloroethene (PCE)-contaminated soil. The petroleum hydrocarbon source area (PHSA) is on the Former Phillips 66 parcel (shown in orange) and contains petroleum-contaminated soil. The PHSA is divided into two areas, the west excavation area and the southeast excavation area. The Field Sampling Plan (Section A.2) and Quality Assurance Project Plan (Section A.3) are presented below.

A.2 Field Sampling Plan

A.2.1 Soil Sampling

Soil performance monitoring associated with the final cleanup action will include laboratory analysis of both excavation sidewall and excavation bottom samples. The distance between soil samples will not exceed 16 feet, and closer sample spacing may be necessary. The samples will be submitted for laboratory analysis of parameters described in the QAPP.

The soldier piles of the shoring system will be used as a reference point in the excavation areas for setting up a sampling grid. The shoring piles will be placed on 8-foot centers, and for performance monitoring of the assumed excavation bottoms, Aspect will establish a systematic 16-foot sampling grid (one sample per 16-foot by 16-foot square, or two shoring piles). Within each 16-foot grid area, Aspect will field-screen the soil for evidence of contamination, and samples will be collected for laboratory analysis described in the QAPP of gasoline-, diesel-, and heavy oil-range petroleum hydrocarbons, benzene, toluene, ethylbenzene, and xylenes (BTEX), and/or volatile organic compounds (VOCs) based on field screening observations at the bottom elevations, as follows:

- If field screening indications of contamination are observed at the planned bottom elevation, samples will be collected for laboratory analysis described herein at up to five locations within the 16-foot grid to evaluate the lateral extent of the potentially-contaminated soil. Each of these five locations will be submitted as a discrete sample for laboratory analysis.
- If there are no indications of contamination within the entire 16-foot grid area, a single soil sample will be collected for analysis from the approximate center of the square area (one sample per 16-foot by 16-foot square) to document that the cleanup levels have been met at depth.

The laboratory analyses are as follows:

- Performance soil samples in the CSSA excavation will be analyzed for short list cVOCs by U.S. Environmental Protection Agency (EPA) Method 8260C.
- Performance soil samples in the PHSA excavations will be analyzed for gasoline-range petroleum hydrocarbons by Ecology Method NTWPH-Gx; diesel- and oil-range petroleum hydrocarbons by Ecology Method NWPTH-Dx; BTEX by EPA Method 8021 or 8260; and cVOCs by EPA Method 8260C.

Aspect will subcontract with a Washington-licensed resource protection well driller to complete soil borings and monitoring well installations in accordance with requirements of Chapter 173-160 WAC.

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

A.2.1.1 Soil Sample Collection and Handling Procedures

Aspect field personnel, under the direction of a licensed geologist or engineer, will oversee the excavation activities. The field representative will visually classify the soils in accordance with ASTM International (ASTM) Method D2488 and record soil descriptions, field screening results, and other relevant details (e.g., staining, debris, odors, etc.) in the field notes. If samples are collected for chemical analysis, the sample ID and depth will also be recorded in the field notes.

The performance monitoring soil samples will be discrete grab samples of soil collected from within the excavation using the excavator bucket, or, if safely accessible to a worker, by hand using a decontaminated stainless-steel spoon or disposable spoon.

Headspace Vapor

Samples will be field screened to obtain a relative estimate of its total 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 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, 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 parts per million [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:

- **No Sheen:** No visible sheen on the surface of the water.
- **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 performance monitoring soil samples to be submitted for gasoline-range total petroleum hydrocarbons (by Ecology Method NWTPH-Gx) and VOC analyses (by EPA Methods 8021 or 8260C) and will be collected in accordance with EPA Method 5035A. The soil aliquot for these analyses will be collected using a laboratory-supplied modified disposable plastic syringe from the bucket as required by the EPA Method 5035A and placed in pre-weighed laboratory-supplied vials.

For all other analyses, the performance monitoring soil samples will be removed from the bucket 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 inches 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.

QC soil samples (e.g., field duplicates and trip blanks) will be collected at the respective frequencies prescribed in Section A.3.5 of the QAPP.

A.2.1.2 Soil Sample Identification

Each soil sample collected for chemical analysis will be assigned a unique sample identification number including the location ID and the elevation from which the sample was collected. Location IDs will be determined using the shoring piles as reference. Samples will be named using the following conventions:

- Bottom samples: B - East/west pile number - north/south pile number - elevation – Maddux North or Maddux South identifier(e.g., B-P20-P29-60-N).
- Sidewall samples: SW - pile number - elevation – Maddux North or Maddux South identifier (e.g. SW-P20-65-S)

A.2.2 Groundwater Sampling

A.2.2.1 Monitoring Well Installation

Replacement monitoring wells will be installed as discussed in Section 3.1 of the CMP and using hollow-stem auger methods. Soils will be logged and sampled, and an appropriate well screen interval will be selected based on the original monitoring well construction. The drillers will advance the augers until the appropriate depth has been reached, at which point, the well will be will be constructed inside the auger, in accordance with WAC 173-160 . As the augers are removed from the boring, the annulus of the well will be filled with sand and bentonite, as appropriate. Wells will consist of 2-inch-diameter, Schedule 40 PVC blank casing and 0.010-inch slot (10-slot) well screen. Well screen lengths will be similar to the original monitoring well they are replacing and will be installed at a similar elevation. All wells will be completed with an appropriate protective seal and secured with locking well caps.

A.2.2.2 Monitoring Well Development

Following installation, each monitoring well will be developed to remove fine-grained material from inside the well casing and filter pack, and to improve hydraulic communication between the well screen and the surrounding water-bearing formation. Wells will be developed using a 12-volt submersible pump. During development, the pump will be surged along the entire length of submerged well screen. Each well will be developed until visual turbidity is reduced to minimal levels, or until a maximum of 10 casing volumes of water has been removed. Field parameters will be recorded on a Well Development Record form. Groundwater produced during well development will be collected and stored at the Site in sealed and labeled 55-gallon drums pending profiling and disposal. Monitoring well development forms are included in Attachment A.

A.2.2.3 Groundwater Sampling Procedure

Groundwater samples will be collected and handled in accordance with the procedures described below.

- The locking well cap will be removed, and the depth-to-water will be measured from the surveyed location to the nearest 0.01 foot 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) in order to minimize drawdown. 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 Yellow Springs Instrument (YSI) water quality 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 groundwater sample collection. Three turbidity measurements will also be made before collecting the sample using a Hach 2100Q turbidimeter, or equivalent.

- Samples with a field-measured specific electrical conductance greater than 1,000 microSiemens per centimeter (µS/cm) or turbidity greater than 25 nephelometric turbidity units (NTU) will be denoted as such on the chain-of-custody 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 groundwater 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.
- QC groundwater samples (e.g., field duplicates and trip blanks) will be collected at the respective frequencies prescribed in Section A.3.5.
- Following sampling, the wells cap and monument cap will be secured. Each well's dedicated tubing will be retained in the monitoring well for subsequent sampling events. Any damaged or defective well caps or monuments will be noted and scheduled for replacement, if necessary.

Groundwater sampling forms are included in Attachment A.

A.2.2.4 Groundwater Sample Laboratory Analyses

Groundwater samples will be submitted to a state-certified laboratory and analyzed for a combination of the following contaminants of concern (COCs), as prescribed in Section 4 of the CMP:

- Gasoline-range petroleum hydrocarbons by Ecology Method NWTPH-Gx
- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx (without Silica Gel Cleanup)
- BTEX by EPA Method 8260 or 8021
- CVOCs by EPA Method 8260

A.2.2.5 Groundwater Sample Identification

Each groundwater sample will be assigned a unique sample identification number that includes the well number and the 6-digit date on which the sample was collected. For example, a groundwater sample collected from monitoring well MW-11 on October 5, 2020, would be identified as MW-11-20201005.

A.2.3 Soil Vapor Sampling

A.2.3.1 Soil Gas Probe Installation

Subslab soil gas sampling will be performed at Maddux North and Maddux South after the buildings have been constructed. The locations of subslab soil gas samples have been determined based on the proposed building foundation and internal layouts. The locations are shown on the building architectural plans, which are included as Appendix B of the CMP.

Subslab soil gas sampling will be accomplished using soil gas probes. Typical soil gas probe construction includes a 6-inch-long by 0.5-inch-outer-diameter stainless-steel slotted screen and 0.25-inch-outer-diameter Teflon tubing. The screen filter pack will be glass beads or silica sand with an appropriate bentonite seal and concrete to grade. Soil gas probes will be set at a depth of approximately 6 to 12 inches beneath the chemical vapor barriers.

A.2.3.3 Soil Vapor Sampling Procedure

Prior to soil vapor sampling, the weather forecast will be monitored in an effort to synchronize sampling with a period of declining or low barometric pressure and without precipitation. However, it is recognized that this may not be possible given all the logistical considerations for the field effort. Regardless, barometric pressures will be monitored and recorded during sampling.

Soil vapor samples will be collected using laboratory-supplied, evacuated SUMMA canisters with flow controllers set to a flow rate of less than 200 mL/min in accordance with the following procedures:

- The sampling train and SUMMA canister will be leak-tested prior to sampling using a shut-in test to verify there are no leaks in the fittings or connections between the leak-testing shroud and the sample media.
- The vapor pin or gas probe monument will be enclosed in a leak-testing shroud and a known concentration (between 10 and 50 percent) of tracer gas (helium) will be added to the shroud. The selected concentration of tracer gas will be maintained and monitored for the duration of sampling.
- Prior to sample collection, the sampling train will be purged at a rate of 200 milliliters per minute using a peristaltic pump (or equivalent), taking care that the entire sampling train volume has been purged to ensure the sample is representative of subsurface conditions. Purged soil vapor will be collected in Tedlar® bags and field-screened to ensure leakage is less than 5 percent of the shroud concentration.

- After confirming there is no significant leakage in the sampling train or around the vapor point, a vapor sample will be collected by opening the valve on the SUMMA canister. Sampling will be complete when the vacuum gauge on the canister reaches -5 inches of mercury. Notes regarding the usage of each building, including windows, doorways, and HVAC, will be recorded during sampling.
- A final vacuum of -5 inches of mercury will be maintained in SUMMA canister and submitted to the laboratory for verification that the SUMMA canister did not leak in transit.

Upon completion of vapor sampling, the SUMMA canisters will be packed in their original shipping containers and maintained under chain-of-custody procedures until they are delivered to the laboratory. Soil vapor sampling forms are included in Attachment A.

A.2.3.4 Soil Vapor Laboratory Analyses

Subslab soil gas samples will be analyzed for cVOCs at the Maddux North building and cVOCs, air-phase hydrocarbons, naphthalene, and BTEX at the Maddux South building. CVOCs, naphthalene, and BTEX will be analyzed by EPA Method TO-15, and air-phase hydrocarbons will be analyzed by Massachusetts's Department of Environmental Protection Method Air-Phase Petroleum Hydrocarbons (MDEP APH). The soil vapor samples will also be analyzed for helium by ASTM D1945 to confirm there was negligible atmospheric dilution (no more than 5 percent of shroud concentration) from above ground.

A.2.3.5 Soil Vapor Sample Identification

Each soil vapor sample will be assigned a unique sample identification number that includes the prefix "ASG" for sub-slab soil gas probe samples, the soil gas probe location ID, and the 6-digit date on which the sample was collected. For example, a soil gas sample collected from soil gas probe ASG-2 on October 5, 2020, would be identified as ASG-2-20201005.

A.2.4 Indoor Air Sampling

If subslab soil gas sampling indicates a potential for vapor intrusion into either building, indoor air samples will be collected for that building at two locations. The methods for sampling are outlined in the following subsections.

A.2.4.1 Site Walk/Building Evaluation

The as-built construction drawings will be used to evaluate the building design, including the potential for vapor intrusion. These drawings will be used to complete the building evaluation form (Attachment A). The building inhabitants will be provided with a copy of the final page of the building evaluation form, which contains instructions for the tenant prior to the sampling event.

A.2.4.2 Indoor Air Samples

If subslab soil gas sampling indicates a potential for vapor intrusion into either building, indoor air samples will be collected for that building at two locations. The locations within each building will be chosen based on representativeness for both the exceeded subslab soil gas screening location and potential resident exposure. If indoor air sampling is required, two rounds will be conducted on a semiannual basis. Indoor air sampling will be conducted in accordance with the following general field procedures:

- The indoor air sampling location will approximate human exposures. The samples will be collected in the breathing zone, which is about 3 to 5 feet off the ground. The locations will be visibly assessed for potential sources of cross-contamination.
- The samples will be collected in 6-liter SUMMA canisters that are individually certified "clean" by the analytical laboratory supplying them (Fremont Analytical, Inc.). The canister number will be recorded on the sampling log. Each canister will be outfitted with a 0.2 µm filter, a vacuum gage, and an 8-hour flow rate controller.
- Once the canisters have been placed, the initial vacuum on each canister will be recorded, and the valve on each canister will be opened.
- After sampling begins, the operation of the flow rate controller will be verified by measuring the rate of change on the canister vacuum gauge.
- Before, during, and after the sampling period, the meteorological conditions will be recorded, including:
    - A general description of the weather
    - Barometric pressure
    - Wind speed and direction
    - Temperature
    - Humidity
    - Precipitation
- Sampling will be complete when the vacuum gauge on the canister reaches -5 inches of mercury. Notes regarding the usage of each building, including windows, doorways, and HVAC, will be recorded during sampling.
- A final vacuum of -5 inches of mercury will be maintained in SUMMA canister and submitted to the laboratory for verification that the canister did not leak in transit.

Upon completion of indoor air sampling, the SUMMA canisters will be packed in their original shipping containers and maintained under chain-of-custody procedures until they are delivered to the laboratory. Indoor air sampling forms are included in Attachment A.

A.2.4.3 Ambient Air Samples

An ambient (outdoor) air sample will be collected coincident with each indoor sampling event. The ambient air sample will likely be collected on the roof of the building, upwind and separated to the maximum extent possible from any roof exhausts/vents. Ambient air sampling will be conducted in accordance with the general field procedures provided in Section A.2.4.2.

A.2.4.4 Air Sample Laboratory Analyses

Upon completion of vapor sampling, the SUMMA canisters will be packed in their original shipping containers and maintained under chain-of-custody procedures until they are delivered to the laboratory.

Both indoor air and ambient air samples will be submitted to a state-certified laboratory and analyzed for cVOCs, naphthalene, and BTEX by EPA Method TO-15 and/or air-phase hydrocarbons by MDEP Method APH, based on the results of subslab soil gas sampling.

A.2.4.5 Air Sample Identification

Each air sample will be assigned a unique sample identification number that includes the prefix “IA” for indoor air samples or “AA” for ambient air samples, the air sampling location ID, and the 6-digit date on which the sample was collected. For example, an indoor air sample collected from location IA-1 on October 5, 2020, would be identified as IA-1-20201005.

A.2.5 Sample Custody and Field Documentation

A.2.5.1 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
- 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 Aspect.

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 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.

A.2.5.2 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, groundwater 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. Field documentation forms are included in Attachment A.

A.2.6 Groundwater Level Monitoring

Depth-to-groundwater measurements will be conducted in monitoring wells using an electric well sounder, graduated to 0.01 foot.

A.2.7 Surveying

Horizontal coordinates for each soil sampling location will be recorded using the surveyed location of shoring piles. The horizontal coordinates of new monitoring wells and soil gas probes will be surveyed by a licensed surveyor relative to a common horizontal and vertical datum (1988 North American Vertical Datum [NAVD 88]). Monitoring well top-of-casing elevations will be surveyed to the nearest 0.01 foot, and horizontal coordinates to the nearest 0.1 foot, or better. Each well will be surveyed at the marked spot on the top of the PVC well casing (typically the north side) from which depth-to-water measurements are collected.

A.2.8 Decontamination and Investigative-Derived Waste Management

All non-disposable 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.

Any investigation-derived waste (IDW) water generated during equipment decontamination and sampling will be treated and discharged in accordance with the Construction Stormwater General Permit, which is presented as an appendix in the Engineering Design Report (EDR).

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. Purge water generated during compliance groundwater monitoring will also be temporarily stored on-Site in DOT-approved drums and disposed of off-site. 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
- Name and telephone number of the Project Manager or Field Manager.

All 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.

A.3 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.

A.3.1 Purpose of the QAPP

As stated in tEcology's *Guidelines for Preparation of Quality Assurance Project Plans for Environmental Studies* (Ecology, 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
- 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 CMP, and sample collection procedures that are presented in the FSP (Section A.2 of this Appendix).

A.3.2 Project Organization and Responsibilities

The project consultant team involved with data generation includes representatives from Aspect. Key individuals and their roles on this project are as follows:

Project Manager—Aspect. 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 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 provides regular, up-to-date progress reports and other requested information to project team and Ecology.

Field Manager—Aspect. 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. 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 Aspect. The validator works independently, with no interference from those who collect and use the Site data.

Laboratory Project Manager—Fremont Analytical, Inc. (Fremont). Aspect will contract Fremont for the analysis described in the CMP. The laboratory project manager is responsible for ensuring that all laboratory analytical work for soil, water, and gas media complies with project requirements, and acts 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.

A.3.3 Analytical Methods and Reporting Limits

Laboratory analytical methods for soil and groundwater analyses to be performed during this environmental characterization are as follows:

Chemical Group and Analyte	Analytical Method	Matrix
Gasoline-Range Petroleum	NWTPH-Gx	Soil and Groundwater
Diesel- and Heavy Oil-Range	NWTPH-Dx	Soil and Groundwater
Benzene, Toluene, Ethylbenzene, Xylenes	EPA 8260C or 8021B	Soil and Groundwater
Chlorinated Volatile Organic Compounds	EPA 8260C	Soil and Groundwater
PCE Toxicity Characteristic Leaching Procedure (TCLP)	EPA 1311	Soil
Volatile Organic Compounds	EPA TO-15	Soil Vapor, Indoor Air, and Ambient Air
Air-Phase Hydrocarbons	MA APH	Soil Vapor, Indoor Air, and Ambient Air

The attached Table A-1 lists samples containers, preservation, and analytical holding times for each analysis and matrix.

A.3.3.1 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 Fremont are summarized in Table A-3 for soil samples collected by Aspect.

A.3.4 Data Quality Objectives

DQOs, including the Measurement Quality Indicators (MQIs)—precision, accuracy, representativeness, comparability, completeness, and sensitivity (namely, the 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 A-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 A-3 through A-6. Definitions of these parameters and the applicable QC procedures are presented below.

A.3.4.1 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 A-3 through A-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.

A.3.4.2 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 A-3 through A-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.

A.3.4.3 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 A.2) 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.

A.3.4.4 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, EPA-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.

A.3.4.5 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:

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

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.

A.3.4.6 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.

A.3.5 Quality Control Procedures

Field and laboratory QC procedures are outlined below.

A.3.5.1 Field Quality Control

Beyond use of standard sampling protocols defined in the FSP (Section A.2), 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 groundwater 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 cleanup action 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 groundwater 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.

A.3.5.2 Laboratory Quality Control

The laboratory's 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, at a minimum, of the following:

- Instrument tuning, instrument initial calibration, and calibration verification analyses as required in the analytical methods and the laboratory SOPs
- Laboratory and/or instrument method blank measurements at a minimum frequency of 5 percent (1 per 20 samples) or in accordance with method requirements, whichever is more frequent
- Accuracy and precision measurements as defined in Table A-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.

A.3.6 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.

A.3.7 Data Reduction, Quality Review, and Reporting

All data will undergo a QA/QC evaluation at the laboratory which will then be reviewed by the Aspect 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.

A.3.7.1 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 sample delivery group (SDG).
- Completed chain-of-custody 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 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.

A.3.8 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 shall be performed at Quality Assurance Level 2 (EPA2) by Aspect.

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, EPA 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, EPA-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 A-3 through A-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 (inductively coupled plasma analyses only)
- Serial dilution (metals only)
- Labeled compound recovery (isotope dilution methods only)
- Ion ratios for detected compounds (high resolution gas chromatography–mass spectrometry 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 Cleanup Action Report (CAR).

A.3.9 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 groundwater sampling) will be conducted regularly in accordance with manufacturer recommendations prior to use.

A.3.10 Performance and System Audits

The Aspect 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.

A.3.11 Data and Records Management

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

A.3.11.1 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., groundwater or soil)
- Soil or groundwater 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 EIM database once data have been reviewed and validated.

A.3.11.2 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., groundwater or soil)
- Soil or groundwater 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 EIM database once data have been reviewed and validated.

A.4 References

Puls, R.W. and M.J. Barcelona, 1996, Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, EPA Groundwater Issue, EPA/540/S-95/504.

U.S. Environmental Protection Agency (EPA), 2008, 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.

U.S. Environmental Protection Agency (EPA), 2009, Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use, January 13, 2009, EPA 540-R-08-005.

U.S. Environmental Protection Agency (EPA), 2010, 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.

Washington State Department of Ecology (Ecology), 2004, Collecting and Preparing Soil Samples for VOC Analysis, Implementation Memorandum Number 5, Publication No. 04-03-030, 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.

APPENDIX A
TABLES

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

Project No. 160324, Mt. Baker Properties, Seattle, WA

Sample Matrix	Analytical Parameter	Analytical Method	Sample Container	No. Containers	Preservation Requirements	Holding Time
Soil	Gasoline-Range Petroleum Hydrocarbons	Ecology Method NWTPH-Gx	EPA Method 5035A, 40-mL vials	4	4°C ±2°C, Freeze within 48 hours to <-7°C	14 days
	Diesel-and Heavy Oil-Range Petroleum Hydrocarbons	Ecology Method NWTPH-Dx (without Silica Gel Cleanup)	4 ounce jar	1	4°C ±2°C	14 days for extraction; 40 days for analysis
	Chlorinated Volatile Organic Compounds	EPA Method 8260C	EPA Method 5035A, 40-mL vials	4	4°C ±2°C, Freeze within 48 hours to <-7°C	14 days
	Benzene, Toluene, Ethylbenzene, and Total Xylenes	EPA Method 8260C or 8021B	EPA Method 5035A, 40-mL vials	4	4°C ±2°C, Freeze within 48 hours to <-7°C	14 days
Water	Gasoline-Range Petroleum Hydrocarbons	Ecology Method NWTPH-Gx	40-mL VOA vials	3	4°C ±2°C, HCl pH < 2	14 days
	Diesel-and Heavy Oil-Range Petroleum Hydrocarbons	Ecology Method NWTPH-Dx (without Silica Gel Cleanup)	500-mL amber glass bottle	1	4°C ±2°C	7 days for extraction, 40 days for analysis
	Chlorinated Volatile Organic Compounds	EPA Method 8260	40-mL VOA vials	3	4°C ±2°C, 1 with HCl pH < 2, 2 without HCl	14 days for analysis
	Benzene, Toluene, Ethylbenzene, and Total Xylenes	EPA Method 8260C or 8021B	40-mL VOA vials	3	4°C ±2°C, 1 with HCl pH < 2, 2 without HCl	14 days for analysis
Soil Vapor, Indoor Air, and Ambient Air	Chlorinated Volatile Organic Compounds	EPA Method TO-15	6L SUMMA Canister	1	N/A	28 days
	Benzene, Toluene, Ethylbenzene, Total Xylenes, and Naphthalene	EPA Method TO-15	6L SUMMA Canister	1	N/A	28 days
	Air-Phase Hydrocarbons	MDEP Method APH	6L SUMMA Canister	1	N/A	28 days

Notes:

Ecology = Washington State Department of Ecology
EPA = United States Environmental Protection Agency
HCl = hydrochloric acid

Table A-2. QC Parameters Associated with PARCCS

DRAFT

Project No. 160324, Mt. Baker Properties, Seattle, WA

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, Sensitivity

Table A-3. Measurement Quality Objectives for Soil Samples

Fremont Analytical, Inc.

Project No. 160324, Mt. Baker Properties, Seattle, WA

Analyte Name	MDL[(A)]	MRL	LCS/LCSD %R[(A)]	RPD (%)	Surrogate %R[(A)]
Volatile Organic Compounds (VOCs) by SW8260D (mg/kg)					
1,1,1,2-Tetrachloroethane	0.0018	0.025	84.8 - 113	≤20	n/a
1,1,1-Trichloroethane	0.0020	0.025	81.4 - 117	≤20	n/a
1,1,2,2-Tetrachloroethane	0.0024	0.02	68.3 - 125	≤20	n/a
1,1,2-Trichloroethane	0.0046	0.02	77.9 - 118	≤20	n/a
1,1-Dichloroethane	0.0039	0.02	78 - 119	≤20	n/a
1,1-Dichloroethene	0.0078	0.02	62.8 - 139	≤20	n/a
1,1-Dichloropropene	0.0157	0.02	79.9 - 117	≤20	n/a
1,2,3-Trichlorobenzene	0.0040	0.02	75.9 - 130	≤20	n/a
1,2,3-Trichloropropane	0.0029	0.025	71 - 125	≤20	n/a
1,2,4-Trichlorobenzene	0.0052	0.025	81 - 126	≤20	n/a
1,2,4-Trimethylbenzene	0.0045	0.02	84.1 - 119	≤20	n/a
1,2-Dibromo-3-chloropropane	0.0115	0.5	62.3 - 136	≤20	n/a
1,2-Dibromoethane	0.0030	0.005	78.6 - 117	≤20	n/a
1,2-Dichlorobenzene	0.0078	0.02	90.3 - 115	≤20	n/a
1,2-Dichloroethane	0.0029	0.02	77.5 - 117	≤20	n/a
1,2-Dichloropropane	0.0032	0.02	77.6 - 117	≤20	n/a
1,3,5-Trimethylbenzene	0.0071	0.025	84 - 118	≤20	n/a
1,3-Dichlorobenzene	0.0074	0.02	90.4 - 115	≤20	n/a
1,3-Dichloropropane	0.0054	0.025	77.1 - 118	≤20	n/a
1,4-Dichlorobenzene	0.0093	0.02	90.3 - 115	≤20	n/a
2-Chlorotoluene	0.0089	0.025	80.4 - 122	≤20	n/a
4-Chlorotoluene	0.0080	0.025	83.1 - 118	≤20	n/a
4-Isopropyltoluene	0.0046	0.05	82.8 - 119	≤20	n/a
Benzene	0.0070	0.02	81 - 116	≤20	n/a
Bromobenzene	0.0081	0.02	84 - 117	≤20	n/a
Bromodichloromethane	0.0012	0.02	78.9 - 116	≤20	n/a
Bromoform	0.0024	0.05	70.7 - 125	≤20	n/a
Bromomethane	0.0149	0.05	32.8 - 194	≤20	n/a
Carbon tetrachloride	0.0183	0.05	80.4 - 117	≤20	n/a
Chlorobenzene	0.0097	0.025	86.5 - 113	≤20	n/a
Chlorodibromomethane	0.0014	0.025	77.9 - 118	≤20	n/a
Chloroethane	0.0116	0.05	52 - 146	≤20	n/a
Chloroform	0.0047	0.02	80.8 - 117	≤20	n/a
Chloromethane	0.0026	0.05	45.3 - 153	≤20	n/a
cis-1,2-Dichloroethene	0.0035	0.02	81.9 - 116	≤20	n/a
cis-1,3-Dichloropropene	0.0019	0.02	78 - 115	≤20	n/a
Cumene	0.0092	0.025	85 - 117	≤20	n/a
Dibromomethane	0.0039	0.02	81.2 - 115	≤20	n/a
Dichlorodifluoromethane	0.0054	0.02	21.6 - 169	≤20	n/a
Ethylbenzene	0.0096	0.025	86.3 - 115	≤20	n/a
Hexachlorobutadiene	0.0154	0.05	77.8 - 133	≤20	n/a
m,p-Xylene	0.0042	0.05	86.8 - 115	≤20	n/a
Methylene chloride	0.0016	0.02	78.4 - 118	≤20	n/a
n-Butylbenzene	0.0072	0.025	83.6 - 120	≤20	n/a
n-Propylbenzene	0.0088	0.025	84.4 - 119	≤20	n/a
Naphthalene	0.0065	0.05	69.6 - 133	≤20	n/a
o-Xylene	0.0074	0.025	86.2 - 114	≤20	n/a
sec-Butylbenzene	0.0054	0.05	82.9 - 119	≤20	n/a
Styrene	0.0041	0.025	86 - 114	≤20	n/a
tert-Butyl Methyl Ether	0.0111	0.05	72.4 - 122	≤20	n/a
tert-Butylbenzene	0.0087	0.025	83.3 - 117	≤20	n/a
Tetrachloroethene	0.0090	0.025	84.3 - 117	≤20	n/a
Toluene	0.0021	0.02	82.8 - 117	≤20	n/a
trans-1,2-Dichloroethene	0.0041	0.02	82 - 117	≤20	n/a
trans-1,3-Dichloropropene	0.0020	0.02	75.7 - 117	≤20	n/a
Trichloroethene	0.0022	0.02	83.4 - 115	≤20	n/a
Trichlorofluoromethane	0.0041	0.02	54.3 - 152	≤20	n/a
Vinyl chloride	0.0088	0.025	57.5 - 137	≤20	n/a
2-Butanone	0.0496	0.25	57.5 - 139	≤20	n/a
4-Bromofluorobenzene (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*82.8 - 113*
Dibromofluoromethane (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*80 - 116*
Toluene-d8 (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*84.8 - 113*
Gasoline Range Hydrocarbons by NWTPH-Gx (mg/kg)					
Gasoline Range Hydrocarbons	0.77	5	65 - 135	≤20	n/a
4-Bromofluorobenzene (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*65 - 135*
Toluene-d8 (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*65 - 135*
Diesel and Motor Oil Range Hydrocarbons by NWTPH-Dx without Silica Gel Cleanup (mg/kg)					
Diesel Range Hydrocarbons	4.1	20	65 - 135	≤20	n/a
Oil Range Hydrocarbons	7.2	50	--	--	n/a
2-Fluorobiphenyl (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*50 - 150*
o-Terphenyl (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*50 - 150*

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.

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

%R = Percent recovery

MDL = Method detection limit

MRL = Method reporting limit

mg/kg = milligram per kilogram

n/a = not applicable

RPD = Relative percent difference

(--) = Not identified by the lab

Table A-4. Measurement Quality Objectives for Water Samples

Fremont Analytical, Inc

Project No. 160324, Mt. Baker Properties, Seattle, WA

Analyte Name	MDL[(A)]	MRL	LCS/LCSD %R[(A)]	RPD (%)	Surrogate %R[(A)]
Volatile Organic Compounds (VOCs) by SW8260D (µg/L)					
1,1,1,2-Tetrachloroethane	0.054	1	85.5 - 110	≤20	n/a
1,1,1-Trichloroethane	0.084	1	82.8 - 116	≤20	n/a
1,1,2,2-Tetrachloroethane	0.110	1	74.8 - 124	≤20	n/a
1,1,2-Trichloroethane	0.107	1	77.8 - 120	≤20	n/a
1,1-Dichloroethane	0.090	1	79.5 - 119	≤20	n/a
1,1-Dichloroethene	0.207	1	81.8 - 116	≤20	n/a
1,1-Dichloropropene	0.113	1	81.5 - 117	≤20	n/a
1,2,3-Trichlorobenzene	0.077	4	57.1 - 150	≤20	n/a
1,2,3-Trichloropropane	0.253	1	73.2 - 126	≤20	n/a
1,2,4-Trichlorobenzene	0.063	2	68.7 - 138	≤20	n/a
1,2,4-Trimethylbenzene	0.061	1	79.6 - 119	≤20	n/a
1,2-Dibromo-3-chloropropane	0.287	1	54.8 - 147	≤20	n/a
1,2-Dibromoethane	0.086	0.25	76.8 - 120	≤20	n/a
1,2-Dichlorobenzene	0.060	1	90.1 - 115	≤20	n/a
1,2-Dichloroethane	0.083	1	78.4 - 118	≤20	n/a
1,2-Dichloropropane	0.070	1	78 - 120	≤20	n/a
1,3,5-Trimethylbenzene	0.061	1	79.8 - 120	≤20	n/a
1,3-Dichlorobenzene	0.070	1	90.7 - 114	≤20	n/a
1,3-Dichloropropane	0.078	1	76.5 - 121	≤20	n/a
1,4-Dichlorobenzene	0.038	1	90.1 - 114	≤20	n/a
2-Chlorotoluene	0.073	1	81.8 - 119	≤20	n/a
4-Chlorotoluene	0.077	1	81.6 - 118	≤20	n/a
4-Isopropyltoluene	0.080	1	78.5 - 120	≤20	n/a
Benzene	0.075	1	81.6 - 117	≤20	n/a
Bromobenzene	0.046	1	83.2 - 116	≤20	n/a
Bromodichloromethane	0.061	1	80.9 - 116	≤20	n/a
Bromoform	0.858	2	73.4 - 119	≤20	n/a
Bromomethane	0.118	1	34.2 - 171	≤20	n/a
Carbon tetrachloride	0.534	1	83.3 - 114	≤20	n/a
Chlorobenzene	0.070	1	85.2 - 112	≤20	n/a
Chlorodibromomethane	0.053	1	78 - 117	≤20	n/a
Chloroethane	0.199	1	73.3 - 123	≤20	n/a
Chloroform	0.110	1	81 - 117	≤20	n/a
Chloromethane	0.789	2	44.8 - 153	≤20	n/a
cis-1,2-Dichloroethene	0.079	1	83.5 - 115	≤20	n/a
cis-1,3-Dichloropropene	0.102	1	79.8 - 118	≤20	n/a
Cumene	0.059	1	82.5 - 116	≤20	n/a
Dibromomethane	0.099	1	80 - 117	≤20	n/a
Dichlorodifluoromethane	0.109	1	14.5 - 175	≤20	n/a
Ethylbenzene	0.087	1	83.5 - 115	≤20	n/a
Hexachlorobutadiene	0.197	4	73.6 - 134	≤20	n/a
m,p-Xylene	0.173	1	85.8 - 114	≤20	n/a
Methylene chloride	0.396	1	80.4 - 116	≤20	n/a
n-Butylbenzene	0.079	1	88.3 - 120	≤20	n/a
n-Propylbenzene	0.062	1	80.4 - 122	≤20	n/a
Naphthalene	0.205	1	54.7 - 151	≤20	n/a
o-Xylene	0.069	1	84.4 - 114	≤20	n/a
sec-Butylbenzene	0.082	1	78.8 - 119	≤20	n/a
Styrene	0.051	1	84.2 - 115	≤20	n/a
tert-Butyl Methyl Ether	0.057	1	55.4 - 146	≤20	n/a
tert-Butylbenzene	0.061	1	79.7 - 119	≤20	n/a
Tetrachloroethene	0.085	1	86.2 - 114	≤20	n/a
Toluene	0.091	1	82.7 - 117	≤20	n/a
trans-1,2-Dichloroethene	0.099	1	83.1 - 115	≤20	n/a
trans-1,3-Dichloropropene	0.100	1	75.8 - 122	≤20	n/a
Trichloroethene	0.095	0.5	82.2 - 116	≤20	n/a
Trichlorofluoromethane	0.127	1	77.4 - 121	≤20	n/a
Vinyl chloride	0.082	0.2	64.1 - 131	≤20	n/a
2-Butanone	0.905	5	62.8 - 142	≤20	n/a
4-Bromofluorobenzene (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*84.2 - 111*
Dibromofluoromethane (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*81.1 - 118*
Toluene-d8 (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*85.7 - 113*
Gasoline Range Hydrocarbons by NWTPH-Gx (µg/L)					
Gasoline Range Hydrocarbons	7.2	50	65 - 135	≤20	n/a
4-Bromofluorobenzene (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*65 - 135*
Toluene-d8 (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*65 - 135*
Diesel and Motor Oil Range Hydrocarbons by NWTPH-Dx without Silica Gel Cleanup (µg/L)					
Diesel Range Hydrocarbons	8.4	50	65 - 135	≤20	n/a
Oil Range Hydrocarbons	6.7	100	--	--	n/a
2-Fluorobiphenyl (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*50 - 150*
o-Terphenyl (surr)	*n/a*	*n/a*	*n/a*	*n/a*	*50 - 150*

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.

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

%R = percent recovery

MDL = method detection limit

MRL = method reporting limit

n/a = not applicable

RPD = relative percent difference

µg/L = microgram per liter

(--) = Not identified by the lab

Table A-5. Measurement Quality Objectives for Soil Vapor Samples

Fremont Analytical, Inc.

Project No. 160324, Mt. Baker Properties, Seattle, WA

Analyte Name	MDL[(A)]	PQL	LCS/LCSD %R[(A)]	RPD (%)	Surrogate %R[(A)]
Volatile Organic Compounds (VOCs) by TO-15 (μg/m³)					
1,1,1-Trichloroethane	0.0668	2.18	70 - 130	30	n/a
1,1,2,2-Tetrachloroethane	0.101	2.06	70 - 130	30	n/a
1,1,2-Trichloro-1,2,2-trifluoroethane	0.133	3.07	70 - 130	30	n/a
1,1,2-Trichloroethane	0.0456	2.73	70 - 130	30	n/a
1,1-Dichloroethane	0.0643	0.81	70 - 130	30	n/a
1,1-Dichloroethene	0.0285	1.59	70 - 130	30	n/a
1,2,4-Trichlorobenzene	0.172	2.23	70 - 130	30	n/a
1,2,4-Trimethylbenzene	0.0562	1.47	70 - 130	30	n/a
1,2-Dibromoethane	0.0679	1.54	70 - 130	30	n/a
1,2-Dichlorobenzene	0.0891	2.4	70 - 130	30	n/a
1,2-Dichloroethane	0.0755	0.809	70 - 130	30	n/a
1,2-Dichloropropane	0.105	2.31	70 - 130	30	n/a
1,3,5-Trimethylbenzene	0.0527	1.47	70 - 130	30	n/a
1,3-Butadiene	0.0469	1.11	70 - 130	30	n/a
1,3-Dichlorobenzene	0.133	1.8	70 - 130	30	n/a
1,4-Dichlorobenzene	0.115	1.8	70 - 130	30	n/a
1,4-Dioxane	0.158	1.44	70 - 130	30	n/a
2-Butanone	0.0503	2.95	70 - 130	30	n/a
2-Hexanone	0.0839	4.1	70 - 130	30	n/a
2-Propanol	0.189	2.46	70 - 130	30	n/a
4-Methyl-2-pentanone	0.0853	4.1	70 - 130	30	n/a
Acetone	0.0614	2.38	70 - 130	30	n/a
Acrolein	0.107	1.15	70 - 130	30	n/a
Benzene	0.0358	0.286	70 - 130	30	n/a
Benzyl chloride	0.288	2.59	70 - 130	30	n/a
Bromodichloromethane	0.0652	2.01	70 - 130	30	n/a
Bromoform	0.114	2.07	70 - 130	30	n/a
Bromomethane	0.0527	1.94	70 - 130	30	n/a
Carbon disulfide	0.0408	4.67	70 - 130	30	n/a
Carbon tetrachloride	0.0689	0.413	70 - 130	30	n/a
Chlorobenzene	0.057	0.921	70 - 130	30	n/a
Chlorodibromomethane	0.0852	4.26	70 - 130	30	n/a
Chloroethane	0.0256	1.06	70 - 130	30	n/a
Chloroform	0.0814	0.977	70 - 130	30	n/a
Chloromethane	0.0635	1.03	70 - 130	30	n/a
cis-1,2-Dichloroethene	0.0432	0.793	70 - 130	30	n/a
cis-1,3-dichloropropene	0.0411	1.82	70 - 130	30	n/a
Cyclohexane	0.0373	1.38	70 - 130	30	n/a
Dichlorodifluoromethane	0.0755	1.98	70 - 130	30	n/a
Dichlorotetrafluoroethane	0.147	2.8	70 - 130	30	n/a
Ethyl acetate	0.0462	3.6	70 - 130	30	n/a
Ethylbenzene	0.0326	1.74	70 - 130	30	n/a
Heptane	0.0738	1.61	70 - 130	30	n/a
Hexachlorobutadiene	0.107	10.7	70 - 130	30	n/a
m,p-Xylene	0.0745	3.47	70 - 130	30	n/a
Methyl methacrylate	0.06	1.64	70 - 130	30	n/a
Methylene chloride	0.0951	6.95	70 - 130	30	n/a
n-Hexane	0.0476	1.41	70 - 130	30	n/a
Naphthalene	0.0669	0.524	70 - 130	30	n/a
o-Xylene	0.0461	1.74	70 - 130	30	n/a
p-Ethyltoluene	0.0566	1.97	70 - 130	30	n/a
Propylene	0.061	0.688	70 - 130	30	n/a
Styrene	0.0556	1.7	70 - 130	30	n/a
tert-Butyl Methyl Ether	0.0734	1.44	70 - 130	30	n/a
Tetrachloroethene	0.0415	1.36	70 - 130	30	n/a
Tetrahydrofuran	0.0467	1.18	70 - 130	30	n/a
Toluene	0.0215	1.51	70 - 130	30	n/a
trans-1,2-Dichloroethene	0.0529	0.793	70 - 130	30	n/a
trans-1,3-dichloropropene	0.0259	2.27	70 - 130	30	n/a
Trichloroethene	0.0581	0.349	70 - 130	30	n/a
Trichlorofluoromethane	0.0607	2.25	70 - 130	30	n/a
Vinyl acetate	0.089	3.52	70 - 130	30	n/a
Vinyl chloride	0.0342	0.274	70 - 130	30	n/a
Air-Phase Hydrocarbons (APHs) by MA APH (μg/m³)					
Aliphatic Hydrocarbon (EC5-8)	5.21	28.5	70 - 130	30	n/a
Aliphatic Hydrocarbon (EC9-12)	4.26	44.2	70 - 130	30	n/a
Aromatic Hydrocarbon (EC9-10)	0.692	31.4	70 - 130	30	n/a
Helium by EPA 3C Mod (parts per thousand)					
Helium	1.91	100	70 - 130	30	n/a

Notes:

(A) = Based on current laboratory control criteria. Some values may vary slightly between instruments and can be subject to change

%R = Percent recovery

MDL = Method detection limit

n/a = not applicable

PQL = Practical quantitation limit

RPD = Relative percent difference

μg/m³ = microgram per cubic meter

Table A-6. Measurement Quality Objectives for Indoor and Ambient Air Samples

Fremont Analytical, Inc.

Project No. 160324, Mt. Baker Properties, Seattle, WA

Analyte Name	MDL[(A)]	PQL	LCS/LCSD %R[(A)]	RPD (%)	Surrogate %R[(A)]
Volatile Organic Compounds (VOCs) by TO-15 (μg/m^3)					
1,1,1-Trichloroethane	0.0668	2.18	70 - 130	30	n/a
1,1,2,2-Tetrachloroethane	0.101	2.06	70 - 130	30	n/a
1,1,2-Trichloro-1,2,2-trifluoroethane	0.133	3.07	70 - 130	30	n/a
1,1,2-Trichloroethane	0.0456	2.73	70 - 130	30	n/a
1,1-Dichloroethane	0.0643	0.81	70 - 130	30	n/a
1,1-Dichloroethene	0.0285	1.59	70 - 130	30	n/a
1,2,4-Trichlorobenzene	0.172	2.23	70 - 130	30	n/a
1,2,4-Trimethylbenzene	0.0562	1.47	70 - 130	30	n/a
1,2-Dibromoethane	0.0679	1.54	70 - 130	30	n/a
1,2-Dichlorobenzene	0.0891	2.4	70 - 130	30	n/a
1,2-Dichloroethane	0.0755	0.809	70 - 130	30	n/a
1,2-Dichloropropane	0.105	2.31	70 - 130	30	n/a
1,3,5-Trimethylbenzene	0.0527	1.47	70 - 130	30	n/a
1,3-Butadiene	0.0469	1.11	70 - 130	30	n/a
1,3-Dichlorobenzene	0.133	1.8	70 - 130	30	n/a
1,4-Dichlorobenzene	0.115	1.8	70 - 130	30	n/a
1,4-Dioxane	0.158	1.44	70 - 130	30	n/a
2-Butanone	0.0503	2.95	70 - 130	30	n/a
2-Hexanone	0.0839	4.1	70 - 130	30	n/a
2-Propanol	0.189	2.46	70 - 130	30	n/a
4-Methyl-2-pentanone	0.0853	4.1	70 - 130	30	n/a
Acetone	0.0614	2.38	70 - 130	30	n/a
Acrolein	0.107	1.15	70 - 130	30	n/a
Benzene	0.0358	0.286	70 - 130	30	n/a
Benzyl chloride	0.288	2.59	70 - 130	30	n/a
Bromodichloromethane	0.0652	2.01	70 - 130	30	n/a
Bromoform	0.114	2.07	70 - 130	30	n/a
Bromomethane	0.0527	1.94	70 - 130	30	n/a
Carbon disulfide	0.0408	4.67	70 - 130	30	n/a
Carbon tetrachloride	0.0689	0.413	70 - 130	30	n/a
Chlorobenzene	0.057	0.921	70 - 130	30	n/a
Chlorodibromomethane	0.0852	4.26	70 - 130	30	n/a
Chloroethane	0.0256	1.06	70 - 130	30	n/a
Chloroform	0.0814	0.977	70 - 130	30	n/a
Chloromethane	0.0635	1.03	70 - 130	30	n/a
cis-1,2-Dichloroethene	0.0432	0.793	70 - 130	30	n/a
cis-1,3-dichloropropene	0.0411	1.82	70 - 130	30	n/a
Cyclohexane	0.0373	1.38	70 - 130	30	n/a
Dichlorodifluoromethane	0.0755	1.98	70 - 130	30	n/a
Dichlorotetrafluoroethane	0.147	2.8	70 - 130	30	n/a
Ethyl acetate	0.0462	3.6	70 - 130	30	n/a
Ethylbenzene	0.0326	1.74	70 - 130	30	n/a
Heptane	0.0738	1.61	70 - 130	30	n/a
Hexachlorobutadiene	0.107	10.7	70 - 130	30	n/a
m,p-Xylene	0.0745	3.47	70 - 130	30	n/a
Methyl methacrylate	0.06	1.64	70 - 130	30	n/a
Methylene chloride	0.0951	6.95	70 - 130	30	n/a
n-Hexane	0.0476	1.41	70 - 130	30	n/a
Naphthalene	0.0669	0.524	70 - 130	30	n/a
o-Xylene	0.0461	1.74	70 - 130	30	n/a
p-Ethyltoluene	0.0566	1.97	70 - 130	30	n/a
Propylene	0.061	0.688	70 - 130	30	n/a
Styrene	0.0556	1.7	70 - 130	30	n/a
tert-Butyl Methyl Ether	0.0734	1.44	70 - 130	30	n/a
Tetrachloroethene	0.0415	1.36	70 - 130	30	n/a
Tetrahydrofuran	0.0467	1.18	70 - 130	30	n/a
Toluene	0.0215	1.51	70 - 130	30	n/a
trans-1,2-Dichloroethene	0.0529	0.793	70 - 130	30	n/a
trans-1,3-dichloropropene	0.0259	2.27	70 - 130	30	n/a
Trichloroethene	0.0581	0.349	70 - 130	30	n/a
Trichlorofluoromethane	0.0607	2.25	70 - 130	30	n/a
Vinyl acetate	0.089	3.52	70 - 130	30	n/a
Vinyl chloride	0.0342	0.274	70 - 130	30	n/a

Table A-6. Measurement Quality Objectives for Indoor and Ambient Air Samples

Fremont Analytical, Inc.

Project No. 160324, Mt. Baker Properties, Seattle, WA

Analyte Name	MDL[(A)]	PQL	LCS/LCSD %R[(A)]	RPD (%)	Surrogate %R[(A)]
Air-Phase Hydrocarbons (APHs) by MA APH (μg/m^3)					
Aliphatic Hydrocarbon (EC5-8)	1.3	7.125	70 - 130	30	n/a
Aliphatic Hydrocarbon (EC9-12)	1.065	11.05	70 - 130	30	n/a
Aromatic Hydrocarbon (EC9-10)	0.173	7.85	70 - 130	30	n/a

Notes:

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

%R = Percent recovery

MDL = Method detection limit

PQL = Practical quantitation limit

μg/m^3 = microgram per cubic meter

n/a = not applicable

RPD = Relative percent difference

ATTACHMENT A-A

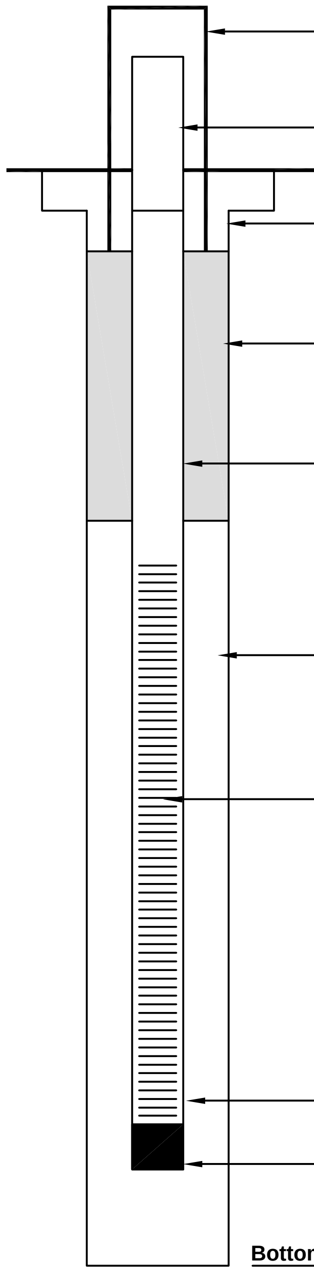
Aspect Field Forms

As-Built Well Completion Diagram

Project Number:	Boring/Monitoring Well Number: Sheet: of:
Project:	Location:
Elevation:	Drilling Contractor:
Drilling Method and Equipment Used:	Logged By:
Water Levels:	Completion Start: Finish:

Ecology Well ID ________________

Soil Type/ Depth | **Completion Depths**



Monument Type/Height ______________________________

Well Cap Type ______________________________

Surface Seal Material ______________________________

Seal Material ______________________________
(list NSF/ANSI certification)

Well Casing ID ______________________________

Type of Casing ______________________________

Type of Connection ______________________________

Filter Pack/Size ______________________________

Filter Pack Interval ______________________________

Well Screen ID ______________________________

Type of Screen ______________________________

Slot Size ______________________________

Screen Interval ______________________________

Centralizers ______________________________

Diameter of Borehole ______________________________

Sump ______________________________

Bottom of Boring ______________________________

Aspect consulting earth+water www.aspectconsulting.com *a limited liability company*	Materials Used:	Screen:
	Sand:	Bentonite:
	Blank:	Monument:
	Concrete:	Other:

Q:_ACAD Standards\Standard Details\Well Diagram.dwg

Field Staff:

DAILY REPORT

Date: **Project Name:** **Project Number:** **Weather:** **Arrival on site:** **Departure from site:**	Equipment used: Calibration:

Aspect CONSULTING

Sample number ________________________________

GROUNDWATER SAMPLING RECORD

WELL NUMBER: _______ **Page:**____ **of** ____

Project Name: ______________________________

Project Number: ______________________________

Date: ____________________

Starting Water Level (ft TOC):________________

Sampled by: ______________________________

Casing Stickup (ft):________________

Measuring Point of Well:______________________________

Total Depth (ft TOC):________________

Screened Interval (ft. TOC)______________________________

Casing Diameter (inches):________________

Filter Pack Interval (ft. TOC) ______________________________

Casing Volume ___________ (ft Water) x ___________ (Lpfv)(gpf) = ___________ (L)(gal)

Casing volumes: 3/4"= 0.02 gpf 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf

3/4"= 0.09 Lpf 2" = 0.62 Lpf 4" = 2.46 Lpf 6" = 5.56 Lpf

Sample Intake Depth (ft TOC):___________

PURGING MEASUREMENTS

Criteria:		Typical 0.1-0.5 Lpm	Stable	na	± 3%	± 10%	± 0.1	± 10 mV	± 10%	
Time	Cumul. Volume (gal or L)	Purge Rate (gpm or Lpm)	Water Level (ft)	Temp. (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	ORP (mv)	Turbidity (NTU)	Comments

Total Gallons Purged: ______________________________

Total Casing Volumes Removed: ______________

Ending Water Level (ft TOC): ______________________________

Ending Total Depth (ft TOC):______________

SAMPLE INVENTORY

Time	Volume	Bottle Type	Quantity	Filtration	Preservation	Appearance		Remarks
						Color	Turbidity & Sediment	

METHODS

Parameters measured with (instrument model & serial number):______________________________

Purging Equipment: ______________________________ Decon Equipment: ______________________________

Disposal of Discharged Water: ______________________________

Observations/Comments: ______________________________

____

Building Evaluation Form

Address ______________________________ Date ____________________

Occupant Name ________________________ Phone: ____________________

Owner's Name _________________________ Phone: ____________________

Owner's Address ____

Point of Contact ______________________ Phone: ____________________

Contact Information ____

Conducted By _________________________ Company ____________________

A. General Building Information

Building Age____

Building Type: Residential / Office / Commercial / Industrial /
Government / School / Warehouse

Building Occupants: Adults _____ Children under 6 ___ Children 6-15 ______

Building Use____

Square Footage____

Ceiling Height ____

General Description of Building Construction Materials: ____________________

____

____

Foundation Type: Basement / Crawl Space / Slab

Foundation Materials: Poured Concrete / Cinder Blocks / Earthen / Wood Pilings/

Other (Specify ____)

Foundation Wall Material: Poured Concrete / Cinder Blocks / Earthen / Wood / Stone

Building Evaluation Form

Floor Plan:

If there is a basement, please answer questions in Section B. If there is not a basement, skip to Section C.

B. Basement Information:

Is the basement finished? Y / N

Does anyone live in the basement as a primary residence or use the basement daily? Y / N

Is the basement generally: wet / dry / damp?

Is there a sump in the basement? Y / N If yes, please describe the size, the construction, where it is, and whether or not there is a sump and how it is activated: ___________________________________

____

____

What was the PID or FID or CGI reading on the air above the sump grate? ____________________

Does the basement have cracks? Y / N If yes, PID/FID/CGI reading: __________________________

____

Does basement have (cont):

drainage point in floor Y / N If yes, PID/FID/CGI reading___________________

____

sump or sump pump Y / N If yes, PID/FID/CGI reading ___________________

____

pipes or utility conduits through floor or outside walls Y / N If yes, PID/FID/CGI reading

____

____

Is the basement painted? Y / N

If yes, when _____________and with: latex / oil-based paint / stain ?

Does the basement have flooring over the foundation? Y / N

If yes, what type: tile / carpet / wood / pergo / other, specify _________________

Was glue used for installing the flooring?

Is there new furniture in the basement? Y / N If yes, describe type and date received

____

Are there odors in the basement? If yes, describe ___________________________________

C. First Floor Information

What are the walls constructed of? Cinder block / sheet rock / paneling / other, specify

____

Are the walls painted? Y / N

If yes, when____________ and with: latex / oil-based paint / stain ?

Is there flooring in the first floor? Y / N

If yes, what type tile / carpet / wood / pergo / other, specify__________________

Was glue used for installing the flooring?

Is there new furniture on the first floor? Y / N If yes, describe type and date received

____

Are there pipes or utility conduits through the outside walls or floor? Y / N If yes, PID/FID/CGI reading___________________

Are there odors on the first floor? If yes, describe _______________________________

D. Second Floor Information (if applicable) What are the walls constructed of? Cinder block / sheet rock / paneling / other, specify

____

Are the walls painted? Y / N

If yes, when ___________ and with: latex / oil-based paint / stain?

Is there flooring in the second floor? Y / N

If yes, what type: tile / carpet / wood / pergo / other, specify___________

Was glue used for installing the flooring?

Is there new furniture on the second floor? Y / N If yes, describe type and date received ____

Are there pipes or utility conduits through the outside walls or floor? Y / N If yes, PID/FID/CGI reading ___________________

Are there odors on the second floor? If yes, describe ____________________________

____

E. Heating and Ventilation Systems:

What type of heating system(s) are used in the building? (check all that apply)

- ☐ Heat Pump/Furnace
- ☐ Hot Air Radiation
- ☐ Steam Radiation
- ☐ Unvented Kerosene Heater
- ☐ Wood Stove
- ☐ Electric Baseboard
- ☐ Other, specify ____

What type of fuel(s) are used in the building? (check all that apply):

- ☐ Natural Gas
- ☐ Electric
- ☐ Fuel Oil
- ☐ Wood
- ☐ Coal
- ☐ Solar
- ☐ Other, specify ____

Building Evaluation Form

What type of mechanical ventilation systems are present and/or currently operating in the building? (check all that apply)

- ☐ Mechanical Fans
- ☐ Open Windows
- ☐ Individual Air Conditioning Units
- ☐ Kitchen Range Hood
- ☐ Bathroom Ventilation Fan
- ☐ Air-to-Air Heat Exchanger
- ☐ Other, specify ______________________________

F. Roof construction

Is the roof pitched or flat? ______________________________

Is there an attic? Y / N

If so, is it accessible? Y / N

If so, what is the height of the attic?__________________

What is the roof comprised of? Tar shingles / metal / rolled tar material / asphalt coating / other, specify ______________________________

Description of roof support system (trusses, beams, construction materials, etc.) :

____

____

Diagram of Roof and Roof Supports

G. Potential Sources of Indoor Chemical Contaminants: Which of these items are present in the building? (Check all that apply)

Potential VOC Source	Location of Source	Removed 48 hours prior to sampling (Yes/No/NA)
Paints		
Gas-powered equipment		

Building Evaluation Form

Gasoline storage cans		
Cleaning solvents (thinner)		
Air fresheners		
Oven cleaners		
Carpet/upholstery cleaners		
Hairspray		
Nail polish/polish remover		
Bathroom cleaner		
Appliance cleaner		
Furniture/floor polish		
Moth balls		
Fuel tank		
Wood stove		
Fireplace		
Perfume/colognes		
Hobby supplies (e.g., solvents, paints, lacquers, glues, photographic darkroom chemicals)		
Scented trees, wreaths, potpourri, etc.		
Polish / wax		
Insecticide / pesticide		
kerosene		
Other		
Other		

H. Building Use:

Is there standing water in the building (historic or current)? Y / N

Is there water damage in the building (historic or current)? Y / N

Is there fire damage to the building? Y / N   If yes, date___________

Building Evaluation Form

Are there pest control applications to the building? Y / N   If yes, date____________

Is there a septic system? Y / N   If yes, date of system _______________________

Do one or more smokers occupy this building on a regular basis? Y / N

Has anybody smoked in the building in the last 48 hours? Y / N

Does the building have an attached garage? Y / N

If so, is a car usually parked in the garage? Y / N

Do the occupants of the building frequently have their clothes dry-cleaned? Y / N

Was there any recent remodeling or painting done in the building? Y / N

Are there any pressed wood products in the building (e.g., hardwood plywood wall paneling, particleboard, fiberboard)? Y / N

Are there any new upholstery, drapes or other textiles in the building? Y / N

Has the building been treated with any insecticides/pesticides? Y / N
If so, what chemicals are used and how often are they applied?

____
____
____

Do any of the occupants apply pesticides/herbicides in the yard or garden? Y / N
If so, what chemicals are used and how often are they applied?

____
____
____

Type of ground cover (e.g., grass, pavement, etc.) outside the building:

____
____

Is there a well on the property? If so, what is it used for and where is it screened?

____

Is there any other information about the structural features of this building, the habits of its occupants or potential sources of chemical contaminants to the indoor air that may be of importance in facilitating the evaluation of the indoor air quality of the building?

____
____
____

Building Evaluation Form

I. Other Potential Sources of Indoor or Outdoor Air Contamination

Outside Sources of Contamination (check all that apply):

- ☐ Garbage Dumpsters
- ☐ Heavy Motor Traffic
- ☐ Landing Dock in Use
- ☐ Construction Activities
- ☐ Airport flight path
- ☐ Railyard/railcar traffic
- ☐ Nearby Industries, specify ______________________________
- ☐ UST/AST (gasoline/heating fuel/other, specify) ____________________

Is there a known spill or release outside or inside the building? If yes, was it:

- ☐ oil
- ☐ natural gas
- ☐ kerosene
- ☐ heating oil
- ☐ used vehicle oil
- ☐ solvents
- ☐ pesticide/instecticide
- ☐ other, describe ____________

Describe any additional information about the release (amount, when it occurred, action taken to clean up, etc.): ____

____

____

____

____

J. Building Screening Results (PID/FID/CGI)

	FID (ppm)	PID (ppm)	CGI (%)
Basement			
First Floor			
Second Floor			
Other -			
Other -			
Other -			

Building Evaluation Form

Instructions for Inhabitants of Building Prior to Sampling Event
(to be followed starting at least 48 hours prior to and during the sampling event)

- Do not open windows, fireplace openings or vents.
- Do not keep doors open.
- Do not operate ventilation fans or air conditioning.
- Do not use air fresheners or odor eliminators.
- Do not smoke in the house.
- Do not use wood stoves, fireplace or auxiliary heating equipment (e.g., kerosene heater).
- Do not use paints or varnishes.
- Do not use cleaning products (e.g., bathroom cleaners, furniture polish, appliance cleaners, all-purpose cleaners, floor cleaners).
- Do not use cosmetics, including hair spray, nail polish, nail polish remover, perfume, etc.
- Do not partake in indoor hobbies that use solvents.
- Do not apply pesticides.
- Do not store containers of gasoline, oil or petroleum–based or other solvents within the house or attached garage (except for fuel oil tanks).
- Do not operate or store automobiles in an attached garage.

Indoor Air Sample Collection Form

Project Name: ____________________ Address: ____________________________________ Project No.: _____________

Date: ___________________________ Field Representative: ______________________________

Completed Building Evaluation Form? ☐ Yes ☐ No

Provided inhabitant with pre-sampling instructions? ☐ Yes ☐ No

Weather Data		
Weather Description:		
Barometric Pressure (in Hg):	start:	stop:
Wind Direction (from the):	start:	stop:
Wind Speed (mph):	start:	stop:
Temperature (deg F):	start:	stop:
Humidity (%):	start:	stop:
Precipitation:	y / n	amount:

Indoor Air Sample Name:		Canister ID:	Gauge ID:	Flow Ctrl ID:
Sampling Readings				
START		END		
Date:	Time:	Date:	Time:	
Canister Vacuum (inches Hg):		Canister Vacuum (inches Hg):		
Canister cleaned and certified? Yes No				
Canister inlet height:				
Sample location:				
Notes:				

Indoor Air Sample Name:		Canister ID:	Gauge ID:	Flow Ctrl ID:
Sampling Readings				
START		END		
Date:	Time:	Date:	Time:	
Canister Vacuum (inches Hg):		Canister Vacuum (inches Hg):		
Canister cleaned and certified? Yes No				
Canister inlet height:				
Sample location:				
Notes:				

Indoor Air Sample Name:		Canister ID:	Gauge ID:	Flow Ctrl ID:
Sampling Readings				
START		END		
Date:	Time:	Date:	Time:	
Canister Vacuum (inches Hg):		Canister Vacuum (inches Hg):		
Canister cleaned and certified? Yes No				
Canister inlet height:				
Sample location:				
Notes:				

Soil Vapor Port Sample Collection Form

Project Name: ____________________ Address: ______________________________ Aspect Project No.: ____________

Date: ____________________ Field Representative: ______________________________

Brand and Model of Field Meters Used:

Photoionization Detector: ______________________________

Multi-Gas Meter: ______________________________

Helium Monitor: ______________________________

Soil Vapor Sample Name:			Cannister ID:		Gauge ID:		
Shut-In Vacuum Test Readings			**Final Purge Readings**				
START	Time:	Vacuum (inches Hg):	PID (ppm)	CH_4 (%LEL)	CO_2 (%)	O_2 (%)	He (%)
END	Time:	Vacuum (inches Hg):					
Sampling Readings							
START		Sample Time Interval	END				
Helium Shroud: Y N (%)		Start:	Helium Shroud: Y N (%)				
Canister Vacuum (inches Hg):		End:	Canister Vacuum (inches Hg):				

Notes:

Soil Vapor Sample Name:			Cannister ID:		Gauge ID:		
Shut-In Vacuum Test Readings			**Final Purge Readings**				
START	Time:	Vacuum (inches Hg):	PID (ppm)	CH_4 (%LEL)	CO_2 (%)	O_2 (%)	He (%)
END	Time:	Vacuum (inches Hg):					
Sampling Readings							
START		Sample Time Interval	END				
Helium Shroud: Y N (%)		Start:	Helium Shroud: Y N (%)				
Canister Vacuum (inches Hg):		End:	Canister Vacuum (inches Hg):				

Notes:

Soil Vapor Sample Name:			Cannister ID:		Gauge ID:		
Shut-In Vacuum Test Readings			**Final Purge Readings**				
START	Time:	Vacuum (inches Hg):	PID (ppm)	CH_4 (%LEL)	CO_2 (%)	O_2 (%)	He (%)
END	Time:	Vacuum (inches Hg):					
Sampling Readings							
START		Sample Time Interval	END				
Helium Shroud: Y N (%)		Start:	Helium Shroud: Y N (%)				
Canister Vacuum (inches Hg):		End:	Canister Vacuum (inches Hg):				

Notes:

Aspect CONSULTING

WELL DEVELOPMENT RECORD

WELL NUMBER:

Project Name: ______

Date: ______

Developed by: ______

Measuring Point of Well: ______

Screened Interval (ft. BGS): ______

Filter Pack Interval (ft. BGS):

Project Number: ______

Starting Water Level (ft TOC): ______

Casing Stickup (ft BGS): ______

Total Depth (ft TOC): ______

Casing Diameter (inches): ______

Casing Volume: ft Water x gpf =

Casing volumes: 2" = 0.16 gpf 4" = 0.65 gpf 6" = 1.47 gpf

DEVELOPMENT MEASUREMENTS

Elapsed Time (min)	Cumul. Vol. (gallons)	Purge Rate (gpm)	Temp. (C or F)	pH	Specific Conductance (µmhos/cm)	Turbidity (NTU)	Imhoff Cone (ml/L)	Comments

Total Discharge (gallons): ______

Total Casing Volumes Removed (gallons): ______

Ending Water Level (ft TOC): ______

Ending Total Depth (ft TOC): ______

METHODS

Cleaning Equipment: ______

Development Equipment: ______

Disposal of Discharged Water: ______

Observations/Comments: ______

APPENDIX B

Architectural Drawings Showing Replacement Monitoring Well and Subslab Soil Gas Probe Locations

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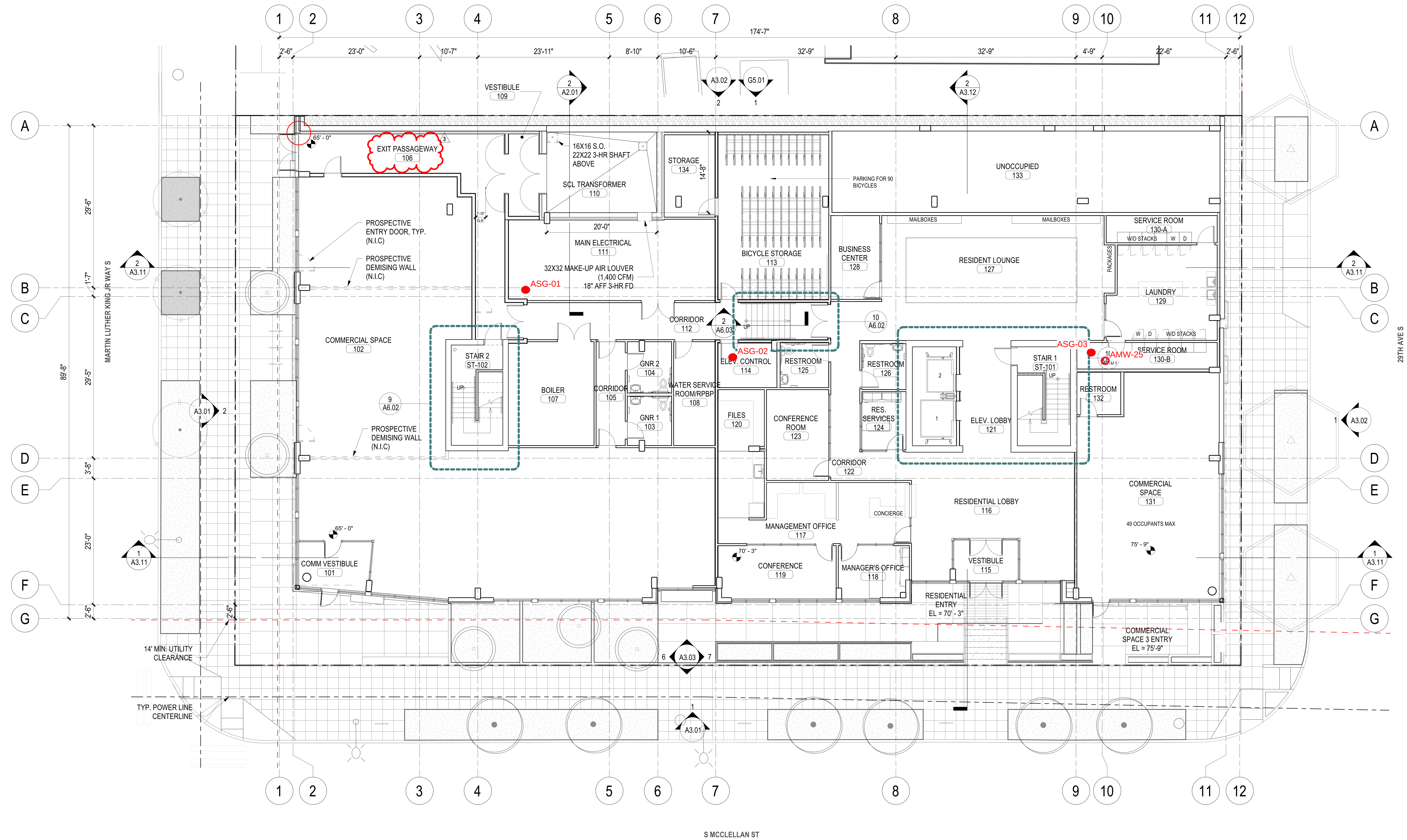
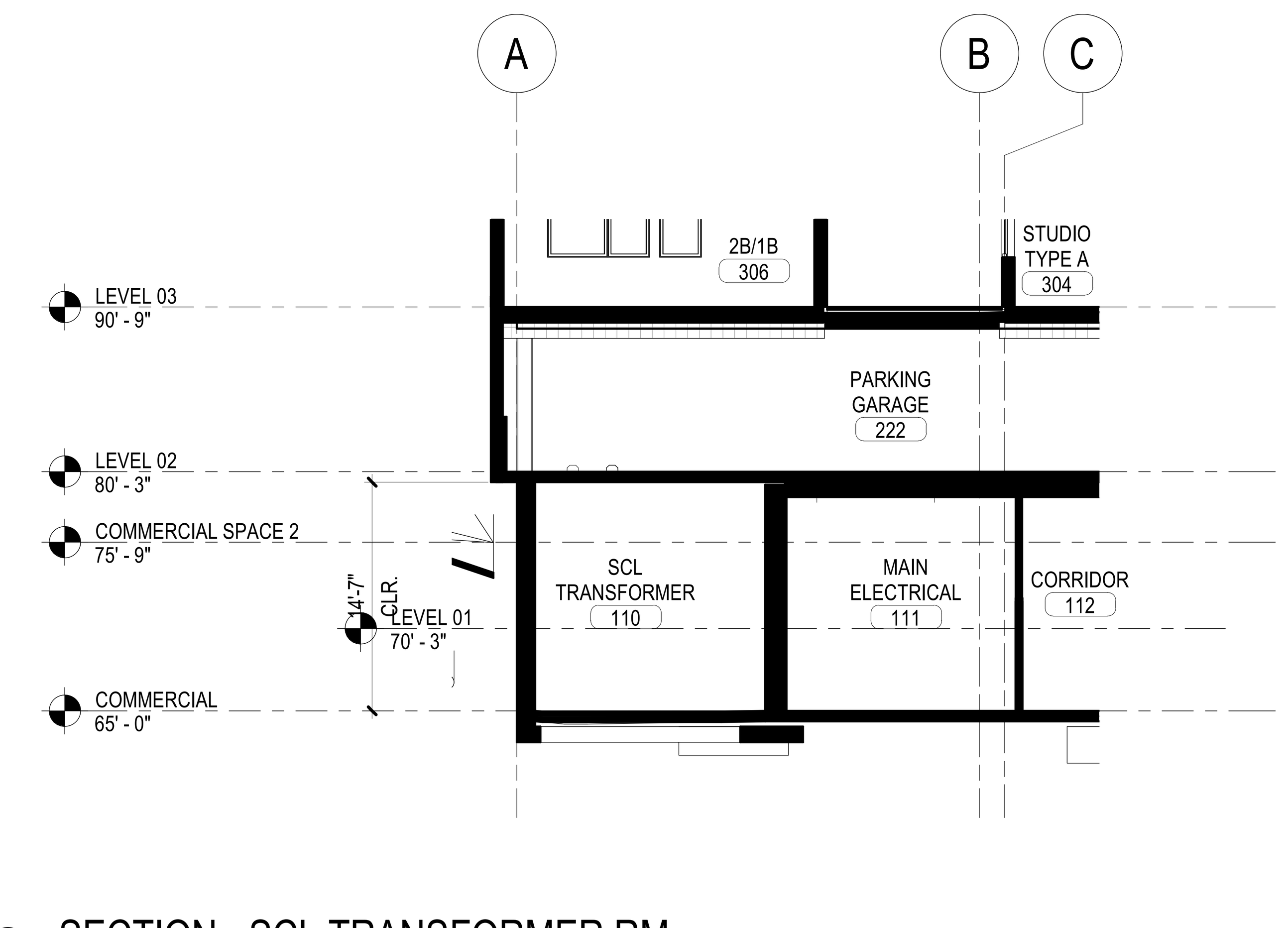


1 LEVEL 01 - OVERALL FLOOR PLAN

1/8" = 1'-0"

NORTH

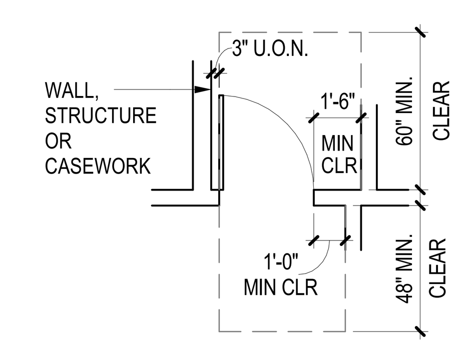
0' 4' 8' 16'



2 SECTION - SCL TRANSFORMER RM

1/8" = 1'-0"

PLAN SHEET LEGEND



TYPICAL DOOR LAYOUT

SHAFT LEGEND

D - DISHWASHER
G - GREASE
C - CORRIDOR SUPPLY / RETURN
EC - ELECTRICAL CONDUIT
MU - MAKE UP AIR
GE - GARAGE EXHAUST
V - TRANSFORMER VAULT EXHAUST
T - TRASH EXHAUST

PLAN NOTES

1. SEE SHEET G1.02 FOR ABBREVIATION LIST AND DEFINITION.
2. SEE SHEETS A2.10 - A2.19 FOR ENLARGED UNIT PLANS.
3. SEE SHEET A5.02 FOR EXTERIOR WALL ASSEMBLIES.
4. SEE SHEETS A9.01 AND A9.02 FOR INTERIOR PARTITION ASSEMBLIES.
5. SEE SHEETS A6.01 - A6.02 FOR ENLARGED STAIR PLANS.
6. SEE SHEET A10.01 FOR DOOR TYPES & SCHEDULE.
7. SEE SHEETS A10.04 - A10.07 FOR WINDOW TYPES.
8. CRITICAL CLEARANCES ARE DESIGNATED "CLEAR", "CLR" AND ARE TO FINISH FACE OF PARTITION.
9. DIFFERING PARTITION TYPES SHALL ALIGN SO WALL PLANES CONTINUE UNBROKEN WITHIN ROOMS, U.O.N.
10. DOORS, WINDOWS AND RELITES ARE TYPICALLY POSITIONED MIDPOINT OF THE SPAN OF THE WALL OR REFER TO PLAN SHEET LEGEND FOR TYPICAL DOOR LAYOUT OR UNLESS NOTED IN PLAN. DIMENSIONS TO THE CENTERLINE OF THE OPENING. REFER TO DOOR AND WINDOW SCHEDULE FOR SIZE AND TYPE.
11. PROVIDE/VERIFY A 3" CLEAR MIN DIMENSION BETWEEN R.O. AND NEAREST PERPENDICULAR WALL AT ALL INTERIOR DOORS, UNLESS NOTED OTHERWISE, OR WHERE DOOR IS INTENDED TO BE CENTERED.
12. MECHANICAL, ELECTRICAL AND PLUBMING SUBCONTRACTORS TO COMPLY WITH FIREBLOCKING AND FIRE STOPPING REQUIREMENTS AT ALL PENTRATIONS OF RATED WALLS.
13. SEE UNIT PLANS FOR INTERIOR PARTITION TYPES.
14. PROVIDE 2-WAY COMMUNICATION DEVICE INSIDE ELEVATOR LOBBY AT EACH FLOOR (EXCEPT STREET LEVEL).
15. LOCATE WASHING MACHINE VALVE BOX IN WALL AT SIDE OF WASHER FOR SHUT OFF ACCESS.
16. ALL UNIT REFRIGERATORS TO FREELY OPEN AT 110 DEGREES.
17. PROVIDE NON-COMBUSTIBLE FRAMING AT SHAFTS SURROUDING TYPE I GREASE DUCTS.
18. REFER TO VENTILATION NOTES ON SHEET A2.04 FOR DWELLING UNIT LOCAL EXHAUST.
19. PROVIDE CARBON MONOXIDE DETECTION IN EACH AND EVERY DWELLING UNIT PER SBC S. 915.2.2 EXCEPTION. LOCATE CO DECTECTION IMMEDIATELY OUTSIDE EACH BEDROOM.
20. CLOSETS IN UNITS SHALL NOT EXCEED A 2' MAXIMUM DEPTH.

ORIGINAL SHEET SIZE 30" x 42"

MITHŪN

SEATTLE / Pier 56, 1201 Alaskan Way, #200
Seattle, WA 98101 / 206.623.3344

SAN FRANCISCO / 660 Market Street, #300
San Francisco, CA 94104 / 415.956.0688

mithun.com

PROJECT
MADDUX NORTH

LOCATION
2802 S MCCLELLAN ST
SEATTLE, WA 98144

PREPARED FOR
MT. BAKER HOUSING ASSOCIATION

NO.	DATE	REVISION
1	09.13.2019	MUP CORRECTIONS #1
3	TBD	BLDG PERMIT CORRECTIONS #1
5	04.10.2020	MUP CORRECTION #3

PROJECT DIRECTOR
AT
PROJECT MANAGER
DL
PROJECT ARCHITECT
GG
PROJECT DESIGNER
CH
PROJECT TEAM MEMBERS
BT, KK
CHECK
KB

ARCHITECT SEAL

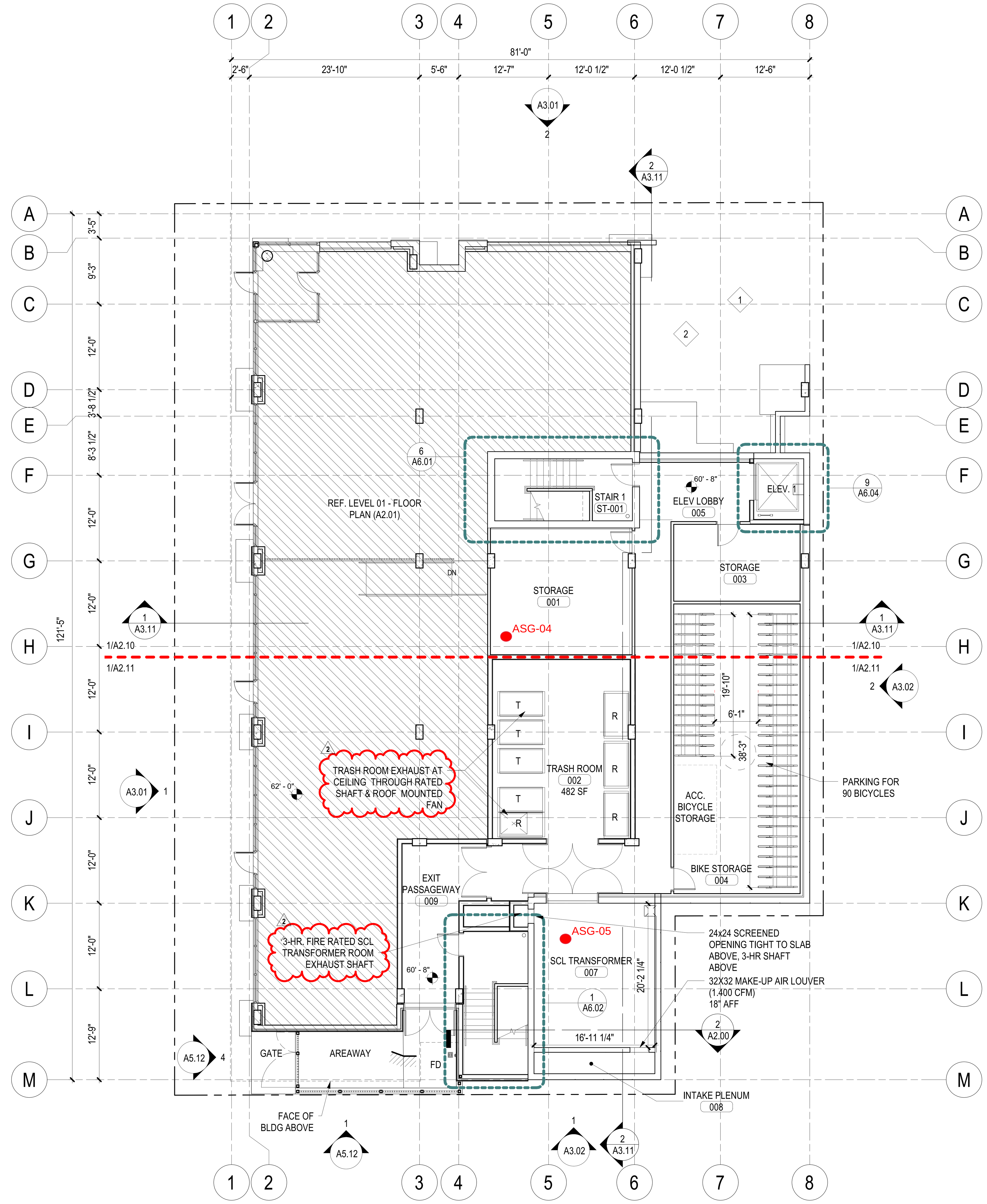
3689 REGISTERED ARCHITECT
BRUCE L. WILLIAMS
STATE OF WASHINGTON

SEATTLE DCI / OPCD APPROVAL STAMP

TITLE
LEVEL 01 OVERALL FLOOR PLAN

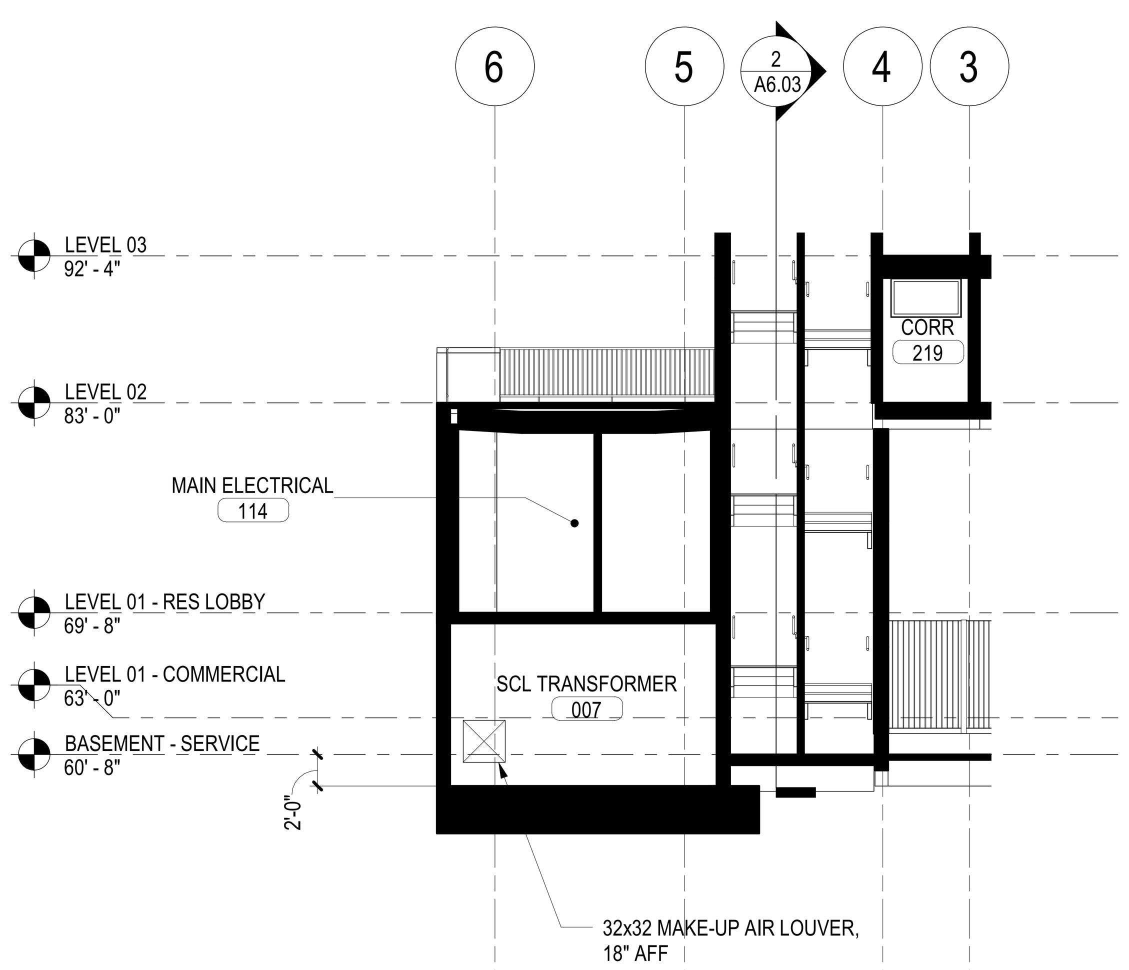
PROJECT NO.
1723500
DATE
11/26/19

SHEET NUMBER
A2.01 -N
BID SET



1 BASEMENT - FLOOR PLAN

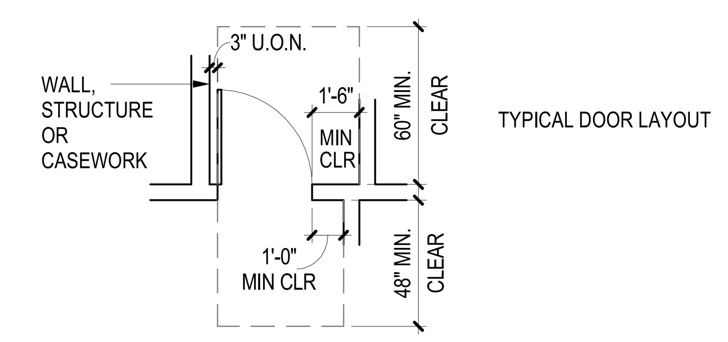
1/8" = 1'-0"



2 SECTION - SCL TRANSFORMER RM

1/8" = 1'-0"

PLAN SHEET LEGEND



PLAN NOTES

1. SEE SHEET G1.02 FOR ABBREVIATION LIST AND DEFINITION.
2. SEE SHEETS A2.10 - A2.19 FOR ENLARGED UNIT PLANS.
3. SEE SHEET A5.02 FOR EXTERIOR WALL ASSEMBLIES.
4. SEE SHEETS A9.01 AND A9.02 FOR INTERIOR PARTITION ASSEMBLIES.
5. SEE SHEETS A6.01 - A6.02 FOR ENLARGED STAIR PLANS.
6. SEE SHEET A10.01 FOR DOOR TYPES & SCHEDULE.
7. SEE SHEETS A10.04 - A10.07 FOR WINDOW TYPES.
8. CRITICAL CLEARANCES ARE DESIGNATED "CLEAR", "CLR" AND ARE TO FINISH FACE OF PARTITION.
9. DIFFERING PARTITION TYPES SHALL ALIGN SO WALL PLANES CONTINUE UNBROKEN WITHIN ROOMS, U.O.N.
10. DOORS, WINDOWS AND RELITES ARE TYPICALLY POSITIONED MIDPOINT OF THE SPAN OF THE WALL OR REFER TO PLAN SHEET LEGEND FOR TYPICAL DOOR LAYOUT OR UNLESS NOTED IN PLAN. DIMENSIONS TO THE CENTERLINE OF THE OPENING. REFER TO DOOR AND WINDOW SCHEDULE FOR SIZE AND TYPE.
11. PROVIDE/VERIFY A 3" CLEAR MIN DIMENSION BETWEEN R.O. AND NEAREST PERPENDICULAR WALL AT ALL INTERIOR DOORS, UNLESS NOTED OTHERWISE, OR WHERE DOOR IS INTENDED TO BE CENTERED.
12. MECHANICAL, ELECTRICAL AND PLUBMING SUBCONTRACTORS TO COMPLY WITH FIREBLOCKING AND FIRE STOPPING REQUIREMENTS AT ALL PENTRATIONS OF RATED WALLS.
13. SEE UNIT PLANS FOR INTERIOR PARTITION TYPES.
14. PROVIDE 2-WAY COMMUNICATION DEVICE INSIDE ELEVATOR LOBBY AT EACH FLOOR (EXCEPT STREET LEVEL).
15. LOCATE WASHING MACHINE VALVE BOX IN WALL AT SIDE OF WASHER FOR SHUT OFF ACCESS.
16. ALL UNIT REFRIGERATORS TO FREELY OPEN AT 110 DEGREES.
17. PROVIDE NON-COMBUSTIBLE WALL FRAMING AT SHAFTS THAT ENCLOSE TYPE-1 GREASE DUCTS, TYP.
18. THE OCCUPANT LOAD OF ASSEMBLY OCCUPANCIES OR SPACES SHALL BE POSTED IN A CONSPICUOUS PLACE, NEAR THE MAIN EXIT OR EXIT ACCESS DORWAYS FROM THE ROOM OR SPACE. NOTE: ASSEMBLY SPACES INCLUDE UNCOVERED ASSEMBLY AREAS SUCH AS ROOF DECKS (SPACES LISTED AS GROUP A3, SHEET G3.06, G3.07.
19. CLOSETS IN UNITS SHALL NOT EXCEED A 2' MAX. DEPTH.

NORTH

0' 4' 8' 16'

MITHŪN

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Seattle, WA 98101 / 206.623.3344

SAN FRANCISCO / 660 Market Street, #300
San Francisco, CA 94104 / 415.956.0688

mithun.com

PROJECT
MADDUX SOUTH

LOCATION
2800 M L KING JR WAY S SEATTLE, WA 98144

PREPARED FOR
MT. BAKER HOUSING ASSOCIATION

NO.	DATE	REVISION
1	09.16.2019	L.U. CORRECTION #1
2	TBD	BLDG PERMIT CORRECTION #1

PROJECT DIRECTOR
AT
PROJECT MANAGER
DL
PROJECT ARCHITECT
GG
PROJECT DESIGNER
CH
PROJECT TEAM MEMBERS
BT, KK
CHECK
KB

3689 REGISTERED ARCHITECT BRUCE L. WILLIAMS STATE OF WASHINGTON

SEATTLE DCI / OPCD APPROVAL STAMP

TITLE
BASEMENT - FLOOR PLAN

PROJECT NO.
1723500
DATE
12/03/19

SHEET NUMBER
A2.00 -S

BID SET

ORIGINAL SHEET SIZE 30" x 42"

APPENDIX C

Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND USE GUIDELINES

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the Client. No other party may rely on this report or the product of our services without the express written consent of Aspect Consulting, LLC (Aspect). This limitation is to provide our firm with reasonable protection against liability claims by third parties with whom there would otherwise be no contractual conditions or limitations and guidelines governing their use of the report. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and recognized standards of professionals in the same locality and involving similar conditions.

Services for Specific Purposes, Persons and Projects

Aspect has performed the services in general accordance with the scope and limitations of our Agreement. This report has been prepared for the exclusive use of the Client and their authorized third parties, approved in writing by Aspect. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

This report is not, and should not, be construed as a warranty or guarantee regarding the presence or absence of hazardous substances or petroleum products that may affect the subject property. The report is not intended to make any representation concerning title or ownership to the subject property. If real property records were reviewed, they were reviewed for the sole purpose of determining the subject property's historical uses. All findings, conclusions, and recommendations stated in this report are based on the data and information provided to Aspect, current use of the subject property, and observations and conditions that existed on the date and time of the report.

Aspect structures its services to meet the specific needs of our clients. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and subject property. This report should not be applied for any purpose or project except the purpose described in the Agreement.

This Report Is Project-Specific

Aspect considered a number of unique, project-specific factors when establishing the Scope of Work for this project and report. You should not rely on this report if it was:

- Not prepared for you
- Not prepared for the specific purpose identified in the Agreement
- Not prepared for the specific real property assessed
- Completed before important changes occurred concerning the subject property, project or governmental regulatory actions

If changes are made to the project or subject property after the date of this report, Aspect should be retained to assess the impact of the changes with respect to the conclusions contained in the report.

Geoscience Interpretations

The geoscience practices (geotechnical engineering, geology, and environmental science) require interpretation of spatial information that can make them less exact than other engineering and natural science disciplines. It is important to recognize this limitation in evaluating the content of the report. If you are unclear how these "Report Limitations and Use Guidelines" apply to your project or site, you should contact Aspect.

Discipline-Specific Reports Are Not Interchangeable

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually address any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding the subject property.

Environmental Regulations Are Not Static

Some hazardous substances or petroleum products may be present near the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, but are not included in current local, state or federal regulatory definitions of hazardous substances or petroleum products or do not otherwise present potential liability. Changes may occur in the standards for appropriate inquiry or regulatory definitions of hazardous substance and petroleum products; therefore, this report has a limited useful life.

Property Conditions Change Over Time

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time (for example, Phase I ESA reports are applicable for 180 days), by events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, slope failure or groundwater fluctuations. If more than six months have passed since issuance of our report, or if any of the described events may have occurred following the issuance of the report, you should contact Aspect so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Phase I ESAs – Uncertainty Remains After Completion

Aspect has performed the services in general accordance with the scope and limitations of our Agreement and the current version of the "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process", ASTM E1527, and U.S. Environmental Protection Agency (EPA)'s Federal Standard 40 CFR Part 312 "Innocent Landowners, Standards for Conducting All Appropriate Inquiries".

No ESA can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with subject property. Performance of an ESA study is intended to reduce, but not eliminate, uncertainty regarding the potential for environmental conditions affecting the subject property. There is always a potential that areas with contamination that were not identified during this ESA exist at the subject property or in the study area. Further evaluation of such potential would require additional research, subsurface exploration, sampling and/or testing.

Historical Information Provided by Others

Aspect has relied upon information provided by others in our description of historical conditions and in our review of regulatory databases and files. The available data does not provide definitive information with regard to all past uses, operations or incidents affecting the subject property or adjacent properties. Aspect makes no warranties or guarantees regarding the accuracy or completeness of information provided or compiled by others.

Exclusion of Mold, Fungus, Radon, Lead, and HBM

Aspect's services do not include the investigation, detection, prevention or assessment of the presence of molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detection, assessment, prevention or abatement of molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts. Aspect's services also do not include the investigation or assessment of hazardous building materials (HBM) such as asbestos, polychlorinated biphenyls (PCBs) in light ballasts, lead based paint, asbestos-containing building materials, urea-formaldehyde insulation in on-site structures or debris or any other HBMs. Aspect's services do not include an evaluation of radon or lead in drinking water, unless specifically requested.