PACIFIC CREST ENVIRONMENTAL
1531 BENDIGO BOULEVARD NORTH PO BOX 952 NORTH BEND, WA 98045
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February 12, 2020

Ms. Sandra Matthews
Toxics Cleanup Program
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington 98008

RE: Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington
Facility/Site No. 23408
Pacific Crest No. 105-003

Dear Ms. Matthews:

Enclosed for your review is one original, one copy, and one CD copy of the Cleanup Action Progress Report (Progress Report), dated February 12, 2020, prepared by Pacific Crest Environmental, LLC (Pacific Crest) on behalf of Penthouse Drapery Cleaners and Manufacturers, Inc. (Penthouse Drapery) for the Site Area 1 (SA-1) of the Former Penthouse Drapery and Belshaw Site (the Site). This Progress Report documents the cleanup action activities conducted at SA-1 between December 2018 and December 2019.

Please feel free to contact the undersigned at (425) 888-4990 if you have questions or comments regarding the information provided herein.

Sincerely,

PACIFIC CREST ENVIRONMENTAL, LLC

William Carroll, L.G., L.H.G.
Principal Hydrogeologist

Attachment: Cleanup Action Progress Report, dated February 12, 2020

cc: Mr. Jack Zahner – Foster Pepper, PLLC
Todd and Karen Sullivan – Seattle Collision Center

PACIFIC CREST ENVIRONMENTAL
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CLEANUP ACTION PROGRESS REPORT

FORMER PENTHOUSE DRAPERY AND BELSHAW SITE
1752 RAINIER AVENUE SOUTH
SEATTLE, WASHINGTON
SITE ID NO. 23408

Submitted by:

Pacific Crest Environmental, LLC
1531 Bendigo Boulevard North
North Bend, WA 98045
Pacific Crest PN: 105-003

For:
Ms. Sandra Matthews
Toxics Cleanup Program
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington 98008

Prepared by:

FOR:

Michael Black
Project Engineer

Reviewed by:

William Carroll, L.G., L.H.G.
Principal Hydrogeologist

State of Washington Hydrogeologist 558 Licensed Geologist
William E. Carroll

February 12, 2020

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APPENDICES

1.0 INTRODUCTION

Pacific Crest Environmental, LLC (Pacific Crest) has prepared this Cleanup Action Progress Report (Progress Report) to document cleanup action activities conducted in response to a release of dry cleaning solvent that occurred at the former Penthouse Drapery and Belshaw Site located in Seattle, Washington (the Site) (Figure 1). The contaminants of concern (COCs) for Site Area 1 (SA-1) include: tetrachloroethene (PCE); trichloroethene (TCE); cis-1,2-dichloroethene (c-DCE); trans-1,2-dichloroethene (t-DCE); and vinyl chloride (VC). The cleanup approach for SA-1 and Site-Specific Cleanup Levels (CULs) for the COCs are presented in the Draft for Ecology Review Cleanup Action Plan (dCAP) for SA-1, dated July 7, 2015 (Pacific Crest & AECOM 2015). Formerly, the Site cleanup was conducted under the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) and Ecology had assigned VCP Number NW2278 to the Site. On May 31, 2019, Ecology removed the Site from the VCP; the Site cleanup is currently being conducted as an independent cleanup action.

This Progress Report documents implementation of the dCAP between December 2018 and December 2019 (Reporting Period). The corrective action activities documented in this Progress Report include: electric resistive heating (ERH) system shutdown; background air monitoring; subsurface temperature monitoring; four groundwater monitoring events; and structural building observations. The Site cleanup activities described herein were conducted in accordance with Ecology's Model Toxics Control Act (MTCA) Cleanup Regulation, as established in Chapter 173-340 of the Washington Administrative Code (WAC) (Publication No. 94-06 revised 2013). This Report provides information to Ecology regarding the status of the cleanup action, in accordance with Section 4.6.4.2 of the dCAP.

1.1 OBJECTIVE

This Progress Report is intended to provide sufficient information to document cleanup action measures conducted during the Reporting Period. The overall project objective is to reduce concentrations of COCs in the affected media to levels below regulatory concern and to demonstrate that the cleanup meets the substantive requirements of MTCA sufficient to obtain a No Further Action determination for the Site.

2.0 SITE DESCRIPTION AND BACKGROUND

This section provides an overview of the physiographic conditions, relevant historical information, and investigation and cleanup activities.

2.1 SITE DESCRIPTION

The Site[1] formerly consisted of properties affected by co-mingled contamination associated with releases that occurred at: the current location of Seattle Collision Center, Inc. (SCC), formerly owned by the Penthouse Drapery Cleaners and Manufacturers, Inc. (Penthouse Drapery), at 1752 Rainier Avenue South (Former Penthouse Drapery Property); adjacent properties immediately south of the Former Penthouse Drapery Property formerly owned by Belshaw Brothers, Inc. (Belshaw), a former subsidiary of Enodis Corporation and current subsidiary of AGA Foodservice (Former Belshaw Property); and other adjacent properties owned by third parties as described in Section 2.1 of the Remedial Investigation/Feasibility Study (RI/FS) Report, dated July 25, 2014. For the purpose of selecting and implementing cleanup alternatives, the Site was divided into three sub-areas (SA-1, Site Area 2 [SA-2], and Site Area 3 [SA-3]) where cleanup actions will be implemented. Recent investigation data indicates that contamination related to releases at the former Penthouse facility is distinct and not co-mingled with contamination related to Belshaw.

2.2 GEOLOGY AND HYDROGEOLOGY

In the vicinity of the SCC Building, the upper 40-feet of soil consists of silt, clay, sand, and silty sand layers interpreted to be a mixture of shallow anthropogenic fill, recessional lacustrine and outwash deposits (Qvrl and Qvr) and till (Qvt) that have been modified by liquefaction during historical earthquakes. The material between approximately 40 feet below ground surface (bgs) and 70 feet bgs consists of dense silt and sandy silt containing trace amounts of gravel, interpreted to be till (Qvt). The material between approximately 70 feet bgs and 110 feet bgs (maximum depth explored) consists of sand and silty sand that grades with depth to silty sand and sandy silt interpreted to be advance outwash (Qva).

Shallow unconfined groundwater is first encountered in discontinuous sandy layers at depths ranging from between approximately 12 feet bgs and 30 feet bgs (Shallow Zone) and partially confined discontinuous saturated zones are encountered to 60 feet bgs (Intermediate Zone). The material between the saturated zones (generally silt and sandy silt) was described as moist or slightly moist and did not produce sufficient groundwater to sample. The direction of groundwater flow in the Shallow and Intermediate Zones has been interpreted to be to the southeast. However, due to the geologic heterogeneity in the Shallow and Intermediate Zones, the characterization of groundwater flow direction using standard methods (i.e. potentiometric surface elevation contour maps) has, historically, been unreliable. Groundwater encountered in the sand and silty sand located between 60 feet bgs and 100 feet bgs (Deep Zone) appears to be partially confined by the silt located between 40 feet bgs and 65 feet bgs. The aquifer material in the Deep Zone (sand

[1] A “Site” is defined as the areal and vertical extent of the contaminants of concern (COCs) in the media of concern at concentrations that exceed the applicable cleanup levels.

and silty sand) is more homogeneous than the material in the Shallow and Intermediate Zones (interbedded sands and silts). The direction of groundwater flow in the Deep Zone has been interpreted to be to the east-northeast.

2.3 SITE HISTORY

The Site investigation area (Investigation Area) includes: the Former Penthouse Drapery and Belshaw properties; the public right-of-ways adjacent to the properties; and the topographically up- and down-gradient areas in the immediate vicinity of the Former Penthouse Drapery and Belshaw properties.

Between 1995 and 2010, Phase I Environmental Site Assessments and subsurface investigation activities were conducted in the Investigation Area by Dames & Moore (D&M), Pricewaterhouse Coopers, LLP (PWC), Aaron and Wright Technical Services, Inc. (A&W), URS, G-Logics, Inc. (G-Logics), and Pacific Crest. The objectives of these investigations included satisfying property transaction due-diligence requirements and characterizing the nature and extent of contamination.

Subsurface investigation activities included: advancing soil borings; installing groundwater monitoring wells; collecting soil, groundwater and soil vapor samples for laboratory analysis; and conducting in-situ hydraulic conductivity testing. The locations of soil borings and monitoring wells installed during the previous investigation activities at SA-1 are illustrated on Figure 2. The subsurface investigation activities are summarized in the RI/FS Report dated July 25, 2014.

The dCAP, prepared by Pacific Crest and AECOM, presents electric resistive heating (ERH) combined with enhanced in-situ anaerobic bioremediation and monitored natural attenuation of the COCs in groundwater as the proposed cleanup action for SA-1. ERH is an in-situ technology that applies an electrical current via electrodes to the subsurface for treatment of contaminated soil and groundwater. The electrodes are placed in the subsurface and activated so that electrical current passes through the area of contamination. The resistance of the soil to the electric current heats the soil which, in turn, heats the groundwater to a target temperature approaching 100 degrees Celsius to generate steam. The resulting steam, which serves as a carrier gas to remove chlorinated volatile organic compounds (CVOCs) from the subsurface, is recovered from extraction wells by a vacuum extraction blower and cooled. After the recovered air is cooled and the steam condensed, the CVOC vapors are treated using conventional methods before being discharged to the atmosphere. The site soil and groundwater become progressively cleaner as concentrations of CVOCs are extracted. A full description of the cleanup action is summarized in the dCAP (Pacific Crest & AECOM 2015) and EDR (Pacific Crest & AECOM 2017).

ERH System operations were active between March 29, 2018 and October 8, 2018. Average subsurface temperatures within the Treatment Zone remained above 100°C for approximately 84 days. The cumulative mass of PCE removed during ERH energy application is estimated to be 11.9 kilograms. Confirmation soil sampling results indicated that concentrations of the COCs in Treatment Zone soil are below Site-specific CULs. Performance groundwater monitoring conducted following ERH system shutdown (November 2018) indicated that concentrations of

PCE were reduced from baseline results (August 2017) in Treatment Zone Shallow and Intermediate Wells by an average of 94% (Pacific Crest, 2018a; Pacific Crest, 2018b).

3.0 CLEANUP ACTION IMPLEMENTATION

The elements of the dCAP implemented during the Reporting Period include the following:

- ERH system shutdown;
- Air monitoring;
- Subsurface temperature monitoring;
- Performance groundwater monitoring; and
- SCC Building crack monitoring;

A summary of the cleanup action and progress monitoring activities is provided in the following sections.

3.1 ERH SYSTEM SHUTDOWN

ERH system operations were active between March 29, 2018 and October 8, 2018. ERH system design, calculation and schematics were provided in the EDR, dated May 24, 2017. ERH system construction and start-up activities were provided in the *Cleanup Action Progress Report*, dated August 10, 2018. A summary of ERH system operations were provided in the *Cleanup Action Progress Report*, dated December 11, 2018. On October 8, 2018, ERH operations ceased upon reaching the design remediation energy of 1,750,000 kilowatt-hours (kWh). The vapor recovery system continued operations until December 17, 2018.

ERH system components were decommissioned by TRS Group, Inc. (TRS) between December 2018 and July 2019. ERH system decommissioning activities included: draining the steam condenser; cutting electrode cables at surface grade; removal of all ERH system equipment; and removal of the security fencing. In February 2019, the connection to the sewer was excavated, plugged with concrete, and inspected by the City of Seattle. In April 2019, Seattle City Light disconnected electrical service at the power pole, and removed the electrical transformer, meter, and underground conductors.

A copy of TRS's Final Report for Electrical Resistance Heating, which provides a summary of the ERH system operations, is provided as Appendix A.

3.2 AIR MONITORING

On March 21, 2019, Pacific Crest conducted an air monitoring event by collecting two indoor air samples in the SCC Building and one ambient air sample using laboratory-prepared 6-liter evacuated Summa® canisters with flow regulators set to collect over an 8-hour period (Sample Time). The sampling was conducted to provide performance monitoring following the conclusion of ERH system operations. Sample locations are described below and illustrated on Figure 3:

- Western Interior SCC Building (Indoor Air Sample IA1-032119);

- Eastern Interior SCC Building (Indoor Air Sample IA2-032119); and
- Ambient/Outdoor Air (Ambient Air Sample OA1-032119).

The Summa® canisters were deployed overnight to minimize the potential for automobile repair activities to influence the sample results. One outdoor air sample was collected concurrent with the collection of the indoor air samples. The outdoor sample was collected from two meters above ground surface. After the Sample Time elapsed, the Summa® canisters were collected and transported to Fremont Analytical Inc. (Fremont) of Seattle, Washington, under standard chain-of-custody procedures. Fremont analyzed the samples for PCE, TCE, c-DCE, t-DCE, and VC by EPA Method TO-15 and prepared a report documenting the results. A copy of the laboratory analytical report is provided in Appendix B.

3.3 SUBSURFACE TEMPERATURE MONITORING

Pacific Crest conducted five subsurface temperature monitoring events during the Reporting Period. Subsurface temperature monitoring was conducted on January 10, 2019, March 15, 2019, June 25, 2019, August 8, 2019, and October 25, 2019. Subsurface temperature data were collected from resistance temperature detectors (RTDs) installed within three temperature monitoring points (TMPs) [B6, C4, and C7], located south of the SCC Building (Figure 2). The RTDs within each TMP are spaced vertically in five-foot increments to the maximum TMP depth. TMPs B6 and C7 reach a maximum depth of 85 feet bgs, and TMP C4 reaches a maximum depth of 50 feet bgs. The subsurface temperature data were collected using an Omega® digital thermometer connected to the RTD strings at the surface. Temperature monitoring data is provided in Appendix C.

3.4 PERFORMANCE GROUNDWATER MONITORING

Pacific Crest conducted three performance groundwater monitoring events during the Reporting Period (March 2019, June 2019, and November 2019). The purpose of the performance groundwater monitoring was to evaluate the progress and effectiveness of the cleanup action after the conclusion of ERH operations.

Elevated groundwater temperatures remained present in the Treatment Zone after ERH operations concluded. The March 2019 and June 2019 sampling events necessitated additional safety precautions and sampling procedures during groundwater monitoring activities. Monitoring wells MW-33S, MW-33I, MW-34S, MW-34I, MW-35S, MW35-I, and SCC-3 (Treatment Zone Shallow and Intermediate Wells) were sampled in accordance with EPA's *Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures* (EPA/540/S-95/504) and hot-water sampling methodologies developed by TRS, as described below.

- Water level measurements were not collected from Treatment Zone Wells due to safety concerns.
- A dedicated stainless-steel cooling coil was connected to the stainless-steel discharge tubing in the monitoring well via a brass ball valve and then placed in a portable cooler filled with ice water to reduce the purge water temperature prior to sampling. Additional

ice was added to the cooler when necessary to keep the purge water temperature below 60 degrees Celsius.

- The end of the cooling coil was connected to a peristaltic pump and a YSI 556 multi-parameter water quality meter equipped with a flow-through cell. Groundwater geochemical parameters, including temperature, specific conductivity, pH, dissolved oxygen, and oxidation/reduction potential were recorded during purging approximately every three minutes.
- Groundwater samples were collected from polyethylene tubing upstream of the flow-through cell following stabilization of water quality parameters or once 30 minutes of purging was completed.

Groundwater monitoring for monitoring wells located outside the Treatment Zone (non-Treatment Zone Wells), as well as for all wells sampled during the November 2019 sampling event, was conducted in accordance with EPA's *Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures* (EPA/540/S-95/504) and Pacific Crest SOPs, as described below.

- Prior to collecting water level data, each of the monitoring wells was opened and left undisturbed for a minimum of 15 minutes to allow sufficient time for stabilization and equilibrium with atmospheric pressure.
- An electronic water level indicator was used to measure the depth to groundwater in the wells relative to a surveyed mark on the north side of the top of the casing to an accuracy of 0.01 feet. The water level indicator was raised and lowered a minimum of 3 times to confirm the reading prior to recording the depth to water on the field form.
- Each well was purged using a peristaltic pump and dedicated polyethylene tubing at a flow rate of between approximately 100 to 300 milliliters per minute (mL/min).
- Groundwater geochemical parameters, including temperature, specific conductivity, pH, dissolved oxygen, and oxidation/reduction potential were recorded during purging approximately every three minutes using a YSI 556 multi-parameter water quality meter equipped with a flow-through cell. Groundwater geochemical parameter data collection was discontinued when observed groundwater temperatures exceeded temperatures that may affect data quality (approximately 46°C).
- Groundwater samples were collected from polyethylene tubing upstream of the flow-through cell following stabilization of water quality parameters.

All groundwater samples were collected into laboratory-prepared sample containers. The vials were completely filled with water to eliminate potential loss of volatiles to headspace. Each vial was checked to ensure that there were no air bubbles present in the sample, labeled, placed on ice in a cooler, and transported to OnSite under standard chain-of-custody protocols. OnSite analyzed the samples for HVOCS by SW-846 Method 8260 and prepared reports documenting the results. In March 2019, groundwater samples collected from wells MW-31S and MW-33S were transported to SiREM under standard chain-of-custody protocols. SiREM analyzed the samples for dehalococcoides (Dhc) by Gene-Trac® molecular testing. Copies of the analytical reports are provided in Appendix B.

The monitoring wells sampled during each monitoring event was dependent on the analytical results from previous monitoring events. The groundwater monitoring events were as follows:

- On March 20, 2019, Pacific Crest conducted groundwater monitoring and sampling in monitoring wells MW-31S, MW-31I, MW-33S, MW-33I, MW-34S, MW-34I, SCC-1, and SCC-3.
- On June 18, 2019, Pacific Crest conducted groundwater monitoring and sampling in monitoring wells SCC-1 and SCC-3.
- On November 11 and 12, 2019, Pacific Crest conducted groundwater monitoring and sampling in monitoring wells MW-27S, MW-27I, MW-31S, MW-31I, MW-33S, MW-33I, MW-34S, MW-34I, MW-35S, MW-35I, SCC-1, and SCC-3. On November 25, 2019, Pacific Crest conducted groundwater monitoring and sampling in monitoring wells MW-31D, MW-33D, MW-34D, and MW-35D.

In June 2018, Grand Street Commons LLC (GSC) purchased the Belshaw properties and properties immediately south and east of the current SCC Building. GSC retained Aspect Consulting, LLC (Aspect) to conduct remedial investigation activities at the former Penthouse Drapery and Belshaw Site, as a condition of a Prospective Purchaser Consent Decree. Since then, Aspect has conducted several groundwater monitoring events at the Site, including in SA-1 wells. The groundwater monitoring activities and results are summarized in Aspect's *Grand Street Commons Site – Remedial Investigation Data Summary*, dated September 16, 2019 (Aspect 2019).

3.5 SCC BUILDING CRACK MONITORING

Pacific Crest retained Pacific Engineering Technologies, Inc. (PET) to complete a crack monitor survey of the SCC Building to identify any potential structural changes to the SCC Building following ERH operations. On May 19, 2017, prior to ERH operations, PET conducted an initial visit to document the existing exterior condition of the SCC Building, install crack monitors on existing cracks on the exterior wall, and perform a level survey to document the relative elevation of the interior slab. On October 25, 2019, PET conducted a follow-up visit to observe the post-ERH condition of the SCC Building, document the condition of the crack monitors, and perform a follow-up level survey of the interior slab. A copy of PET's report documenting SCC Building conditions is provided as Appendix D.

3.6 DECONTAMINATION AND WASTE MANAGEMENT

All non-dedicated field sampling equipment was decontaminated between each use and prior to leaving the Site using a solution of Alconox and water and a deionized water rinse. Purge water and decontamination wash water generated during the field activities were contained on-Site in sealed and labeled Department of Transportation approved 55-gallon drums pending waste profiling and proper disposal.

On June 13, 2019, five 55-gallon drums of soil cuttings and two 55-gallon drums containing water filters were removed by Stericycle Environmental Solutions. The soil cuttings were generated

during drilling and trenching associated with soil borings and the spent filters were generated as part of ERH system operations.

On August 8, 2019, Rivers Edge Environmental Services removed approximately 115.6 tons of soil. The soil was generated during excavation and trenching activities for the ERH electrical system. The soil had been previously stockpiled and covered pending laboratory analytical results. Laboratory analytical results did not detect any COCs above their respective method detection limits.

On September 18, 2019, Hazmat Environmental Group removed two vessels containing 1,000 pounds of vapor phase carbon and two 55-gallon drums of liquid phase carbon. The spent carbon was transported to Calgon Carbon in Catlettsburg, Kentucky for disposal.

Waste disposal documentation is provided as Appendix E.

4.0 RESULTS

The results of the cleanup action activities conducted during the Reporting Period are presented in the following sections.

4.1 ERH SYSTEM SHUTDOWN RESULTS

ERH system operations were active between March 29, 2018 and October 8, 2018. The vapor recovery system continued operations until December 17, 2018. During post-ERH operations, daily condensate production averaged 147 gallons per day. The total condensate production during the Reporting Period was 1,361 gallons. The cumulative condensate production was 194,362 gallons (Table 1).

4.2 AIR MONITORING RESULTS

The air analytical data for the Reporting Period are presented in Table 2, illustrated on Figure 3, and summarized below:

- Laboratory analysis detected PCE at concentrations ranging from 7.19 micrograms per cubic meter (µg/m^3) to 18.7 µg/m^3.
- Laboratory analysis did not detect TCE, c-DCE, t-DCE and VC at concentrations above their respective method detection limits in any air samples collected during the Reporting Period.

4.3 SUBSURFACE TEMPERATURE MONITORING RESULTS

The subsurface temperature data for the Reporting Period from TMPs B6, C4, and C7 are provided in Appendix C. TMP C4 was removed by theft between August 2019 and October 2019 monitoring events. Several RTDs in TMP B6 no longer transmit data to the Omega® digital thermometer. The subsurface temperature data for the Reporting Period are summarized below:

- The average subsurface temperature reduced by 28.3°C over the Reporting Period. In the most recent subsurface temperature monitoring event (October 2019), 382 days after ERH energy application had ceased, the average subsurface temperature was 50.8°C.
- In the most recent subsurface temperature monitoring event (October 2019), subsurface temperatures ranged from 33.3°C at 85 feet bgs to 67.7°C at 50 feet bgs.

4.4 PERFORMANCE GROUNDWATER MONITORING RESULTS

This section provides a narrative summary of the results of the performance groundwater monitoring conducted during the reporting period. Comprehensive groundwater elevation data and groundwater quality parameters are summarized on Table 3; however, their comparability is limited due to variable influence from elevated subsurface temperatures from ERH operations.

Groundwater analytical results for the most recent performance groundwater monitoring event (November 2019) are illustrated on Figure 4. All groundwater analytical results for the Reporting

Period are presented in Table 4 and illustrated in Figures F1 and F2, provided as Appendix F. Aspect's groundwater analytical results for SA-1 wells are presented in Table 5. Pacific Crest's groundwater analytical results for the Reporting Period are summarized as follows:

- Laboratory analysis detected PCE at concentrations ranging from 0.33 micrograms per liter (µg/L) to 68 µg/L.
- Laboratory analysis detected TCE at concentrations ranging from 0.26 µg/L to 27 µg/L.
- Laboratory analysis detected c-DCE at concentrations ranging from 0.25 µg/L to 13 µg/L.
- Laboratory analysis detected t-DCE at concentrations ranging from 0.20 µg/L to 1.4 µg/L.
- Laboratory analysis detected VC at concentrations ranging from 0.31 µg/L to 0.57 µg/L.
- No other analytes were detected above laboratory practical quantitation limits.
- Laboratory analysis did not detect Dhc above the quantitation limit.

4.5 SCC BUILDING CRACK MONITORING RESULTS

On October 25, 2019, PET conducted a follow-up visit to observe the post-ERH condition of the SCC Building, document the condition of the crack monitors, and perform a follow-up level survey of the interior slab. No new cracks in the SCC Building and no changes to existing cracks at crack monitoring locations were observed. Minimal subsidence of the interior slab was observed in the south and southwest portion of the SCC Building. A copy of PET's report documenting SCC Building conditions is provided as Appendix D.

5.0 DATA EVALUATION AND PROGRESS SUMMARY

This section presents a summary of data evaluation and recommendations for the continued progress of the corrective action based on the findings of the data evaluation.

5.1 DATA EVALUATION

- Post-ERH operation groundwater sampling indicates that concentrations of PCE in groundwater have been reduced by ERH to below the SA-1 Remediation Level (128.6 µg/L) in all monitoring wells. Concentrations of PCE continue to exceed the Site-specific CUL (5 µg/L) in the most recent groundwater monitoring event (November 2019) in wells MW-27S, MW-27I, MW-31S, MW-31I, MW-33S, and SCC-1. Concentrations of PCE were reduced from baseline results (August 2017) in Treatment Zone Shallow and Intermediate Wells by an average of 97% (Appendix G).
- Post-ERH operation groundwater sampling results for the most recent groundwater monitoring event (November 2019) indicates concentrations of TCE exceed the SA-1 Remediation Level (13.8 µg/L) in wells MW-34I and SCC-3 and exceed only the Site-specific CUL (4 µg/L) in wells MW-33S and MW-33I. Concentrations of TCE, c-DCE, and t-DCE have increased from baseline results (August 2017) in all Treatment Zone Shallow and Intermediate Wells where it was detected.
- Subsurface temperatures in the Treatment Zone continue to reduce since ERH energy application ceased in October 2018. While the average subsurface temperature (50.8°C) is within the optimal temperature range for anaerobic bioremediation (30°C to 55°C), many depths remain outside this range. Molecular testing results were not indicative of existing populations of dehalococcoides in groundwater, likely due to the elevated groundwater temperatures. However, lower dissolved oxygen levels (Table 3) in recent groundwater monitoring events may be indicative of developing anaerobic conditions conducive to bioremediation.
- The SCC Building elevation data collected by PET indicated that subsidence along the south and southwest portion of the SCC Building predates the operation of the ERH system.

5.2 PROGRESS SUMMARY

Implementation of ERH for SA-1 has successfully reduced concentrations of PCE in groundwater to below the SA-1 Remediation Level. Treatment Zone subsurface temperatures remain elevated above optimal temperatures for application of electron receptor substrates to enhance anaerobic bioremediation. Pacific Crest will continue monitoring subsurface temperatures in the Treatment Zone and quarterly groundwater monitoring will continue in 2020.

5.3 FUTURE REDEVELOPMENT ACTIVITIES

Recent publicly available documents prepared by GSC indicates that GSC intends to acquire the Former Penthouse Drapery Property, demolish the SCC Building, and excavate the majority of

the Former Penthouse Drapery Property and the Former Belshaw Property to facilitate redevelopment. A copy of GSC's recent submittal to the City of Seattle is provided as Appendix H.

6.0 REFERENCES

Pacific Crest & URS (Pacific Crest Environmental, LLC and URS Corporation). 2014. *Draft for Ecology Review Remedial Investigation-Feasibility Study Report – Former Penthouse Drapery and Belshaw Site – 1752 Rainier Avenue South and 1750 22nd Avenue South, Seattle, Washington*. July 25.

Pacific Crest & AECOM (Pacific Crest Environmental, LLC and AECOM). 2015. *Draft for Ecology Review Cleanup Action Plan – Site Area 1 – Former Penthouse Drapery and Belshaw Site – 1752 Rainier Avenue South, Seattle, Washington*. July 7.

Pacific Crest (Pacific Crest Environmental, LLC). 2017. *Draft for Ecology Review Engineering Design Report – Site Area 1 – Former Penthouse Drapery and Belshaw Site – 1752 Rainier Avenue South, Seattle, Washington*. May 24.

_____. 2018a. *Cleanup Action Progress Report – Former Penthouse Drapery and Belshaw Site – 1752 Rainier Avenue South, Seattle, Washington.* August 10.

_____. 2018b. *Cleanup Action Progress Report – Former Penthouse Drapery and Belshaw Site – 1752 Rainier Avenue South, Seattle, Washington.* December 11.

Aspect (Aspect Consulting, LLC). 2019. *Grand Street Commons Site – Remedial Investigation Data Summary.* September 16.

7.0 LIMITATIONS

The conclusions and recommendations contained in this report/assessment are based on professional opinions with regard to the subject matter. These opinions have been arrived at in accordance with currently accepted hydrogeologic and engineering standards and practices applicable to this location and are subject to the following inherent limitations:

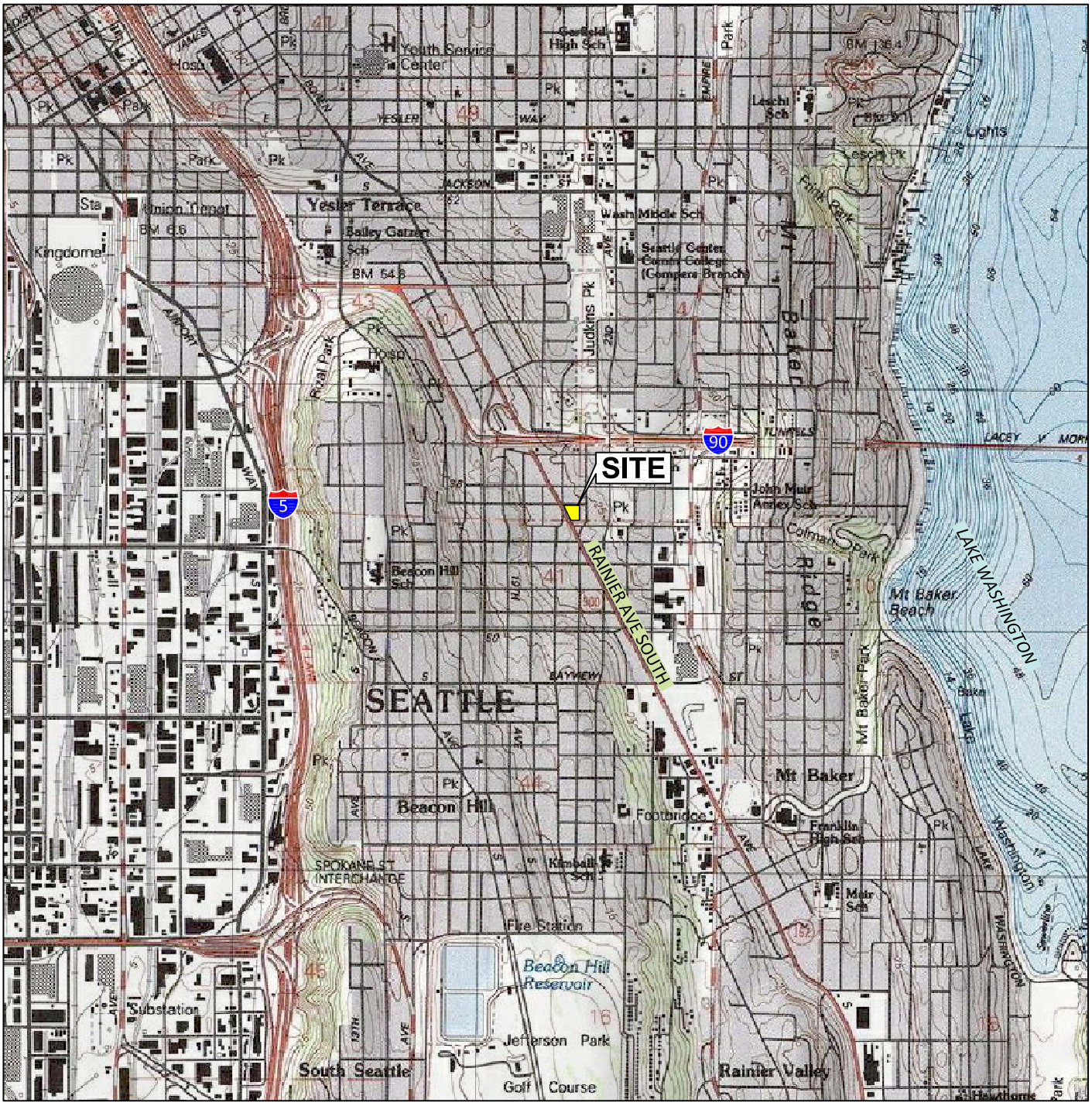
Accuracy of Information. Certain information used by Pacific Crest in this report has been obtained, reviewed, and evaluated from various sources believed to be reliable. Although the conclusions, opinions, and recommendations are based in part on such information, Pacific Crest services did not include the verification of its accuracy or authenticity. Should such information prove to be inaccurate or unreliable, Pacific Crest reserves the right to amend or revise its conclusions, opinions, and/or recommendations.

FIGURES

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

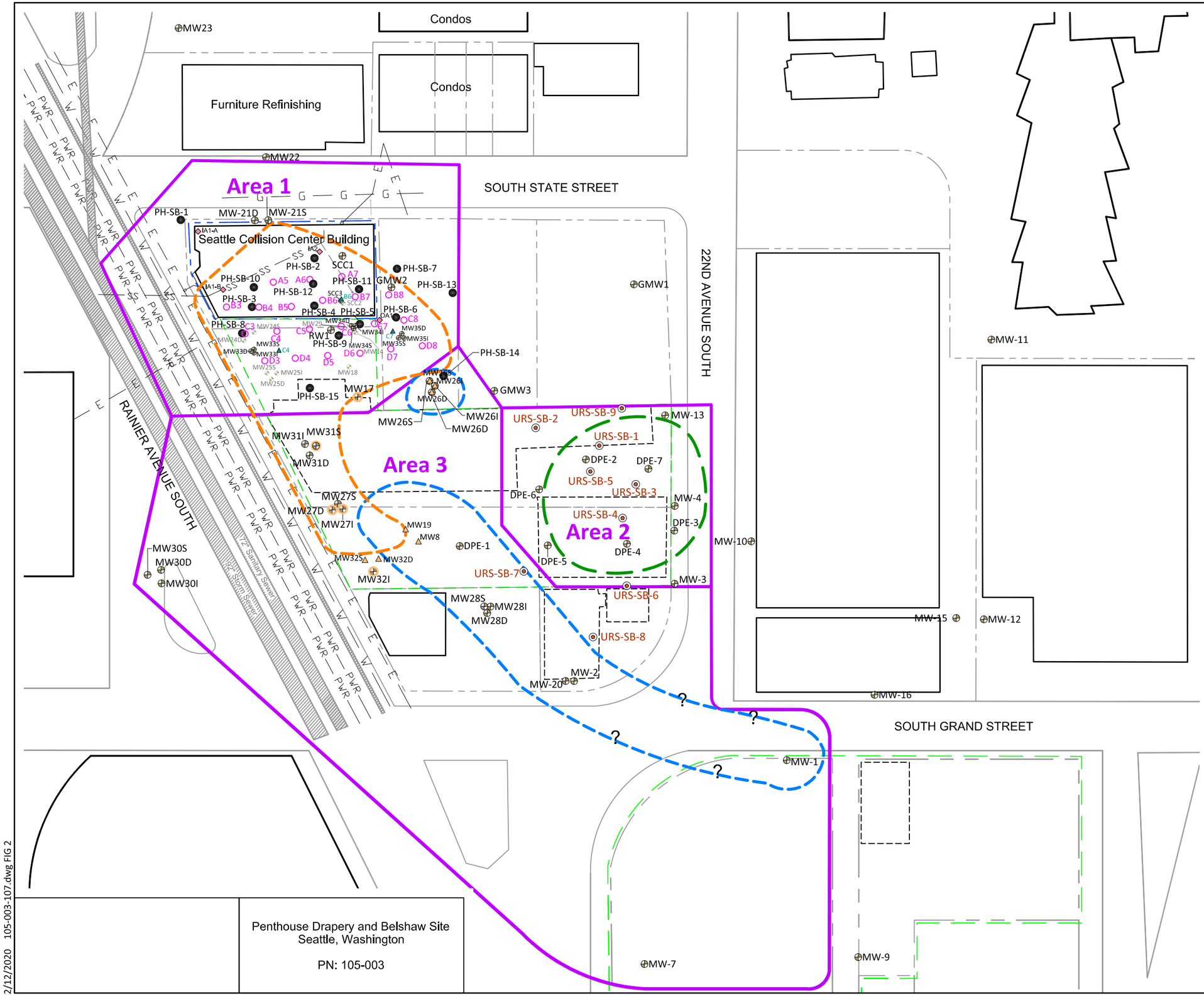
Pacific Crest No: 105-003



Source: TOPO! 2007

PACIFIC CREST ENVIRONMENTAL WWW.PCENV.COM 425-888-4990	Penthouse Drapery and Belshaw Site Seattle, Washington PN: 105-003	**Figure 1** Site Location Map

8/10/2018 105-003-012.dwg FIG 1



Legend

- Existing Monitoring Well
- Abandoned Monitoring Well
- Soil Boring
- Soil Boring (URS, 2012)
- Electrode
- Temperature Monitoring Point
- Air Sample
- Damaged Monument
- Destroyed Wells
- PCE & related CVOCs
- Hydrocarbon
- 1,4-Dioxane & low level CVOCs
- Site Area Boundary
- Belshaw Property
- Penthouse/SCC Property
- Parcel Boundary
- Building
- Former Building Area

PCE Tetrachloroethene

CVOCs Chlorinated Volatile Organic Compounds

- Sanitary Sewer
- Power
- Water
- Gas
- Overhead Bus Power Line
- Abandoned Gas
- Abandoned Drain Line

N

0 50

Approximate Scale in Feet

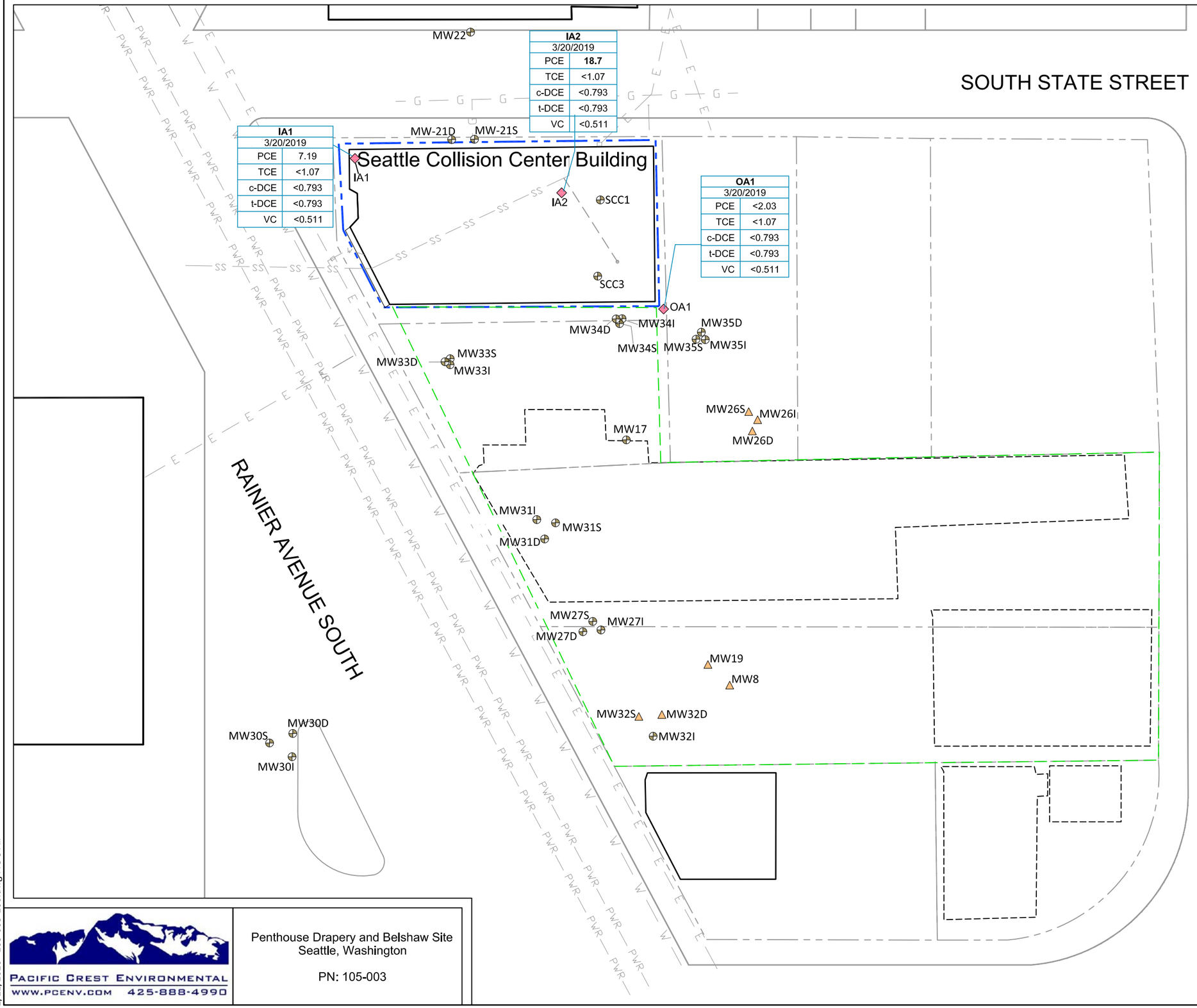
Penthouse Drapery and Belshaw Site
Seattle, Washington

PN: 105-003

Figure 2

Site Plan

2/12/2020 105-003-107.dwg FIG 2



Legend

- Existing Monitoring Well
- Unable to locate
- Air Sample
- Belshaw Property
- Penthouse/SCC Property
- Parcel Boundary
- Building
- Former Building Area

Location ID	
DATE	
Analyte	µg/m³

FS Commercial Screening Level (µg/m³)	
PCE	50.5
TCE	2
c-DCE	--
t-DCE	--
VC	3

PCE tetrachloroethene
TCE trichloroethene
c-DCE cis-1,2-Dichloroethene
t-DCE trans-1,2-Dichloroethene
VC vinyl chloride
µg/m³ micrograms per cubic meter
MTCA Model Toxics Control Act
BOLD exceeds cleanup level
FS Feasibility Study

Sanitary Sewer
Power
Water
Gas
Overhead Bus Power Line
Abandoned Gas
Abandoned Drain Line

N

0 30
Approximate Scale in Feet

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

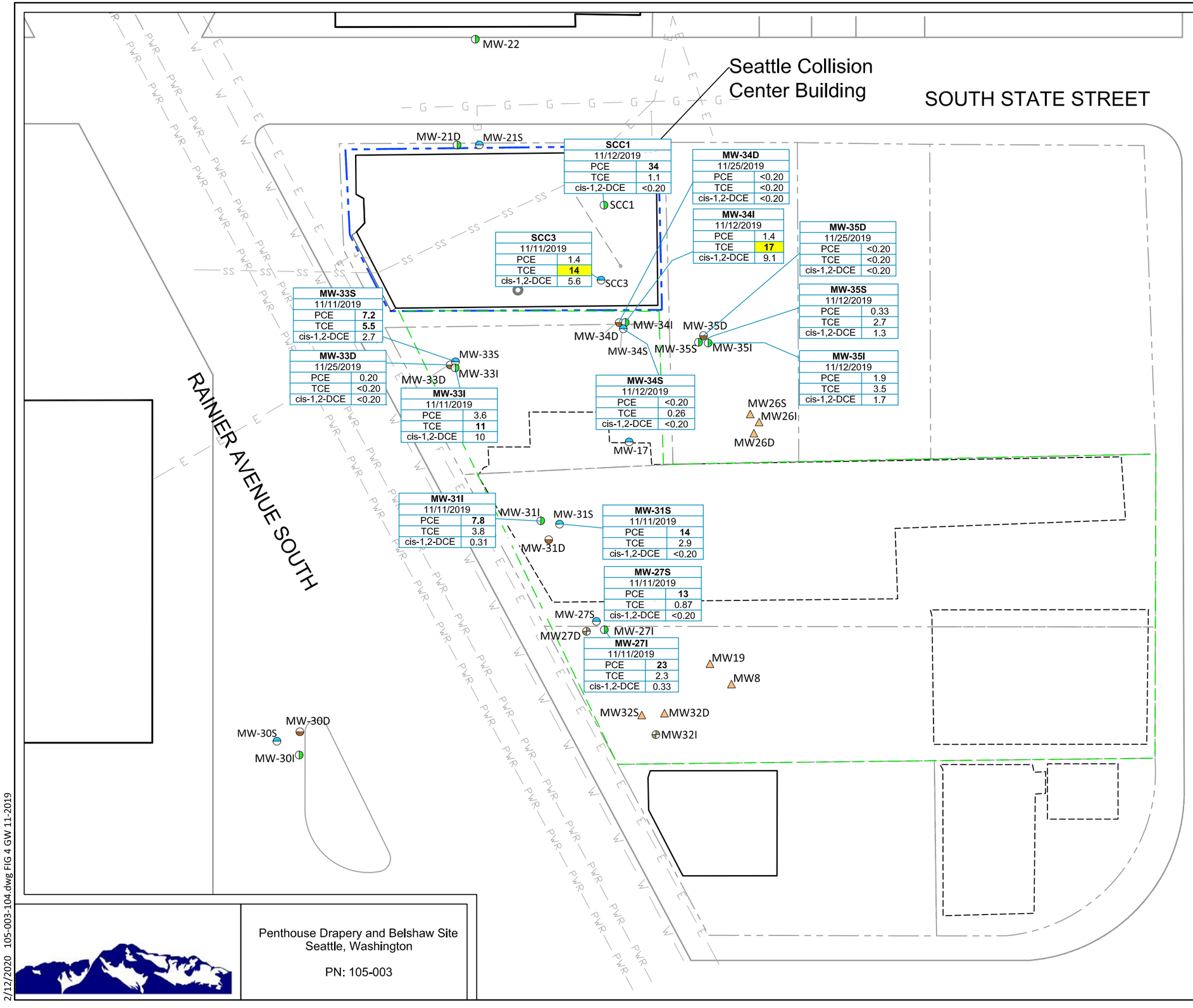
Penthouse Drapery and Belshaw Site
Seattle, Washington

PN: 105-003

Figure 3

Site Plan with Air Analytical Results

2/12/2020 105-003-106.dwg FIG 3 Air



Legend

		Screened Interval
MW-21S	Shallow Well	14.5-29.5 ft bgs
MW-27I	Intermediate Well	25-50 ft bgs
MW-30D	Deep Well	65-100 ft bgs
	Damaged monuments	
	Destroyed wells	

WELL ID	
DATE	
Analyte	(µg/L)

	Site-Specific CULs (µg/L)	Site-Specific Remediation Levels (µg/L)
PCE	5	128.6
TCE	4	13.8
cis-1,2-DCE	16	1,538

PCE tetrachloroethene
TCE trichloroethene
cis-1,2-DCE cis -1,2-Dichloroethene
µg/L micrograms per liter
BOLD concentration exceeds Site-specific CUL
BOLD concentration exceeds Site-specific remediation level
CUL cleanup level
ft bgs feet below ground surface

Belshaw Property
Penthouse/SCC Property
Parcel Boundary
Building
Former Building Area

SS Sanitary Sewer
E Power
W Water
G Gas
PWR Overhead Bus Power Line
G Abandoned Gas
Abandoned Drain Line

0 30
Approximate Scale in Feet

N

Penthouse Drapery and Belshaw Site
Seattle, Washington

PN: 105-003

Figure 4

Groundwater Analytical Results
(November 2019)

2/12/2020 105-003-104.dwg FIG 4 GW 11-2019

TABLES

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

Pacific Crest No: 105-003

Table 1
ERH and Subsurface Temperature Data Summary
Former Penthouse Drapery & Belshaw Site
Seattle, Washington
Pacific Crest No. 105-003

Date	Electricity Use (kWh)	Energy Application (Percent Complete)	Cumulative Condensate Production (gal)	Daily Average Condensate Production (gal)	Average Subsurface Temperature (°C)	Notes
3/29/2018	0	0%	0	0.00	14	ERH Operations Startup
4/5/2018	81,603	5%	181	25.86	19.7	
4/12/2018	159,920	9%	617	62.29	28.5	
4/19/2018	244,684	14%	2,799	311.71	38.9	
4/26/2018	309,061	18%	4,984	312.14	47.7	
5/3/2018	397,360	23%	9,565	654.43	57.4	
5/10/2018	486,944	28%	15,746	883.00	67.2	
5/17/2018	573,050	33%	22,890	1,020.57	75.3	
5/24/2018	657,754	38%	30,961	1,153.00	82.8	
5/31/2018	742,430	42%	38,489	1,075.43	91	
6/7/2018	826,667	47%	49,552	1,580.43	96.5	
6/14/2018	892,292	51%	56,924	1,053.14	99.5	GW Sampling - 6/11/2018 & 6/12/2018
6/21/2018	971,207	55%	66,056	1,304.57	102.4	Soil Sampling - 7/14/2018 through 7/17/2018
6/28/2018	1,049,363	60%	76,437	1,483.00	103.9	
7/5/2018	1,129,461	65%	87,652	1,602.14	104.8	
7/12/2018	1,205,474	69%	96,581	1,275.57	105.4	
7/19/2018	1,223,633	70%	99,648	438.14	103.3	GW Sampling - 7/11/2018 through 7/13/2018
7/26/2018	1,291,699	74%	107,215	1,081.00	105.3	Deep Zone electrodes deactivated - 7/23/18
8/2/2018	1,341,462	77%	117,130	1,416.43	104.3	
8/9/2018	1,383,083	79%	125,812	1,240.29	103	GW Sampling - 8/8/2018
8/16/2018	1,448,333	83%	133,742	1,132.86	103	
8/23/2018	1,471,888	84%	140,603	980.14	101.9	GW Sampling - 8/22/2018 through 8/24/2018
8/30/2018	1,505,493	86%	146,843	891.43	100.4	Soil Sampling - 8/25/2018
9/6/2018	1,545,298	88%	153,382	934.14	100.1	
9/13/2018	1,597,648	91%	162,537	1,307.86	100.2	
9/20/2018	1,644,701	94%	171,152	1,230.71	99.8	GW Sampling - 9/26/2018
9/27/2018	1,678,391	96%	178,044	984.57	98.5	Soil Sampling - 9/27/2018
10/4/2018	1,725,486	99%	185,265	1,031.57	99.1	
10/8/2018	1,750,245	100%	188,205	735.00	97.3	ERH Operations Shutdown
10/12/2018	1,750,245	--	191,145	735.00	97.3	Post-ERH Monitoring
10/18/2018	1,750,245	--	192,184	173.17	94.9	Post-ERH Monitoring
10/25/2018	1,750,245	--	192,445	37.29	93.5	Post-ERH Monitoring
11/1/2018	1,750,245	--	192,653	29.71	92	Post-ERH Monitoring
11/8/2018	1,750,245	--	192,837	26.29	90.6	GW Sampling - 11/8/2018
11/15/2018	1,750,245	--	193,001	23.43	89.2	Post-ERH Monitoring
11/22/2018	1,750,245	--	193,001	0	88	Post ERH Monitoring - estimated temp
11/29/2018	1,750,245	--	193,001	0	86.5	Post ERH Monitoring - estimated temp
1/10/2019	1,750,245	--	193,001	0	79.1	Temp measured by Pacific Crest
3/15/2019	1,750,245	--	193,001	0	69.7	Temp measured by Pacific Crest
6/25/2019	1,750,245	--	193,001	0	59.2	Temp measured by Pacific Crest
8/9/2019	1,750,245	--	193,001	0	55.1	Temp measured by Pacific Crest
10/25/2019	1,750,245	--	193,001	0	50.8	Temp measured by Pacific Crest

Notes:

ERH = electric resistive heating

kWH = kiloWatt-hours

gal = gallons

°C = degrees celsius

GW = groundwater

Table 2
Analytical Results Summary - Air
Former Penthouse Drapery and Belshaw Site
Seattle, Washington
Pacific Crest PN: 105-003

Sample	Sample ID	Location	Sampled By	Sample Date	Summary of Analytical Results in Air - CVOCs (micrograms per cubic meter) [1]				
					Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride
IA-1	IA1-032119	In SCCB lobby	Pacific Crest	3/20/2019	7.19	*<1.07*	<0.793	<0.793	*<0.511*
IA-2	IA2-032119	In SCCB garage, in front of bathrooms	Pacific Crest	3/20/2019	18.7	*<1.07*	<0.792	<0.793	*<0.511*
Ambient	OA1-032119	Outside of SCCB, at southeast corner	Pacific Crest	3/20/2019	<2.03	*<1.07*	<0.793	<0.793	*<0.511*
Method B Cleanup Level - Indoor Air				**Carcinogenic**	**9.6**	**0.37**	**16**	**NA**	**0.28**
				Non-carcinogenic	**18.3**	**0.9**	**NA**	**27.4**	**55.2**
FS - Commercial Screening Level - Indoor Air				**Carcinogenic**	**50.5**	**2**	**--**	**--**	**3**
Method C Cleanup Level - Indoor Air				**Carcinogenic**	**337**	**21.9**	**160**	**NA**	**9.9**
				Non-carcinogenic	**280**	**7**	**NA**	**NA**	**423**

NOTES:

BOLD: indicates detected concentration exceeds FS CUL

< detected result is less than laboratory practical quantitation limit listed or analyte not detected at or above the reporting limit.

CVOCs = chlorinated volatile organic compounds

SCCBT = Seattle Collision Center Building

MTCA = Model Toxics Control Act Cleanup Regulation (WAC 173-340)

Pacific Crest = Pacific Crest Environmental, LLC

[1]Analyzed by US EPA Method TO-15SIM

Table 3
Groundwater Elevation and Groundwater Quality Parameters Summary
Former Penthouse Drapery and Belshaw Site
Seattle, Washington
Pacific Crest No: 105-003

Location ID	Site Area	Sampled By	Date Gauged	Sample Date	CMT Well Port	Top of Casing Elevation[1]	Screen Interval[2]	Depth to Groundwater[2]	Potentiometric Surface (feet)	Pump Intake Depth[2]	Groundwater Quality Parameters					
											Temperature (°C)	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)	Comments
MW-14		Abandoned/Decommissioned 2016														
MW-17		Pacific Crest	11/11/2019	NS	NA	69.71	20-30	15.92	53.79	NM	NA	NA	NA	NA	NA	
MW-18		Abandoned/Decommissioned 2016														
MW-21S		Pacific Crest	11/11/2019	NS	NA	71.26	14.5-29.5	16.88	54.38	NM	NA	NA	NA	NA	NA	
MW-21D		Pacific Crest	11/11/2019	NS	NA	71.12	35-40	16.88	54.24	NM	NA	NA	NA	NA	NA	
MW-22		Pacific Crest	11/11/2019	NS	NA	71.33	25-35	13.81	57.52	NM	NA	NA	NA	NA	NA	
MW-24S		Abandoned/Decommissioned 2016														
MW-24D		Abandoned/Decommissioned 2016														
MW-25S		Abandoned/Decommissioned 2016														
MW-25I		Abandoned/Decommissioned 2016														
MW-25D		Abandoned/Decommissioned 2016														
MW-27S		Pacific Crest	11/11/2019	11/11/2019	NA	69.40	15.5-20.5	14.33	55.07	NM	14.94	0.360	4.54	6.00	160.3	
MW-27I		Pacific Crest	11/11/2019	11/11/2019	NA	69.46	31-36	14.74	54.72	NM	14.24	0.319	5.70	5.95	170.1	
MW-29		Abandoned/Decommissioned 2016														
MW-30S		Pacific Crest	11/11/2019	NS	NA	69.73	19-24	15.61	54.12	NM	NA	NA	NA	NA	NA	
MW-30I		Pacific Crest	11/11/2019	NS	NA	69.68	40-45	15.78	53.9	NM	NA	NA	NA	NA	NA	
MW-30D		Pacific Crest	11/11/2019	NS	NA	69.54	65-70	17.00	52.54	NM	NA	NA	NA	NA	NA	
MW-31S		Pacific Crest	3/20/2019	3/20/2019	NA	70.01	15-20	12.66	57.35	NM	15.51	0.589	7.62	5.55	203.8	
		Pacific Crest	11/11/2019	11/11/2019				15.56	54.45	NM	18.51	0.531	4.38	6.06	169.5	
MW-31I		Pacific Crest	3/20/2019	3/20/2019	NA	69.98	35-40	13.23	56.75	NM	16.92	0.435	2.75	6.27	181.0	
		Pacific Crest	11/11/2019	11/11/2019				15.89	54.09	NM	18.37	0.403	0.83	6.49	148.9	
MW-31D		Pacific Crest	11/11/2019	11/25/2019	NA	69.97	66-71	17.72	52.25	NM	13.00	0.431	2.44	8.64	-74.1	
MW-33S	A1	Pacific Crest	NM	3/20/2019	NA	69.90	15-20	NM	NM	NM	50.45	0.825	*2.96*	7.12	-57.1	
	A1	Pacific Crest	11/11/2019	11/11/2019				15.92	53.98	NM	43.81	0.794	0.17	6.71	-72.7	
MW-33I	A1	Pacific Crest	NM	3/20/2019	NA	69.99	40-45	NM	NM	NM	27.96	0.760	*2.03*	6.60	-33.4	
	A1	Pacific Crest	11/11/2019	11/11/2019[3]				15.94	54.05	NM	46.53	0.747	*0.15*	6.90	-161.6	
MW-33D	A1	Pacific Crest	11/11/2019	11/25/2019	NA	69.80	95-100	16.84	52.96	NM	29.3	0.159	0.54	9.99	-316.1	
MW-34S	A1	Pacific Crest	NM	3/20/2019	NA	71.33	15-20	NM	NM	NM	22.77	0.737	*1.56*	6.65	-27.9	
	A1	Pacific Crest	11/11/2019	11/12/2019[3]				17.04	54.29	NM	46.32	0.809	0.31	7.24	-119.2	
MW-34I	A1	Pacific Crest	NM	3/20/2019	NA	70.77	34-39	NM	NM	NM	15.31	0.644	*3.53*	6.60	14.4	
	A1	Pacific Crest	11/11/2019	11/12/2019[3]				17.08	53.69	NM	46.56	0.775	1.20	7.00	-149.1	
MW-34D	A1	Pacific Crest	11/11/2019	11/25/2019	NA	71.18	95-100	17.82	53.36	NM	37.3	0.534	0.59	11.16	-331.6	
MW-35S	A1	Pacific Crest	11/11/2019	11/12/2019[3]	NA	73.31	30-35	19.91	53.4	NM	46.06	0.872	0.21	7.03	-161.2	
MW-35I	A1	Pacific Crest	11/11/2019	11/12/2019[3]	NA	73.50	45-50	20.16	53.34	NM	46.31	0.846	0.37	6.99	-162.9	
MW-35D	A1	Pacific Crest	11/11/2019	11/25/2019	NA	73.52	85-95	20.36	53.16	NM	34.2	0.173	0.53	8.89	-279.9	
SCC-1	A1	Pacific Crest	3/20/2019	3/20/2019	NA	70.50	27.5-37.5	15.08	55.42	NM	46.91	0.482	0.21	6.42	48.0	
	A1	Pacific Crest	NM	11/12/2019				NM	NM	NM	39.42	0.450	0.44	6.44	63.8	
SCC-2		Abandoned/Decommissioned 2016														
SSC-3	A1	Pacific Crest	NM	3/20/2019	NA	70.24	24.5-29.5	NM	NM	NM	11.56	0.671	*9.76*	6.64	-3.2	
	A1	Pacific Crest	NM	11/12/2019[3]				NM	NM	NM	46.46	0.866	0.63	7.31	-168.0	

NOTES:
[1]Elevation of top of casing (NAVD88)
[2]Depth below top of well casing
[3]Groundwater quality measurements halted prematurely due to high groundwater temperatures affecting instrumentation
C = celsius
mS/cm = millisiemens per centimeter
mg/L = milligrams per liter
mV = millivolts
NA = not applicable
NM = not measured
-- = not reported
Pacific Crest = Pacific Crest Environmental, LLC

Table 4
Analytical Results Summary - Groundwater
Former Penthouse Drapery and Belshaw Site
Seattle, Washington
Pacific Crest No: 105-003

Location ID	Screen Interval[2]	Area	Sampled By	Sample Date	Groundwater Analytical Results (micrograms per liter) CVOCs and 1,4-Dioxane[1] Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	1,1-Dichloroethane	1,4-Dioxane
MW-27S	15.5-20.5	A3	Pacific Crest	11/11/2019	**13**	0.87	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
MW-27I	31-36	A3	Pacific Crest	11/11/2019	**23**	2.3	0.33	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
MW-31S	15-20	A3	Pacific Crest	3/20/2019	**13**	1.4	<0.20	<0.20	<0.20	NA	NA	NA	NA	NA
			Pacific Crest	11/11/2019	**14**	2.9	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
MW-31I	35-40	A3	Pacific Crest	3/20/2019	**10**	**4.5**	0.25	<0.20	<0.20	NA	NA	NA	NA	NA
			Pacific Crest	11/11/2019	**7.8**	3.8	0.31	<0.20	<0.20	0.73	<0.20	<0.20	<0.20	NA
MW-31D	65-70	A3	Pacific Crest	11/25/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
MW-33S	15-20	A1	Pacific Crest	3/20/2019	**25**	**14**	1.9	0.20	<0.20	NA	NA	NA	NA	NA
			Pacific Crest	11/11/2019	**7.2**	**5.5**	2.7	<0.20	<0.20	<0.20	<0.20	0.39	<0.20	NA
MW-33I	40-45	A1	Pacific Crest	3/20/2019	**15**	**23**	13	0.66	<0.20	NA	NA	NA	NA	NA
			Pacific Crest	11/11/2019	3.6	**11**	10	0.46	**0.31**	<0.20	<0.20	1.2	<0.20	NA
MW-33D	95-100	A1	Pacific Crest	11/25/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
MW-34S	15-20	A1	Pacific Crest	3/20/2019	0.71	0.46	<0.2	<0.20	<0.20	NA	NA	NA	NA	NA
			Pacific Crest	11/12/2019	<0.20	0.26	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
MW-34I	34-39	A1	Pacific Crest	3/20/2019	**19**	**27**	11	0.98	<0.20	NA	NA	NA	NA	NA
			Pacific Crest	11/12/2019	1.4	**17**	9.1	1.4	**0.33**	<0.20	<0.20	2.1	<0.20	NA
MW-34D	95-100	A1	Pacific Crest	11/25/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
MW-35S	30-35	A1	Pacific Crest	11/12/2019	0.33	2.7	1.3	<0.20	<0.20	<0.20	<0.20	0.49	<0.20	NA
MW-35I	45-50	A1	Pacific Crest	11/12/2019	1.9	3.5	1.7	0.23	<0.20	<0.20	<0.20	0.48	<0.20	NA
MW-35D	85-95	A1	Pacific Crest	11/25/2019	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
SCC-1	27.5-37.5	A1	Pacific Crest	3/20/2019	**68**	2.1	<0.20	<0.20	<0.20	NA	NA	NA	NA	NA
			Pacific Crest	6/18/2019	**54**	1.6	<0.20	<0.20	<0.20	<0.4	<0.4	<0.4	<0.4	NA
			Pacific Crest	11/12/2019	**34**	1.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NA
SCC-3	23-28	A1	Pacific Crest	3/20/2019	**14**	**14**	3.1	0.53	<0.20	NA	NA	NA	NA	NA
			Pacific Crest	6/18/2019	**5.4**	**12**	3.7	0.45	**0.39**	<0.2	<0.2	1.4	<0.2	NA
			Pacific Crest	11/12/2019	1.4	**14**	5.6	0.78	**0.57**	<0.20	<0.20	2.7	<0.20	NA
Remediation Level					**128.6**	**13.8**	**1,538**	**--**	**3.70**	**--**	**--**	--	--	--
Site-specific Cleanup Level					**5**	**4**	**16**	**--**	**--**	**200**	--	**--**	--	**0.438**

NOTES:
[1]Analyzed by SW-846 Method 8260B.
[2]Feet below ground surface
NA = not analyzed
< = concentration not detected at or above the laboratory detection limit
Bold = concentration exceeds the Site-specific cleanup level
Bold = concentration exceeds the Remediation Level
Italics = laboratory detection limit exceeds the Site-specific cleanup level
-- = No applicable/not available
CVOCs = Chlorinated Volatile Organic Compounds
Pacific Crest = Pacific Crest Environmental, LLC

Table 5
Analytical Results Summary - Groundwater (Aspect Consulting)
Former Penthouse Drapery and Belshaw Site
Seattle, Washington
Pacific Crest No: 105-003

				Groundwater Analytical Results (micrograms per liter)					
				Chlorinated Volatile Organic Compounds					
Location ID	Sample ID	Sampled By	Sample Date	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane
AC-MW-1	AC-MW-1-052219	Aspect	5/22/2019	<1	<1	<1	<1	<0.2	<1
AC-MW-3	AC-MW-3-052019	Aspect	5/20/2019	<1	<1	<1	<1	<0.2	<1
AC-MW-20	AC-MW-20-052019	Aspect	5/20/2019	<1	<1	<1	<1	<0.2	<1
AC-MW-22	AC-MW-22-052219	Aspect	5/22/2019	**12**	4.0	<1	<1	<0.2	<1
AC-MW-23	AC-MW-23-052219	Aspect	5/22/2019	<1	<1	<1	<1	<0.2	<1
AC-MW-27	AC-MW-27-052019	Aspect	5/20/2019	**8.0**	<1	<1	<1	<0.2	<1
AC-MW-28	AC-MW-28-052019	Aspect	5/20/2019	1.4	<1	<1	<1	<0.2	<1
MW-21S	URS-MW-21S-052219	Aspect	5/22/2019	2.1	<1	<1	<1	<0.2	<1
MW-21D	URS-MW-21D-052219	Aspect	5/22/2019	<1	<1	<1	<1	<0.2	<1
MW-22	URS-MW-22-052219	Aspect	5/22/2019	<1	<1	<1	<1	<0.2	<1
MW-27S	URS-MW-27S-052019	Aspect	5/20/2019	**11**	<1	<1	<1	<0.2	<1
MW-27I	URS-MW-27I-052019	Aspect	5/20/2019	**25**	2.1	<1	<1	<0.2	<1
MW-28S	URS-MW-28S-052019	Aspect	5/20/2019	<1	<1	<1	<1	<0.2	<1
MW-28I	URS-MW-28I-052019	Aspect	5/20/2019	<1	<1	<1	<1	<0.2	<1
MW-28D	URS-MW-28D-052019	Aspect	5/20/2019	<1	<1	<1	<1	<0.2	<1
MW-30S	PC-MW-30S-052219	Aspect	5/22/2019	<1	<1	<1	<1	<0.2	<1
MW-30I	PC-MW-30I-052219	Aspect	5/22/2019	<1	<1	<1	<1	<0.2	<1
MW-30D	PC-MW-30D-052219	Aspect	5/22/2019	<1	<1	<1	<1	<0.2	<1
MW31S	MW31S-032019	Aspect	3/20/2019	**13**	1.4	<0.20	<0.20	<0.20	NA
	PC-MW-31S-062019	Aspect	6/20/2019	**13**	1.7	<1	<1	<0.2	<1
MW31I	MW31I-032019	Aspect	3/20/2019	**10**	**4.5**	0.25	<0.20	<0.20	NA
	PC-MW-31I-062019	Aspect	6/20/2019	**10**	3.9	<1	<1	<0.2	<1
MW31D	PC-MW-31D-062019	Aspect	6/20/2019	<1	<1	<1	<1	<0.2	<1
MW33S	MW33S-032019	Aspect	3/20/2019	**25**	**14**	1.9	0.2	<0.20	NA
	PC-MW-33S-062019	Aspect	6/20/2019	1.3	**12**	4.1	<1	<0.2	<1
MW33I	MW33I-032019	Aspect	3/20/2019	**15**	**23**	13	0.66	<0.20	NA
	PC-MW-33I-062019	Aspect	6/20/2019	3.7	**9.5**	9	<1	<0.2	<1
MW33D	PC-MW-33D-062019	Aspect	6/20/2019	<1	<1	<1	<1	<0.2	<1
MW34S	MW34S-032019	Aspect	3/20/2019	0.71	0.46	<0.20	<0.20	<0.20	NA
	PC-MW-34S-062119	Aspect	6/21/2019	<1	<1	<1	<1	<0.2	<1
MW34I	MW34I-032019	Aspect	3/20/2019	19	**27**	11	0.98	<0.20	NA
	PC-MW-34I-062119	Aspect	6/21/2019	**3.5**	**9.8**	13	<1	<0.2	<1
MW34D	PC-MW-34D-062119	Aspect	6/21/2019	<1	<1	<1	<1	<0.2	<1
MW35S	PC-MW-35S-062119	Aspect	6/21/2019	1.6	3.6	1.7	<1	<0.2	<1
MW35I	PC-MW-35I-062119	Aspect	6/21/2019	**7.9**	**6.8**	1.8	<1	<0.2	<1
MW35D	PC-MW-35D-061019	Aspect	6/21/2019	<1	<1	<1	<1	<1	<1
			Remediation Level	**128.6**	**13.8**	**1,538**	**--**	**3.70**	--
			Site-specific Cleanup Level	**5**	**4**	**16**	**--**	**--**	**200**

NOTES:
< or U = concentration not detected at or above the laboratory detection limit
-- = Not analyzed
NA = not analyzed
< = concentration not detected at or above the laboratory detection limit
Bold = concentration exceeds the Site-specific cleanup level
Bold = concentration exceeds the Remediation Level
Italics = laboratory detection limit exceeds the Site-specific cleanup level
Aspect = Aspect Consulting, LLC

APPENDIX A
TRS FINAL REPORT

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

Pacific Crest No: 105-003

Final Report
Electrical Resistance Heating

Former Penthouse Drapery
Seattle, Washington

Issued: August 2019

TRS
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Abbreviations and Acronyms

A	amps
ATX	Auto-Transformer
Belshaw Property	Belshaw Brothers, Inc.
°C	degrees Celsius
cis-1,2-DCE	cis-1,2 dichloroethylene
cm/s	centimeters per second
COC	Contaminants of Concern
CPVC	chlorinated polyvinyl chloride
CVOC	chlorinated volatile organic compound
ERH	electrical resistance heating
EPA	Environmental Protection Agency
E-Stop	emergency stop
ft^2	square feet
ft bgs	feet below grade surface
GAC	granular activated carbon
gpm	gallons per minute
HASP	Health and Safety Plan
hp	horsepower
HSA	hollow stem auger
in Hg	inches of mercury
Kg	kilograms
kW	kilowatt
kWh	kilowatt hour
lb	pounds
LGAC	liquid-phase granular activated carbon
MSL	mean sea level
MTCA	Model Toxics Control Act
OSHA	Occupational Safety and Health Administration
Pacific Crest	Pacific Crest Environmental, LLC
PCE	perchloroethene or tetrachloroethene
PCU	power control unit
Penthouse Drapery	Penthouse Drapery Cleaners & Manufacturers, Inc.
PFD	Process Flow Diagram
PID	photoionization detector
PLC	process logic controller
ppm	parts per million

PSCAA	Puget Sound Clear Air Agency
PVC	polyvinyl chloride
RTD	resistance temperature detector
SA-1	Sub-Area 1
scfm	standard cubic feet per minute
SCC	Seattle Collision Center
SCL	Seattle City Lights
Seahurst	Seahurst Electric, Inc.
SOP	Standard Operating Procedure
TCE	trichloroethylene
TMP	temperature monitoring point
TOC	total organic content
trans-1,2-DCE	trans-1,2 dichloroethylene
TRS	TRS Group, Inc.
µg/kg	micrograms per kilogram
µg/l	micrograms per liter
V	volts
VC	vinyl chloride
VGAC	vapor-phase granular activated carbon
VOC	volatile organic compounds
VR	vapor recovery
yd^3	cubic yards

EXECUTIVE SUMMARY

This report presents the results of the electrical resistance heating (ERH) remediation performed at the former Penthouse Drapery at 1752 Rainier Avenue South, Seattle, Washington 98144 (Site), in collaboration with Pacific Crest Environmental, LLC (Pacific Crest) on behalf of Penthouse Drapery Cleaners & Manufacturers, Inc. (Penthouse Drapery). Seattle Collision Center (SCC) is an auto repair shop currently operating on the Site.

The primary goal of the remediation was to reduce average tetrachloroethene (PCE) concentrations in groundwater to less than 50 micrograms per liter (µg/l) and in soil to less than 50 micrograms per kilogram (µg/kg). Performance was based on soil sampling at five confirmation soil boring locations and groundwater sampling at six groundwater monitoring wells within the treatment volume.

Subsurface construction of the ERH system began on April 4, 2017. The ERH system incorporated 21 bored electrodes with co-located vapor recovery (VR) screens. Subsurface temperatures were measured at three temperature monitoring points (TMPs). Eight of the electrodes and one TMP were completed below grade inside the SCC building in order to minimize impact to SCC operations. Thirteen of the electrodes targeted a depth interval of 5 to 50 feet below ground surface (ft bgs), three targeted a depth of 15 to 85 ft bgs, and five electrodes targeted a depth of 5 to 85 ft bgs.

ERH system operations began on March 29, 2018, and ended on October 8, 2018. The system operated for 193 days and applied 1,750,245 kilowatt hours (kWh) of energy to the treatment volume. On average, subsurface temperatures increased at a rate of approximately 0.9 degrees Celsius (°C) per day as the average treatment volume temperature increased from ambient to a maximum average temperature of 105.5°C.

Recovered vapor samples were collected monthly by Pacific Crest during operations and submitted for laboratory analysis. Based on photoionization detector (PID) measurements and measured flow rates, it is estimated that approximately 15.3 pounds of volatile organic compounds (VOCs) were recovered from the treatment volume during ERH heating.

The first round of iterative confirmation soil and groundwater sampling was conducted between July 12, 2018, and July 17, 2018. Additional soil sampling was conducted on August 25, 2018, and September 27, 2018. Analytical data indicated that Site soils all met the PCE remedial goal of 50 µg/kg. Four additional groundwater sampling events were conducted prior to shutting down ERH operations. Analytical data from the final groundwater sampling event conducted during ERH operations concluded that all groundwater wells, with the exception of MW-33S, had met the remedial goals on November 8, 2018. An additional groundwater sampling event was conducted in March 2019, following completion of ERH operations. Analytical data concluded further reduction in groundwater concentrations across the entire Site. Concentrations in all groundwater wells within the ERH treatment volume met the remedial goal of 50 µg/l.

1.0 INTRODUCTION

This report provides a summary of the design, installation, operation, sampling, and decommissioning of the electrical resistance heating (ERH) treatment system at the Former Penthouse Drapery, located at 1752 Rainier Avenue South, Seattle, Washington (Site). TRS Group, Inc. (TRS) performed ERH remediation in collaboration with Pacific Crest Environmental, LLC (Pacific Crest), on behalf of Penthouse Drapery Cleaners & Manufacturers, Inc. (Penthouse Drapery).

The Site is located approximately 750 feet south of Interstate 90, east of the I-90 and I-5 interchange in Seattle. The former Penthouse Drapery was located on the southeast corner of Rainier Avenue South and South State Street in Seattle's Central District neighborhood. The ERH treatment area spans the former Penthouse Drapery parcel and adjacent vacant parcels to the east and south that are part of the former Belshaw Brothers, Inc. property (Belshaw Property).

Penthouse Drapery occupied this building and used dry-cleaning equipment at the Site between 1984 and 1990. There is one building on the property, currently occupied by the Seattle Collision Center, Inc. (SCC), an auto body repair shop.

ERH is an *in situ* thermal technology that uses the resistance of soil to generate heat in the subsurface and reduce volatile organic compound (VOC) concentrations in groundwater and soil. The subsurface can be heated to the boiling point of water. Groundwater and soil moisture are converted to steam and, as a result, VOCs are removed via steam stripping and distillation.

ERH uses commonly available electricity and delivers it to the subsurface through electrodes. ERH passes an electrical current through the soil, rock, and groundwater that requires treatment. The principal current path is the thin layer of water immediately adjacent to the soil or rock grains. Relatively little current is carried by the water in the soil pores. The electrical current warms the subsurface and then boils a portion of the moisture into steam. The subsurface electrical energy evaporates the target contaminants and provides steam as a carrier gas to sweep VOCs to the vapor recovery (VR) wells. After condensing the steam and cooling the extracted air to ambient conditions, TRS treats the VOC vapor using conventional methods, such as granular activated carbon (GAC) or thermal oxidizers.

2.0 SITE BACKGROUND

The following sections detail the Site history and conditions contributing to the ERH application design.

2.1 Site History

The former Penthouse Drapery building was constructed circa 1947 and covers an area of approximately 4,790 square feet (ft^2). Penthouse Drapery occupied this building and used dry-cleaning equipment at the Site between 1984 and 1990. The disposal of chlorinated solvents during dry-cleaning operations during this time period likely provided the source for the existing contamination.

In addition to dry cleaning, the building has been used for aircraft parts manufacturing, a pool and patio supply, restaurant equipment and supply, and is currently used as an auto body repair shop.

Prior environmental site assessment activities found tetrachloroethylene (PCE) and degradation products trichloroethylene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), and vinyl chloride (VC) in soil, groundwater, and/or soil vapor at concentrations that exceed Model Toxics Control Act (MTCA) clean-up levels for the Site.

This ERH remediation project was specifically implemented in sub-area 1 (SA-1) as defined in Pacific Crest's Draft Interim Measure Clean-Up Action Plan. There are other sub-areas on the former Belshaw Property that are impacted by 1,4-dioxane, 1,1,1-trichloroethane, and petroleum hydrocarbons that are not part of the Penthouse Drapery clean-up action.

The ERH treatment area and other Site features are delineated on **Sheet Y-1**.

3.0 SITE PARAMETERS

The Site is at an elevation of approximately 70 feet above mean sea level (MSL) near the centerline of the Rainier Valley. Subsurface deposits consist of interbedded clays, silts, and sands of glacial origin.

3.1 Groundwater

Groundwater is encountered in discontinuous perched zones that have been characterized as follows based on prior Site investigations:

- Shallow Zone 12-25 feet below ground surface (ft bgs)
- Intermediate Zone 30-40 ft bgs
- Intermediate Deep Zone 50-60 ft bgs
- Deep Zone 65-71 ft bgs

Groundwater is presumed to flow to the west-southwest based on topography but may be to the south-southeast in the Shallow and Intermediate Zones based on potentiometric data. The Shallow Zone is unconfined, but the deeper zones are all under confined or semi-confined conditions. Measured hydraulic conductivity has varied from 9.73×10^{-5} centimeters per second (cm/s) to 1.85×10^{-3} cm/s.

3.2 Contaminant Distribution

The primary contaminants of concern include PCE and the daughter products formed by reductive dechlorination. The typical anaerobic dechlorination pathway is shown below:

Tetrachloroethene → Trichloroethene → cis 1,2-dichloroethene → vinyl chloride → ethene

Historical concentrations of PCE and TCE in soil and groundwater are presented on **Sheets Y-1A** and **Y-1B**, respectively. The target ERH treatment area is located beneath the southern portion of the former Penthouse Drapery building as well as a portion of the lot

immediately south and east of the building. The total treatment area covered approximately 4,276 square feet (ft^2) as shown on **Sheet Y-1**. There are three different depth intervals requiring ERH remediation in the treatment area including:

1. From 5 to 50 ft bgs in the original area (2,735 ft^2)
2. From 5 to 85 ft bgs in the area of electrodes B6, B7, B8, C6 and C7 (1,033 ft^2)
3. From 15 to 85 ft bgs in the area of electrodes C8, D7 and D8 (508 ft^2)

Based on the depth intervals the total treatment volume was 8,900 cubic yards (yd^3). The as-built treatment volumes did not differ from the values established in TRS' April 21, 2016, Firm Fixed Price Proposal for ERH Remediation (3rd Revision).

3.3 Total Organic Carbon Content

The type of contaminant and the desired remedial goal affect the energy, time, and cost to remediate a site applying ERH. However, two subsurface parameters are particularly important: the amount of total organic carbon (TOC) and the presence of heavy hydrocarbons such as diesel, oil, or grease. TOC and hydrocarbons, in general, can preferentially adsorb VOCs in comparison to water, which is why activated carbon is used for vapor and water treatment of VOCs. The Site TOC content was determined to be 0.17 percent based on information provided to TRS.

4.0 PROJECT OBJECTIVES

The principal impacts and target of this remediation are the PCE concentrations in soil and groundwater. The remedial objective for the Site is to reduce the soil concentrations to below 50 µg/kg PCE and to reduce groundwater concentrations below 50 µg/l PCE.

Prior to ERH system construction, the maximum historical concentrations of PCE detected in Site groundwater was 12,000 µg/L with an estimated 6 pounds of VOC mass in soil and groundwater. The PCE mass estimate and the ERH system design were based on this and other historical concentrations.

5.0 ERH DESIGN APPROACH

TRS' remedial approach used ERH to heat the subsurface to facilitate the remediation of PCE and daughter products in Site soil. TRS estimated that 1,750,00 kilowatt hours (kWh) of electrical energy applied to the subsurface would be required to decrease the concentrations of the contaminants of concern (COCs) below the remedial goals. The estimated electrical energy would be applied over a duration of approximately 120-160 days.

All ERH system components within the SCC building were designed for below-grade completion to minimize disruption to the current business. Above-grade components and process equipment were installed on a portion of the former Belshaw Property.

5.1 ERH System Components

A list of the ERH system components is provided in **Table 1**. A summary of the ERH process and supporting ancillary system components is also provided in the process flow diagram (PFD) illustrated on **Sheets P-1** through **P-7**. The primary service one-line drawing is presented on **Sheets E-1** and **E-2.**

Table 1. ERH Treatment System Components

System Component	Quantity
700-kilowatt (kW) Power Control Unit (PCU)	1
Monitoring, control, and data acquisition system	1
Remote access and control system	1
Electrodes (all below grade completions)	21
ERH condenser with cooling towers	1
25-horsepower (hp) vapor recovery blowers	2
200-lb Liquid-phase GAC vessels	2
2,000-lb Vapor-phase GAC vessels	2
Temperature Monitoring Points (TMPs)	3
Resistance Temperature Detectors (RTDs)	44
Groundwater Performance Monitoring Wells	10

5.2 Power Control Unit

The ERH system used a 700-kilowatt (kW) power control unit (PCU) to deliver the estimated treatment energy to the subsurface for heating and remediation. The PCU is contained in a weather-tight steel enclosure that provides security and electrical insulation. The PCU is designed for 100 percent duty cycle and is sized for a maximum power output of 700 kWs. During ERH operation, the incoming primary voltage is regulated to the appropriate level for optimum subsurface heating. As the subsurface is heated, this optimum voltage changes, and the PCU output is adjusted to those changes to support maintaining a constant the power application designed for the Site.

TRS required a dedicated 480 volt (V) 1,200 amp (A) three-phase service drop from Seattle City Light (SCL). TRS contracted Seahurst Electric, Inc. (Seahurst) to install underground conduit, construct the SCL-required transformer pad, and to make all the medium voltage electrical connections between the SCL utility service and the TRS PCU and ancillary equipment. TRS provided the switchgear located in the equipment compound and the distribution panels for ancillary ERH system treatment equipment, also installed by Seahurst. Seahurst also installed the meter box for the SCL revenue meter. The PCU output was cabled to three field located auto transformers (ATXs), which were directly cabled to

field-located electrodes in a design configuration supporting uniform heat-up and treatment.

PCU operational control and data acquisition were performed on a dedicated computer and associated programmable logic controllers (PLCs). Remote data acquisition software was used to collect and store ERH treatment volume temperatures, power, voltage, amperage, and operational status data for the entire ERH system. Off-site project personnel could view and download this information in real-time using a high-speed, wireless modem. The software also allowed for control and/or monitoring of power application, vapor condensation, and wastewater pumping functions.

The PCU compound was equipped with an emergency stop (E-Stop) button on the outside of the PCU next to the control room entrance of the PCU, to the right of the primary compound entrance gate, and in the SCC building. The equipment compound is presented on **Sheet Y-3**.

5.3 Electrodes

A total of 21 electrodes were used to apply the required electrical energy to the subsurface within the treatment volume as shown on **Sheet Y-1**. TRS' design called for the installation of 21 bored electrodes as described in **Table 2.** The bored electrodes consisted of a copper element placed into a 12-inch diameter boring and backfilled with TRS' patented conductive backfill. Electrode installation was completed via a combination of hollow stem auger (HSA) and sonic drilling methods. All electrodes installed inside the SCC building were completed below grade to minimize the impact to SCC operations.

Table 2. Electrode Completion Details

Treatment Area	Treatment Interval	Number of Electrodes	Number of Electrodes Inside SCC Building and Completed Below Grade	Sheet
2,735 ft^2	5 to 50 ft bgs	13	6	M-1
1,033 ft^2	5 to 85 ft bgs	5	2	M-2
508 ft^2	15 to 85 ft bgs	3	0	M-3

Typical construction details for each electrode design are shown on **Sheets M-1** through **M-3**.

5.4 Electrode Wetting System

Electrode wetting tubes were installed with each electrode. During operation, the area immediately surrounding each electrode has the potential for drying out, which may reduce the effectiveness of the electrode to transmit energy to the subsurface. This dry-out condition is addressed by periodically adding small amounts of water to the electrode/soil interface. Electrode wetting tubes were connected to the potable water supply and the timing and duration of electrode wetting controlled via dedicated solenoid valves at each

electrode. The electrode wetting valve assembly is shown on **Sheet M-8**. The electrode wetting system layout of the wetting supply lines and solenoid wiring plans are presented on **Sheets Y-6** and **Y-7**, respectively.

5.5 Temperature Monitoring Points

The ERH system used three temperature monitoring points (TMPs) containing temperature sensors to track the progress of the ERH heating and provide continuous temperature monitoring within the ERH treatment volume. The TMP locations are shown on **Sheet Y-1**. Each TMP casing was constructed of 1 ½-inch steel pipe surrounded by grout. TMP C4 was installed to a depth of 50 ft bgs and TMPs B6 and C7 were installed to a depth of 85 ft bgs. A string of resistance temperature detector (RTD) sensors was inserted into the casing with each RTD spaced vertically in five-foot increments from the bottom of the treatment interval. Within the SCC building, TMP B6 RTDs were grouted in place within the TMP casing while the exterior RTD strings were not grouted to facilitate recovery at the end of the project. Construction details of typical TMPs are shown on **Sheets M-4** and **M-5**. The thermocouple cabling plan is presented on **Sheet Y-5** and the field box cabling plan for automated electrode wetting is presented on **Sheet Y-4**.

5.6 Groundwater Performance Monitoring Wells

Groundwater monitoring wells within the treatment volume were constructed of stainless-steel components and capped to withstand the elevated temperatures and steam created during ERH. Caps contained bore-through fittings for tubing used for sampling and venting. Ten stainless steel, performance groundwater monitoring wells were installed during ERH construction. Groundwater monitoring wells M-33, M-34, and M-35 each consisted of a three well cluster that individually targeted the Shallow, Intermediate, and Deep Zones while SCC-3 was a stand-alone well inside the SCC building.

The groundwater monitoring well locations are shown in **Sheet Y-1**.

5.7 Vapor Recovery and Treatment System

The VR system consisted of one 25-horsepower (hp) rotary lobe positive displacement blower used to apply vacuum to the VR screens located throughout the treatment area through a chlorinated polyvinyl chloride (CPVC) conveyance piping system. Sampling ports and gauges were installed to measure vacuum and flow at the VR blower inlets. Temperature was measured by a gauge at the VR blower outlet, and flow was measured using pitot tubes at the condenser effluents. The blower was capable of a flow rate of 500 standard cubic feet per minute (scfm).

Vapor recovery piping consisted of 1-, 2-, 3-, and 4-inch CPVC to move the vapor stream mixture of steam, air, and chlorinated volatile organic compound (CVOC) vapors from the treatment volume. The vapor recovery plan is presented on **Sheet Y-2**. Vapor recovery piping and cables were placed in trenches as shown on **Sheets M-6 and M-7.**

The vapor treatment system consisted of one condenser/cooling tower unit, two 2,000-pound vapor-phase granular activated carbon (VGAC) vessels and two 200-pound liquid-phase granular activated carbon (LGAC) vessels. The VGAC vessels were installed on the

effluent side of the VR blowers in a series-parallel configuration. The VR and abatement system operated under the jurisdiction of the Puget Sound Clean Air Agency (PSCAA) air permit No. 29980, dated June 26,2017. ERH process flow details are presented on **Sheets P-1** through **P-7**.

The condenser was utilized to cool the VR stream. The condenser consisted of an inlet air/water separation vessel, a plate-and-frame heat exchanger, a condensate tank, a cooling tower, an outlet air/water separation system, and ancillary pumps and controls. The vapor outlets of the condensers contained a mist eliminator that is 99 percent efficient in removing droplets to a size of 10 microns. Automated condensate pumping functions were monitored, controlled, and recorded by the PCU computer.

Condensate discharge from the condensers was routed to the two LGAC vessels, plumbed in series. Treated wastewater and potable blowdown water from the condensers was discharged to the municipal sewer under King County Wastewater Treatment Division Letter of Authorization 1065-01. The temporary side sewer connection is presented on **Sheet Y-10**.

5.8 Site Security

Site security during construction, operations, and demobilization was monitored using a cellular-based, infrared, motion-detecting, battery operated camera system. The security system provided six perimeter cameras which alerted TRS of an intrusion with an e-mailed video and a phone call from a manned alarm center. One 360-degree camera was located on a mast above the PCU to allow for remote viewing the Site. During operations, a motion-detecting security system was installed along the perimeter fence lines. The system consisted of six motion-detecting sensors which, if movement is detected within the coverage area, opens the PCU load contactor and immediately discontinues electrical energy application to the treatment volume. TRS was notified of this action by automated text message, e-mail, and phone call.

A six-foot tall, vinyl clad chain-link fence and privacy screen surrounded the equipment compound and exterior (above grade) treatment area. “Danger, High Voltage” and “Do Not Dig” signs were hung every 20 feet. Additionally, TRS registered the site as an 8-1-1 Dig Alert site. Access to the compound was controlled by a locked gate. The Site security plan is presented on **Sheet Y-8**.

6.0 SYSTEM CONSTRUCTION

Site activities by TRS began on April 4, 2017, with delivery and placement of the Conex container. Pacific Crest engaged both public and private utility locating services to inspect the treatment area prior to the start of drilling activities. The 21 electrodes, three temperature monitoring points (TMPs), and ten monitoring well locations were measured by hand and marked in the field relative to known reference points.

6.1 Subsurface Installation

The subsurface portion of the installation began on April 15, 2017, with concrete coring inside the SCC building by Dakota Concrete. All subsurface work inside the SCC building took place on weekends when the facility was closed for business. Holocene Drilling began drilling on April 20, 2017. Electrode and TMP installations were completed under TRS subcontract and oversight. Monitoring well installations were completed under Pacific Crest subcontract and oversight. Electrodes were installed using a combination of HSA and sonic drilling techniques. For quality assurance of electrode completion, sonic drilling was the preferred method on electrodes with four independent elements and a targeted completion depth of 85 ft bgs.

Drilling outside of the SCC building was completed on June 15, 2017. Due to limited weekend access, drilling inside the building was not completed until July 15, 2017. On the weekend of July 22, 2017, TRS and excavation contractor River's Edge Environmental Services completed all trenching, below-grade piping and cabling, and trench backfilling within the SCC building. The neutral grid and concrete were placed the following weekend and below-grade installation of ERH electrodes, vapor recovery wells, and TMPs was completed on July 30, 2017. The sewer tie-in was completed by TRS in October 2017 under a City of Seattle Side Sewer Permit and inspection.

6.2 Surface Installation

On April 25, 2017, TRS conducted the successful placement of the condenser, cooling tower, 25 hp blower, and two 200-pound (lb) LGAC vessels. The larger equipment was unloaded and moved by subcontractor Nelson Trucking using a 20-ton forklift. The condenser and LGACs were placed within a polyvinyl chloride (PVC) secondary containment system.

With the SCL service still pending, TRS did not begin surface installation until August 30, 2017. Surface installation activities included above-grade VR piping, wiring of equipment and gauges, wiring of TMP and electrode wetting field boxes, interlock wiring and programming, and ATX supply cable connection. This work was essentially complete in 30 days, but for security reasons electrode supply cables were not placed until November 30, 2017.

The LGAC vessels were loaded with carbon on October 25, 2017. The two 2,000 lb VGAC vessels had also been delivered by this time but were not placed into final position until after SCL transformer installation. The three ATXs were delivered to the Site on November 29, 2017 and placed on an electrically grounded pad. Electrode cables were placed on November 30, 2017.

Condensate discharge from the condensers is routed to the two LGAC vessels plumbed in series. Treated wastewater and blowdown water from the condensers is plumbed to the sanitary sewer tie-in under King County and City of Seattle permits. Discharge flow is limited to 2,880 gallons per day. Make-up water is plumbed above surface from the vacant Belshaw property building to the TRS condenser.

6.3 Power Drop

The application for electrical service was made on December 22, 2016, and assigned Service Number 1700225 on January 5, 2017. A meeting was held on-site with the SCL Client Representative, Antonio Hernandez, and the SCL Project Engineer, Lin Chi, on June 8, 2017. On August 10, 2017, SCL requested a secondary containment plan prior to issuance of the service construction letter. TRS retained Seahurst to prepare a secondary containment plan, which was submitted to SCL on August 28, 2017. The service construction letter was issued on September 14, 2017, and field work related to the electrical service began on October 18, 2017. TRS performed the trenching and backfill work while Seahurst performed all other tasks including secondary containment construction, assembly of the switchgear and meter cabinet, and cable installation. The Seahurst-installed equipment passed inspection on November 21, 2017, and it took until January 3, 2018, before SCL installed the meter and February 6, 2018, for SCL to pull conductors from the pole, set the transformer, and make final connections. At this point, the switchgear was energized, and start-up was only contingent on the third-party inspection and City of Seattle approval discussed in the Start-Up section below.

6.4 Site Security

When TRS' construction activities began, a combination of permanent and temporary galvanized fence surrounded the entire Belshaw property. The temporary fence was erected by IMCO Construction to secure their temporary lay-down yard that surrounded the Site. Work on the ERH Restricted Zone fence began on September 28, 2018, by All City Fence. This fence consists of wood posts and vinyl clad chain link with a privacy screen on the publicly facing west and south sides. Once IMCO construction vacated the Site, TRS purchased IMCO-owned pole mounted LED area lights and took over rental of their temporary perimeter fence as added security measures.

7.0 ERH SYSTEM START-UP

ERH system start-up is a key component of operation of the system. TRS takes extra precautions during start-up to ensure a safe operating system is being deployed. The following sections detail this start-up sequence.

7.1 Pre-Start-up Tasks

Prior to start-up, a final quality assurance inspection of all above-grade piping and electrical connections was completed. Quality assurance inspections and testing were completed by TRS on the electrode cable connections, condenser components, transformer connections, TMP field box connections, VR blower, and PCU. Quality assurance inspections were completed on electrode connections. TRS also completed the initial phase of the internal TRS Start-Up Safety Checklist and all associated tasks prior to commencing start-up operations.

All pieces of equipment were visually inspected for weld cracks or breaks, scrapes of protective coating, corrosion, structural damage, and inadequate installation or

construction such as cracks, punctures, and damaged fittings. No discrepancies were identified.

7.2 System Start-up

System start-up and optimization began on February 16, 2018. This phase of the work consisted of energizing the condenser and cooling tower, VR blower, air heat exchanger, TMPs, and control systems. This was followed up with functionality testing of the ERH equipment and interlocks and the evaluation of subsurface energy application.

The condenser holding tanks were filled with water and condenser operations were initiated. Items inspected included leak checks, functionality (hand/off/auto switches, float switches, valves), and the ability to maintain normal operations. The inspection of the system also verified the proper operational parameters (flow, differential pressures, and applied field vacuum) on each gauge and valve. Once proper operations of the components were confirmed, ERH equipment interlock testing commenced. Testing of the ERH equipment interlocks was completed on March 16, 2018, and each interlock performed as designed.

A third-party field evaluation was required by the City of Seattle prior to operations. TRS engaged Power Science Engineering LLC (PSE) to initiate the third-party evaluation process. The third-party evaluation included the physical inspection of all TRS equipment, designs, and execution of TRS standard operating procedures (SOPs) including voltage testing procedures. PSE performed a preliminary inspection on January 11, 2018, a progress inspection on February 22, 2018, and a final inspection on March 7, 2018. TRS made several corrections at the request of PSE, most were minor in nature with the exception of one that required the installation of a ground fault detection and indication device in the PCU.

TRS initiated electrical energy application to the subsurface for voltage safety testing on February 22, 2018. These tests were done to evaluate surface conditions for the presence of voltage potentials. Areas where the public or personnel may walk and/or touch surfaces were evaluated for exposed voltage potential.

Step-and-touch electrical potentials are the reference points of a possible circuit a person would form as the result of typical movement or physical actions. For example, a person standing at a gated fence entrance and touching the fence gate with their hand. The reference points would be the person's feet, in contact with the ground surface, and their hand, reaching out and touching the fence gate. Similarly, if a person were to touch an object on the ground with their hand, the reference points would be the person's feet in contact with the ground surface and their hand touching the object that is in contact with the energized subsurface.

An extension cord survey is a voltage survey that uses the earth ground established with an electrical service as a reference point for voltage measurements. Comparing the scenario of a step-and-touch potential with a person standing at a fence gate (feet on ground [step] and hand on gate [touch]), in an extension cord survey, the reference points would be the utility ground and the hand on the gate.

The TRS electrical safety policy limit for exposed voltage is:

- **Public Zone:** 5-Volt Step-and-Touch, 10-Volt Extension Cord Survey
- **TRS Restricted Zone:** 10-Volt Step-and-Touch, 30-Volt Extension Cord Survey
- **TRS Controlled 30-Volt Zone:** 30-Volt Step-and-Touch, 30-Volt Extension Cord Survey (This zone requires TRS upper management approval for implementation)
- **Exclusion Zone:** No entry allowed with ERH electrical energy applied to the subsurface

Any areas exceeding the TRS administrative safety limits were bonded or isolated from touch to ensure the safe application of ERH.

The Site was established as electrically safe for step-and-touch potentials however, voltage issues remained in the SCC building during wetted extension cord surveying (i.e., wet concrete to utility ground). This is likely due to wire reinforcement in the concrete floor slab and steel rebar in the footing or former stem wall that separates the original building from the east side addition. Mitigation to 10 volts was deemed impractical and the issue was addressed via administrative controls that included:

1) Additional training of SCC staff on March 27, 2017
2) Testing of corded power tools and replacement as necessary
3) Replacement of SCC's metal ladders and stools with non-conductive versions
4) Tagging of approved tools and posting of warning signs throughout the building

Once these efforts were completed, the Site was cleared for uninterrupted operations on March 29, 2018. During initial energy application, TRS monitored cable/electrode amperages, applied voltages to the subsurface, and the overall application of ERH to the treatment volume.

8.0 ERH OPERATIONS

Full ERH system operations began on Thursday March 29, 2018, at 2:34 PM local time. Operational parameters such as power application, subsurface temperatures, condensate production, VR parameters, and estimates of CVOC concentrations in the recovered subsurface vapors were routinely measured. This data was used to assess the efficiency of the ERH system and allow TRS personnel to target specific areas of the Site and optimize system performance. TRS was responsible for monitoring all soil, water, and process vapor sampling of the ERH system, with the exception of the VGAC vessels, which were monitored for possible break-through of VOCs by Pacific Crest.

8.1 Electrical Energy Application

During operations, TRS routinely monitored power, energy, voltage, amperage, resistance, subsurface temperatures, and CVOC recovery data to evaluate system performance. Near continuous incremental adjustments were made to the ERH system to maintain an optimal

energy application rate within the ERH system limitations. A total of 1,750,245 kWh of energy was applied to the treatment volume over a period of 193 days, starting on March 29, 2018, and ceasing on October 8, 2018.

The average power applied to the remediation volume during the operational phase was 398 kW. The maximum power input achieved during the operation phase was 557 kW. **Figure 1** presents the average weekly applied power and total energy.

Unscheduled down time events associated with electrode performance and equipment or programming issues with the ERH PCU did not occur during ERH operations. Scheduled/planned shutdowns did include the following activities:

- Electrode optimization/cabling changes
- Condenser and blower routine maintenance
- Soil and Groundwater sampling events

However, the system was shut down for brief periods as a result of security shut downs due to intruders entering the Site.

8.2 Subsurface Temperatures

Subsurface temperatures in the ERH treatment volume were measured and recorded three times per day at each of the three TMPs. Each TMP contained temperature measurement sensors at 5-foot vertical increments, from 5 to 50 ft bgs at C4 and from 5 to 85 ft bgs at B6 and C7. **Figure 2** provides the average Site subsurface temperature over time. **Figures 3a** through **3c** provides the average temperature at each depth interval during operations for the three TMPs.

At the start of ERH operations, the average ambient subsurface temperature in the ERH treatment volume was 14.0 degrees Celsius (°C). At the peak of treatment volume heating, the average subsurface temperature was 105.5°C on July 12, 2018. The highest individual temperature measurement from within the ERH treatment volume was 129.0°C, recorded at TMP C7 at a depth of 65 ft bgs during much of June and July 2018.

Upon initial energy application, the average subsurface temperature increased rapidly, advancing at nearly 1.0 to over 1.5°C per day. The heat-up rate then naturally slowed as the subsurface within the treatment volume attained steaming conditions. This slowing of the heat-up rate is an indication of a significant change in subsurface conditions as more of the applied energy is used to accomplish phase change from liquid to vapor rather than increase subsurface temperatures.

8.3 Electrode Wetting System

Use of the electrode wetting system was initiated on May 3, 2018. The average electrode wetting flowrate was approximately 0.25 GPM.

8.4 Vapor Recovery and Treatment

The vapor recovery system operated continuously. The VR blowers maintained an average vacuum of 3.7 inches of mercury (in Hg) and a flow of 264 scfm over the course of ERH

operations. The average flow rate was calculated using the flow rate measured daily by the automated data collection portion of the system and thus was the average measured over the full 192 days of ERH application (i.e., not counting the additional 70 days of continued post-ERH VR system operation).

TRS screened vapor samples with a PID from the influent and effluent of the VGAC system as part of routine operational data collection. In addition, Pacific Crest also performed weekly PID screening and on a monthly basis collected vapor samples for off-site laboratory analysis by Environmental Protection Agency (EPA) Methods 8260B or 8260C. The results of the PID screening are found on **Table 4**. Pacific Crest analytical data are presented in their December 5, 2018, Clean-Up Action Progress Report (DRAFT).

Based on the PID measurements, TRS calculated that approximately 15 lb of VOCs were recovered during treatment (**Table 3**). Pacific Crest's independent estimate of mass removal via monthly laboratory data is 11.7 kilograms (Kg), or approximately 25 lb of PCE. Actual mass removal is likely somewhere in between these two estimates due in part to:

1. The inaccuracy of PID measurement, especially of a vapor stream with relatively low VOC concentrations such as these.
2. The relative infrequency of laboratory data collection. It should be noted that both estimates exceed the pre-ERH VOC mass estimates for the Site.

Table 3. Mass Removal Estimates Based on PID Data

Date/Time	Blower Flow Rate (scfm)	PID Influent (ppm)	Corrected* PID Influent (ppm)	VOC Recovery Rate (lb/day)	Total VOC Recovery (lb)
3/29/18 14:33	264	3.6	2.1	0.25	0.0
3/30/18 14:20	260	3.1	1.8	0.21	0.2
4/9/18 10:00	250	0.2	0.1	0.01	1.4
4/10/18 9:37	255	1.5	0.9	0.10	1.5
4/11/18 10:30	255	1.0	0.6	0.07	1.5
4/11/18 13:32	258	0.9	0.5	0.06	1.5
4/12/18 13:30	255	1.5	0.9	0.10	1.6
4/13/18 13:00	255	0.0	0.0	0.00	1.6
4/16/18 8:30	255	0.1	0.1	0.01	1.7
4/17/18 14:15	255	0.7	0.4	0.05	1.7
4/18/18 13:55	255	0.5	0.3	0.03	1.8
4/19/18 8:05	255	0.5	0.3	0.03	1.8
4/20/18 11:15	255	0.9	0.5	0.06	1.9
4/23/18 10:50	255	0.6	0.3	0.04	2.0
4/24/18 11:50	255	0.8	0.5	0.05	2.0
4/25/18 11:30	255	0.6	0.3	0.04	2.1

Date/Time	Blower Flow Rate (scfm)	PID Influent (ppm)	Corrected* PID Influent (ppm)	VOC Recovery Rate (lb/day)	Total VOC Recovery (lb)
4/26/18 7:55	255	1.1	0.6	0.07	2.1
4/27/18 7:20	255	1.3	0.7	0.09	2.2
4/30/18 10:20	255	1.1	0.6	0.07	2.5
5/1/18 9:25	255	0.9	0.5	0.06	2.5
5/2/18 15:55	255	0.5	0.3	0.03	2.6
5/3/18 10:15	255	0.8	0.5	0.05	2.6
5/7/18 10:00	255	0.9	0.5	0.06	2.8
5/8/18 11:55	255	0.7	0.4	0.05	2.9
5/9/18 10:20	255	0.7	0.4	0.05	2.9
5/10/18 8:00	255	1.1	0.6	0.07	3.0
5/14/18 13:10	255	1.4	0.8	0.09	3.4
5/15/18 11:40	255	1.3	0.7	0.09	3.5
5/16/18 14:15	255	1.7	1.0	0.12	3.6
5/17/18 8:10	255	1.1	0.6	0.07	3.7
5/21/18 8:30	255	2.2	1.3	0.15	4.3
5/22/18 9:10	255	1.1	0.6	0.07	4.3
5/23/18 11:30	255	1.5	0.9	0.10	4.5
5/24/18 10:45	255	2.3	1.3	0.16	4.6
5/29/18 8:55	255	2.0	1.1	0.14	5.3
5/30/18 10:55	255	2.2	1.3	0.15	5.4
6/4/18 8:20	255	2.5	1.4	0.17	6.3
6/6/18 12:45	255	0.8	0.5	0.05	6.4
6/8/18 8:10	255	1.3	0.7	0.09	6.5
6/13/18 11:30	255	0.6	0.3	0.04	6.7
6/15/18 8:00	255	1.1	0.6	0.07	6.9
6/18/18 9:55	255	2.5	1.4	0.17	7.4
6/20/18 14:40	255	2.0	1.1	0.14	7.7
6/22/18 14:25	255	2.4	1.4	0.16	8.1
6/25/18 8:45	255	1.7	1.0	0.12	8.4
6/27/18 13:20	255	1.7	1.0	0.12	8.7
6/29/18 10:10	255	1.1	0.6	0.07	8.8
7/2/18 9:00	255	2.3	1.3	0.16	9.2
7/3/18 8:05	255	2.9	1.7	0.20	9.4
7/9/18 8:15	255	1.7	1.0	0.12	10.1
7/10/18 10:10	240	1.0	0.6	0.06	10.2

Date/Time	Blower Flow Rate (scfm)	PID Influent (ppm)	Corrected* PID Influent (ppm)	VOC Recovery Rate (lb/day)	Total VOC Recovery (lb)
7/11/18 9:30	255	1.4	0.8	0.09	10.3
7/18/18 8:15	275	1.3	0.7	0.09	10.9
7/23/18 9:20	260	0.5	0.3	0.03	11.1
7/25/18 14:35	275	0.8	0.5	0.06	11.3
7/27/18 7:30	270	0.9	0.5	0.06	11.4
7/30/18 7:45	270	0.7	0.4	0.05	11.5
8/1/18 15:30	275	0.3	0.2	0.02	11.6
8/3/18 7:45	275	1.1	0.6	0.08	11.7
8/6/18 12:00	275	0.3	0.2	0.02	11.8
8/10/18 8:05	275	1.1	0.6	0.08	12.1
8/13/18 7:55	275	1.2	0.7	0.09	12.3
8/20/18 9:40	400	1.2	0.7	0.13	13.2
8/27/18 6:50	275	0.8	0.5	0.06	13.6
8/29/18 12:15	270	0.7	0.4	0.05	13.8
8/31/18 7:30	270	1.6	0.9	0.11	14.0
9/5/18 7:45	265	0.6	0.3	0.04	14.2
9/6/18 7:55	260	0.9	0.5	0.06	14.2
9/10/18 13:40	260	0.7	0.4	0.05	14.4
9/11/18 11:35	275	0.9	0.5	0.07	14.5
9/12/18 9:10	260	1.0	0.6	0.07	14.6
9/13/18 11:55	265	0.7	0.4	0.05	14.6
9/17/18 7:40	260	0.8	0.5	0.06	14.8
9/19/18 10:30	265	0.8	0.5	0.06	14.9
9/20/18 8:00	255	0.9	0.5	0.06	15.0
10/1/18 8:20	310	0.3	0.2	0.02	15.3
10/3/18 9:00	300	0.8	0.5	0.00	15.3
10/4/18 13:00	310	0.3	0.2	0.02	15.3
10/5/18 7:55	310	0.6	0.3	0.05	15.3

*Assumes PID lamp correction factor of 0.57 for PCE

During operations, some biofouling was observed in the condensate discharge stream. This material began to plug the inlet side of the primary LGAC vessel. On July 13, 2018, TRS and Pacific Crest obtained permission from the King County Wastewater Treatment Division to add a microbicide (peroxyacetic acid) to the condensate stream in small doses – no more than 3 to 5 ounces every other day. After each dosing event, pH was tested to ensure that discharge remained within the 5.5 to 12 pH limits established in the Letter of Authorization. This was effective in controlling the biofouling problem. Water parameters for the end of operations and entire project are presented in **Table 4**.

Table 4. ERH Water Balance

ERH System Parameters	Project Totals (gallons)
Total Cumulative Potable Water Used	248,723
Total Cumulative Condensate Recovered	194,362
Total Cumulative Water Discharge to Sewer	195,217

8.5 System Waste

Throughout all phases of system construction and system operations, TRS generated waste in need of disposal. Soil cuttings and trench spoils were contained in soil roll-off bins and disposed by Pacific Crest during and immediately after subsurface work. Concrete cores and trench slabs were likewise disposed of by Pacific Crest. In addition to the above, there were several drums of mostly liquid waste from drilling and concrete coring activity. These drums were allowed to settle, and the water was pumped through the on-site treatment system prior to discharge to the sanitary sewer. Remaining solid waste was consolidated and an additional six drums were disposed by Pacific Crest. More than 20 drums were rinsed and recycled through these waste minimization efforts.

Throughout system operations, the VGAC was monitored for breakthrough and air permit compliance by Pacific Crest. No VGAC change out was required during the course of the project and therefore only 4,000 pounds of VGAC remain for disposal. Likewise, there was no LGAC change out during operations and 400 pounds of LGAC have been pumped into two 55-galon drums and await disposal by Pacific Crest

TRS made efforts to manage the project waste stream in a sustainable fashion. TRS adhered to this mission throughout the project by making every effort to recycle items that could be sent off-site to recycling facilities instead of a landfill. At project's end, any material that could be reused on future projects such as fittings, field box stands, 3-phase electrical supply cable, was packed and shipped off-site.

8.6 Site Voltage Monitoring

The Occupational Safety and Health Administration (OSHA) limit for voltage safety is 50 volts alternating current (VAC), however, the TRS administrative control limit established by the Site Health and Safety Plan (HASP) was 5 volts step-and-touch within the SCC building.

During start-up related voltage surveys, certain voltages were found within the SCC building that could not be mitigated through engineering controls. The primary source of this voltage potential appeared to be related to wire mesh within the existing concrete floor of the SCC building.

On March 27, 2018, prior to full-scale ERH operation, TRS entered into an agreement with SCC whereby a 15-volt standard was established. All SCC employees and one third-party contractor were trained at that time and certain restrictions implemented. These restrictions remained in place throughout ERH operations and included replacement of metal ladders and step-stools with non-conductive fiberglass ladders and stools, replacement of certain corded power tools with cordless tools, posting of additional warning signs, tagging of corded tools that were tested by TRS and approved for use, and other best practices.

During ERH operations, there were two occasions where voltage potentials were observed slightly above the 15-volt limit (still less than 20 volts) and these were promptly mitigated by epoxy coating a small section of the shop floor and replacing SCC's old ungrounded bench grinder with a new grounded tool.

The limit established by the HASP in the ERH restricted zone (no public access) was 30 volts and weekly surveys did not identify any voltage potential above that limit throughout operations.

9.0 ERH REMEDIATION RESULTS

Following receipt of analytical data from the routine groundwater monitoring event in March 2019, all soil and groundwater samples within the treatment volume have met the remedial goals of 50 µg/kg and 50 µg/l, respectively.

9.1 Groundwater Results

Groundwater samples were collected prior to ERH system construction in August 2017 to establish baseline data. Additional sampling was conducted throughout ERH operations to track remedial progress. The groundwater sampling event in September 2018 produced anonymously high concentrations of PCE in monitoring wells MW34I. Based on a review of groundwater parameters recorded at the time of groundwater sampling, this sample was suspected to have been recovered steam instead of groundwater.

Analytical results for Pacific Crest's groundwater sampling event of November 8, 2018, were received on November 14, 2018. Analytical results for PCE were below the 50 µg/L cleanup objective in all monitoring wells located within the treatment volume except MW-33S. These results confirmed the hypothesis that the September 2018 groundwater sampling results were biased high by steam condensation and were not representative of groundwater conditions within the ERH treatment volume. Based on these data, Pacific Crest recommended no further application of ERH. Groundwater analytical data collected prior to, during, and after ERH operations is presented in **Table 5**.

Table 5. Baseline, Routine, and Confirmatory Groundwater Sampling Analytical Data

Location ID	Screen Interval (ft bgs)	Sampled By	Sample Date	Tetrachloroethene (PCE)
MW-33S	15-20	Pacific Crest	8/1/2017	490
			6/12/2018	1,400
			7/13/2018	480
			8/8/2018	210
			8/24/2018	100
			9/26/2018	310
			11/8/2018	73
			3/20/2019	25
		Aspect	6/20/2019	1.3
MW-33I	40-45	Pacific Crest	8/1/2017	360
			6/12/2018	360
			7/13/2018	1,200
			8/8/2018	8.5
			8/24/2018	5.7
			9/26/2018	1.3
			11/8/2018	26
			3/20/2019	15
		Aspect	6/20/2019	3.7
MW-33D	95-100	Pacific Crest	8/1/2017	0.92
			6/12/2018	0.20
			7/13/2018	<0.20
			8/24/2018	<0.20
		Aspect	6/20/2019	<1
MW-34S	15-20	Pacific Crest	8/1/2017	13
			6/12/2018	410
			7/12/2018	<0.20
			8/8/2018	260
			8/24/2018	270
			9/26/2018	120
			11/8/2018	1.5
			3/20/2019	0.71
		Aspect	6/20/2019	<1
MW-34I	34-39	Pacific Crest	8/1/2017	1,800
			6/12/2018	24,000
			7/12/2018	6,900
			8/8/2018	2,200
			8/23/2018	1.1
			9/26/2018	1,000

Location ID	Screen Interval (ft bgs)	Sampled By	Sample Date	Tetrachloroethene (PCE)
			11/8/2018	38
			3/20/2019	19
		Aspect	6/20/2019	3.5
MW-34D	95-100	Pacific Crest	8/1/2017	3.2
			6/12/2018	<0.20
			7/12/2018	3.0
			8/8/2018	<0.20
			8/23/2018	<0.20
			8/23/2018	<0.20
MW-35S	30-35	Pacific Crest	8/1/2017	300
			6/12/2018	990
			7/12/2018	230
			8/8/2018	0.47
			8/23/2018	<0.20
			9/26/2018	<0.20
		Aspect	6/20/2019	1.6
MW-35I	45-50	Pacific Crest	8/1/2017	1,700
			6/12/2018	690
			7/12/2018	100
			8/8/2018	34
			8/23/2018	15
			9/26/2018	35
		Aspect	6/20/2019	7.9
MW-35D	85-95	Pacific Crest	8/1/2017	93
			6/12/2018	6.1
			7/12/2018	3
			8/8/2018	1.7
			8/23/2018	1.7
			9/26/2018	1.4
		Aspect	6/20/2019	<1
SCC-3	23-28	Pacific Crest	7/30/2017	1,200
			6/12/2018	52
			7/12/2018	5.2
			8/8/2018	1,100
			8/22/2018	830
			9/26/2018	450
			11/8/2018	12
			3/20/2019	14
			6/18/2019	5.4

9.2 Soil Results

The first round of iterative confirmation sampling was conducted between July 14, 2018, and July 17, 2018. Samples were collected from varying depth intervals within six borings (CSB-1 through CSB-6) to target the zones with historically high concentrations of PCE. All samples from locations CSB-1, CSB-4, and CSB-5 met the remedial goal of 50 µg/kg.

The second round of iterative confirmation sampling was conducted on August 25, 2018. Samples were collected near the locations of CSB-2 (identified as CSB-8), CSB-3 (identified as CSB-9), and CSB-6 (identified as CSB-7). Samples from CSB-6 met the remedial goal.

The final round of iterative confirmation sampling was conducted on September 27, 2019. Samples were collected near the locations of CSB-2 (identified as CSB-10) and CSB-3 (identified as CSB-11). All samples from both locations met the remedial goal. All soil analytical data are presented in **Table 6** and on **Sheet Y-1C**.

Table 6. Confirmatory Soil Sampling Analytical Data

Sample Location	Sample Depth	July 14, 2018-July 17, 2018	August 25, 2018	September 27, 2018
CSB-1	10.0-11.0	9.4		
	15.0-15.75	16		
	15.75-16.5	<0.99		
	40.0-40.75	3.3		
	40.75-41.5	3.2		
CSB-2 CSB-8 CSB-10	14.0-15.0	<1.3		
	15.0-16.0	<1.3		
	45.0-45.75	140	19	3.7
	45.75-46.5	140	55	30
CSB-3 CSB-9 CSB-11	5.0-10.0	8		
	50.0-51.5	150	<1.3	4.9
	55.0-56.25	89	180	1.6
CSB-4	17.0-17.75	<1.5		
	17.75-18.5	<0.94		
	40.0-40.75	40		
	40.75-41.5	2.1		
CSB-5	25.0-25.5	2.1		
	25.5-26.5	<1.1		
	35.0-35.75	<1.1		
	35.75-36.5	<1.4		
	25.0-25.5	2.1		
CSB-6 CSB-7	5.0-5.5	57	36	
	5.5-6.5	60	45	
	35.0-35.5	6.9		
	35.5-36.0	6.6		

10.0 DEMOBILIZATION

TRS reached 100 percent of the applied energy goal on October 8, 2018. Energy application to the subsurface was immediately stopped, however, vapor recovery and treatment continued to operate until December 17, 2018, to ensure that steam and vapors were removed from the treatment volume and that the floor temperature in the SCC building would not rise significantly. Floor temperatures were monitored periodically using a Flir thermal imaging camera. By the time of the final vapor recovery shut down, the observed rise in floor temperature was less than 3 degrees Fahrenheit and was confined to a small area of the shop.

TRS began demobilization on December 17, 2018. Electrode cables were disconnected and spooled, the steam condenser was drained, rinsed, and winterized. All rinsate water was pumped through the LGAC vessels and then the LGAC was transferred into 55-gallon drums for disposal by Pacific Crest.

Electrode cables were cut at surface grade and the grounding pad for the three ATXs was removed. During the week of February 5, 2019, the connection to the sewer was excavated, plugged with concrete, and inspected by the City of Seattle to close the Side Sewer Permit. At this time the fence for the vehicle storage area on the east side of the SCC building was restored to its prior configuration and the VR conduits exiting beneath the SCC building foundation were plugged with concrete.

On April 24, 2019, SCL crews arrived on site to disconnect electrical service at the power pole, remove the SCL electrical transformer and meter, and remove all underground conductors. Once the disconnect was completed by SCL, TRS was able to prep the rest of the equipment for shipping. On May 13, 2019, Nelson Trucking loaded the condenser and cooling tower onto a truck for transport off-site. The remaining equipment was staged and prepared for transport.

In June 2019, TRS moved all electrode cables into a PODS® storage container. This was done in response to a break-in and theft of a small amount of cable. On July 30, 2019, TRS and Nelson Trucking moved all remaining equipment and materials off-site including the TRS-owned electrical switchgear. The chain link fence that was installed around the perimeter of the ERH treatment area and equipment compound was also removed.

In August 2019, Pacific Crest and River's Edge removed the soil pile that was left on-site from subsurface utility trenching. River's Edge also removed the concrete secondary containment pad that was the former location of the SCL electrical transformer. TRS also returned to the Site to remove an additional small section of chain link fence that defined the southern boundary of the now-former SCC vehicle storage area. The street-adjacent temporary fence around the larger perimeter of the former Belshaw property (now owned by Grand Street Commons, LLC) was left if place but rental of this fence is being transferred to Grand Street Commons.

Resistance temperature detectors (RTDs) have been left in the TMPs so that Pacific Crest can continue to monitor subsurface temperatures on a periodic basis using a hand-held reader. When Pacific Crest no longer has a need for this temperature data, TRS will recover

the RTDs. The RTDs beneath the SCC building were grouted in place and will not be recovered.

11.0 CONCLUSIONS

Based upon the data collected before, during, and after the ERH remediation, the following conclusions can be reached concerning this remediation effort.

1. Soil concentrations of PCE for all sampled depths at all 6 confirmatory sample locations were below the remedial goal of 50 µg/kg.
2. At ERH completion in November 2018, concentrations of PCE in all except one monitoring well (MW-33s) were below the remedial goal. As anticipated, concentrations continued to decline over time. In March 2019, concentrations in all monitoring wells within the ERH treatment volume were below the remedial goal of 50 µg/L.
3. Average baseline concentration of PCE at performance groundwater wells was 596 µg/l. The average concentration at ERH completion was 19 µg/l representing a 97% reduction of PCE in groundwater. The continued decline in concentrations of PCE in groundwater over time results in a 99.6% reduction in average PCE concentrations in groundwater by June 2019.
4. Based upon PID analysis of soil vapors recovered during ERH operations, approximately 15.3 pounds of VOCs were removed from the treatment volume during the remediation.
5. The ERH system operated for a total of 193 days and applied a total of 1,750,245 kWh of energy to the total treatment volume.
6. The ERH system was able to heat the soils within the treatment volume to design temperatures.
7. Throughout the project, safety of SCC employees and customers was maintained at all times. Business disruptions were kept to a minimum by performing intrusive work on the nights and weekends.
8. TRS completed the work with no OSHA recordable incidents or events resulting in lost time.

12.0 REFERENCES

Pacific Crest Environmental, LLC, *Cleanup Action Progress Report*, December 6, 2018 (DRAFT).

Pacific Crest Environmental, LLC, *Draft for Ecology Review Engineering Design Report – Site Area 1*, May 24, 2017.

Pacific Crest Environmental, LLC, *Cleanup Action Progress Report*, August 10, 2018.

Pacific Crest Environmental, LLC, *Draft Interim Measure Cleanup Action Plan*, June 29, 2011.

Pacific Crest Environmental, LLC, *Remedial Investigation-Feasibility Study Report*, February 4, 2011.

Pacific Crest Environmental, LLC, *Draft Interim Compliance Confirmation Sampling and Analysis Plan*, June 30, 2011.

Pacific Crest Environmental, LLC, *Draft For Ecology Review Cleanup Action Plan – Site Area 1*, July 7, 2015.

TRS Group, Inc., *3rd Revision – Firm Fixed Price Proposal for ERH Remediation,* April 21, 2016.

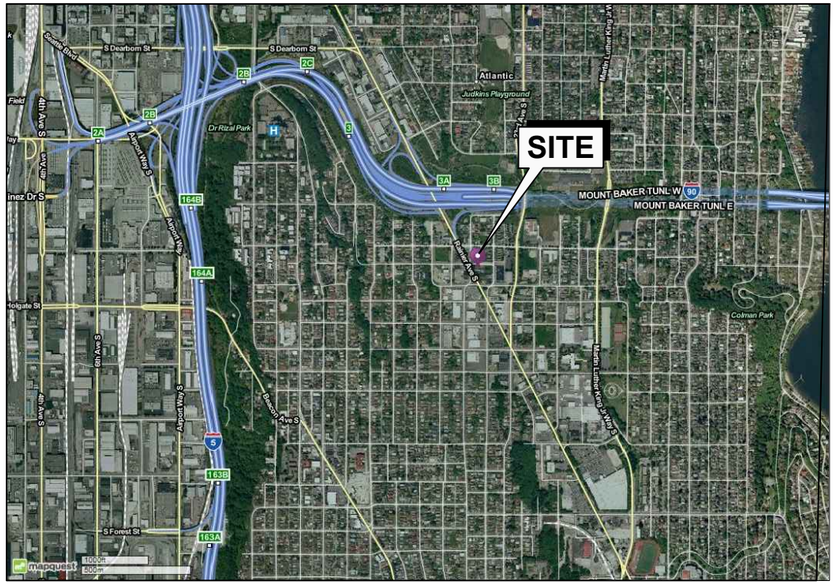
ELECTRICAL RESISTANCE HEATING DESIGN PACKAGE

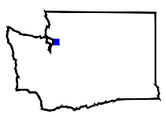
FORMER PENTHOUSE DRAPERY
1752 RAINIER AVENUE SOUTH
SEATTLE, WASHINGTON 98144

Prepared by:

TRS Accelerating Value

AUGUST 2019



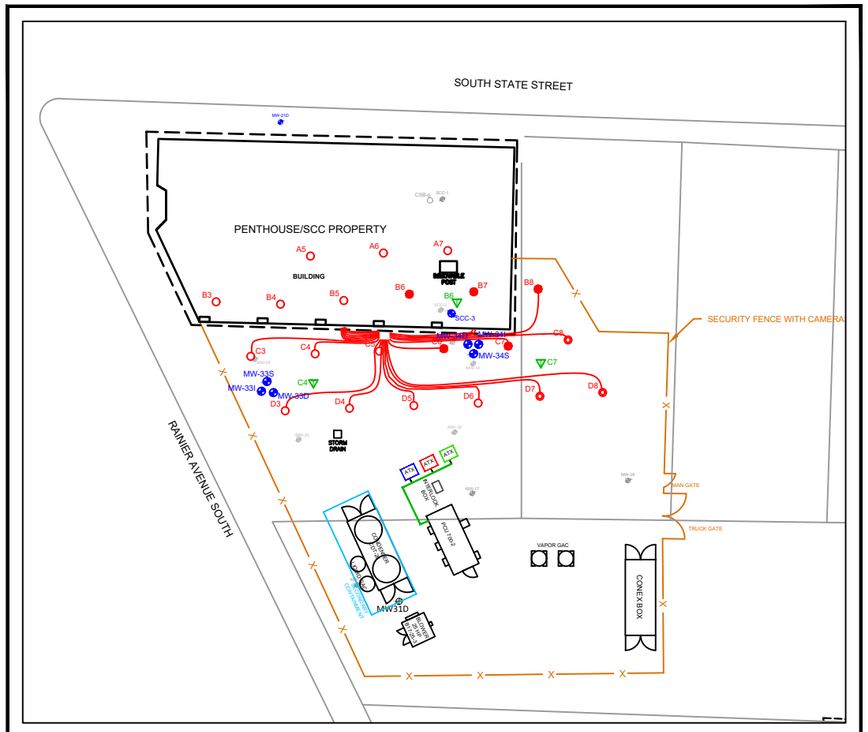


WASHINGTON

SITE LOCATION MAP

N

SHEET INDEX	
DRAWING NUMBER	TITLE AND DESCRIPTION
Y-1	SITE PLAN
Y-1A	SITE PLAN PRE-ERH SOIL CONCENTRATIONS
Y-1B	SITE PLAN PRE-ERH GROUND WATER CONCENTRATIONS
Y-1C	SITE PLAN CONFIRMATION SOIL CONTAMINATION CONCENTRATIONS
Y-1D	SITE PLAN GROUNDWATER CONTAMINATION CONCENTRATIONS
Y-1E	ELECTRICAL SERVICE
Y-2	EQUIPMENT PIPING PLAN
Y-3	VAPOR RECOVERY PIPING PLAN
Y-4	FIELD BOX AND ETHERNET PLAN
Y-5	THERMOCOUPLE WIRING PLAN
Y-6	DRIP PLAN
Y-7	SOLENOID WIRING PLAN
Y-8	SECURITY PLAN
Y-10	SIDE SEWER CONNECTION - TEMPORARY
P-1	LEGEND
P-2	VAPOR RECOVERY AND CONDENSING PROCESS FLOW DIAGRAM
P-3	PROCESS FLOW MASS BALANCE
P-4	FIELD PROCESS AND INSTRUMENTATION DIAGRAM
P-5	CONDENSER PROCESS AND INSTRUMENTATION DIAGRAM
P-6	COOLING TOWER PROCESS AND INSTRUMENTATION DIAGRAM
P-7	VAPOR TREATMENT PROCESS AND INSTRUMENTATION DIAGRAM
M-1	ELECTRODE DETAIL
M-2	ELECTRODE DETAIL
M-3	ELECTRODE DETAIL
M-4	TMP DETAIL
M-5	TMP DETAIL
M-6	TRENCH DETAIL
M-7	TRENCH DETAIL
M-8	DRIP VALVE ASSEMBLY DETAIL
M-9	GROUNDING PLAN
E-1	ELECTRICAL ONE-LINE DIAGRAM LEGEND
E-2	ELECTRICAL ONE-LINE DIAGRAM



EXTENDED SITE PLAN

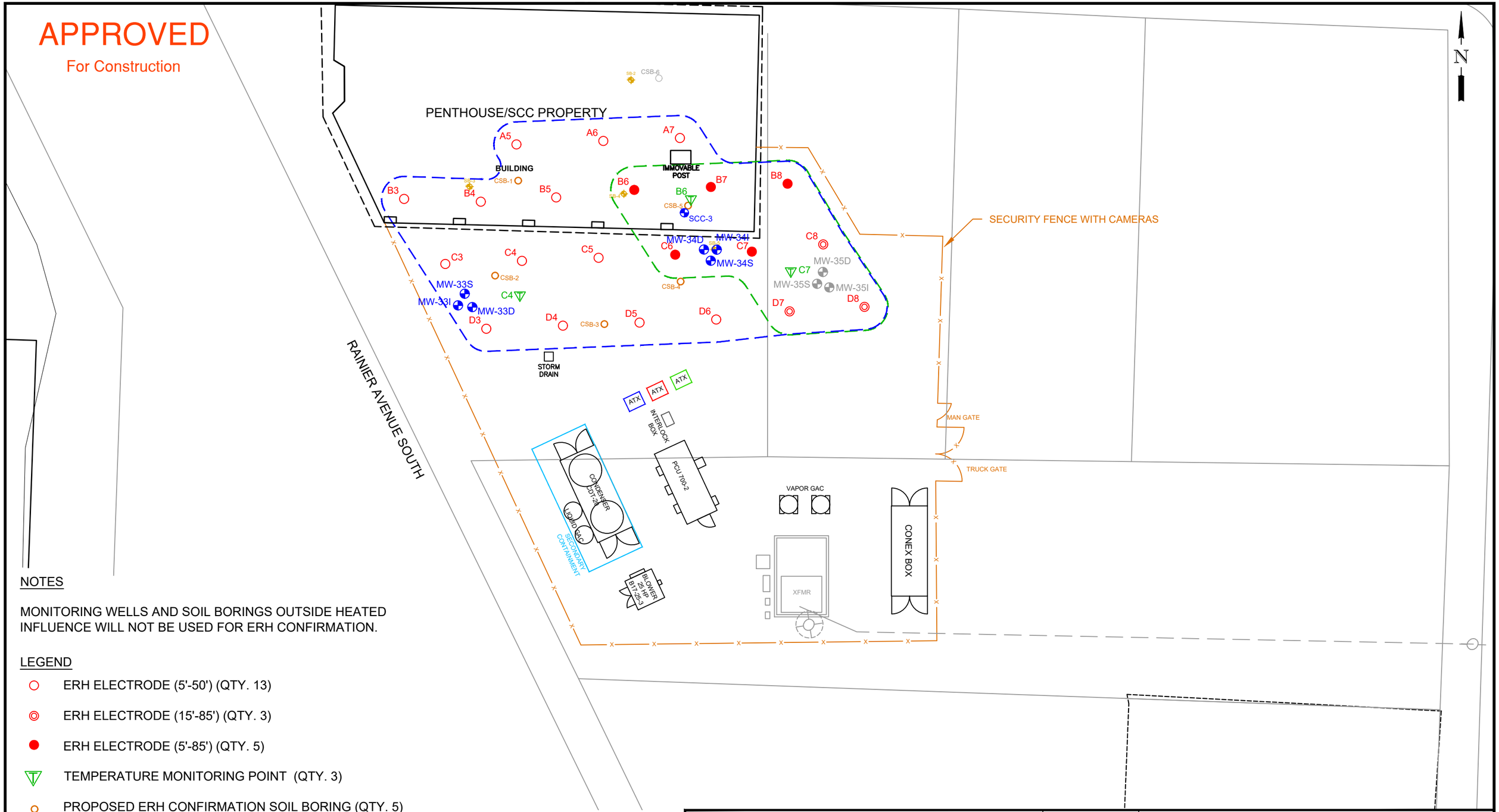
N

0 40

APPROXIMATE SCALE IN FEET

APPROVED

For Construction



NOTES

MONITORING WELLS AND SOIL BORINGS OUTSIDE HEATED INFLUENCE WILL NOT BE USED FOR ERH CONFIRMATION.

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- PROPOSED ERH CONFIRMATION SOIL BORING (QTY. 5)
- ERH CONFIRMATION MONITORING WELL (QTY. 7)
- MONITORING WELL (QTY. 3)
- AREA OF HEATING INFLUENCE
- AREA OF DEEP HEATING INFLUENCE

0 20 40

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

SITE PLAN

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-1

APPROVED

For Construction

PENTHOUSE/SCC PROPERTY

BUILDING

IMMOVABLE POST

RAINIER AVENUE SOUTH

PH-SB-2 (mg/kg) 8/15/2010

DEPTH (ft)	PCE	TCE
5-6	0.047	<0.00078
8.5-10	0.047	<0.00079
13.5-15	0.025	<0.00094
18.5-20	0.0080	<0.00084
23.5-25	<0.00081	<0.00081
26-27.5	<0.00090	<0.00090
28.5-30	<0.00089	<0.00089
33.5-35	<0.00062	<0.00062
38.5-40	0.00017	<0.00078
43.5-45	<0.0085	<0.00085

PH-SB-10 (mg/kg) 12/8/2012

DEPTH (ft)	PCE	TCE
2-4	0.13	<0.00094
SB12-2-4 (duplicate)		
2-4	0.084	<0.00096

PH-SB-12 (mg/kg) 12/8/2012

DEPTH (ft)	PCE	TCE
0-1	0.089	<0.00094

PH-SB-3 (mg/kg) 9/12/2010

DEPTH (ft)	PCE	TCE
5-6.5	0.032	<0.00099
15-16.5	**0.32**	<0.00088
20-21.5	**0.30**	<0.00090
25-26.5	**0.056**	<0.00076
25-26.5	0.049	<0.00081
30-31.5	**0.12**	<0.00084
35-36.5	**0.13**	<0.00090
40-41.5	**0.11**	<0.00077
45-46.5	0.036	<0.00087

PH-SB-8 (mg/kg) 4/7/2009

DEPTH (ft)	PCE	TCE
0.5-6	0.0030	<0.0011
6-10	0.0046	<0.0013
10-16.5	**0.23**	<0.0013
20-26	**0.43**	<0.0010
33-35	0.0020	<0.00088
40-46	<0.0011	<0.0011
50-55	**0.064**	<0.00082
64-66	<0.00084	<0.00084
74-80	<0.00093	<0.00093

MW-24D (mg/kg) 4/7/2009

DEPTH (ft)	PCE	TCE
6	0.02	<0.03
9	0.02	<0.03
14	**0.33**	0.03
46	<0.02	<0.03

PH-SB-4 (mg/kg) 8/22/2010

DEPTH (ft)	PCE	TCE
5-6.5	**2.4**	<0.00088
10-11.5	**1.1**	<0.00076
15-16.5	**1.5**	<0.00077
20-21.5	**0.16**	<0.00084
25-26.5	**0.87**	<0.00092
30-30.5	**3.5**	<0.00077
35-36.5	**2.6**	<0.00082
40-41.5	**0.09**	<0.00074
45-56	**0.056**	<0.00071

MW-25S (mg/kg) 4/13/2009

DEPTH (ft)	PCE	TCE
6	0.0069	<0.0011
6	<0.02	<0.03
13	0.036	<0.3

PH-SB-9 (mg/kg) 9/7/2012

DEPTH (ft)	PCE	TCE
63.5-70	<0.00097	<0.00097
70-78.5	<0.0011	<0.0011
85-87.5	<0.0013	<0.0013
95-97.5	<0.0012	<0.0012

MW-31D (mg/kg) 9/27/2010

DEPTH (ft)	PCE	TCE
9	0.0018	<0.00068
41.5	0.0053	0.00099
71.5	<0.00067	<0.00067

PH-SB-15 (mg/kg) 1/2/2013

DEPTH (ft)	PCE	TCE
64-66	<0.0011	<0.0011
74-76	<0.0013	<0.0013
84-86	<0.0011	<0.0011
94-96	<0.0011	<0.0011
104-106	<0.0012	<0.0012

SCC-2 (mg/kg) 517/2008

DEPTH (ft)	PCE	TCE
5	**0.39**	<0.03
15	**0.34**	<0.03
25	**1.2**	<0.03
35	**4.2**	<0.03

SCC-1 (mg/kg) 5/17/2008

DEPTH (ft)	PCE	TCE
6.5	**0.22**	<0.03
9.5	**0.14**	<0.03
11.5	**0.16**	<0.03

PH-SB-7 (mg/kg) 9/4/2012

DEPTH (ft)	PCE	TCE
2-4	<0.00090	<0.00090
7.5-9.5	<0.0011	<0.0011
13-17	<0.00096	<0.00096
25-26.5	<0.0010	<0.0010
34-35	<0.00094	<0.00094
42-45	<0.0012	<0.0012
52.5-55	<0.0012	<0.0012
62.5-65	<0.0011	<0.0011
75-77.5	<0.0011	<0.0011

PH-SB-13 (mg/kg) 1/4/2013-1/7/2013

DEPTH (ft)	PCE	TCE
34-36	<0.0010	<0.0010
44-46	<0.00092	<0.00092
54-56	<0.0012	<0.0012
64-66	<0.00099	<0.00099
74-76	<0.0010	<0.0010
86-88	<0.00092	<0.00092
94-96	<0.0011	<0.0011
104-106	<0.0012	<0.0012

PH-SB-11 (mg/kg) 12/8/2012

DEPTH (ft)	PCE	TCE
2-4	0.0087	<0.00094
8-10	0.024	<0.0010
10-12	0.025	<0.00092

PH-SB-6 (mg/kg) 9/4/2012-9/6/2012

DEPTH (ft)	PCE	TCE
2.5-5	<0.0010	<0.0010
7.5-10	0.0013	<0.00096
12.5-15	0.0012	<0.00096
22.5-25	<0.00093	<0.00093
33-36	0.028	<0.00097
46-47	0.0038	<0.0010
51-55	**0.10**	<0.00091
62.5-65	0.0029	<0.0011
75-78	**0.19**	<0.0011

PH-SB-14 (mg/lg) 12/26/2012-12/28/2012

DEPTH (ft)	PCE	TCE
34-36	<0.00083	<0.00083
44-46	<0.0010	<0.0010
54-56	<0.0011	<0.0011
64-66	0.0082	<0.00093
74-76	0.0071	<0.0011
86-88	0.0037	<0.0011
94-96	0.0016	<0.0012
104-106	<0.0011	<0.0011

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- SOIL BORING ADVANCED 2010
- EXISTING MONITORING WELL
- MONITORING WELL (QTY. 3)
- EXTENT OF COCS IN GROUNDWATER ABOVE SITE PSL
- AREA OF HEATING INFLUENCE
- AREA OF DEEP HEATING INFLUENCE

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY D. SEILER

DRAWN BY A. PEABODY

CHECKED BY C. CROWNOVER

PROJECT MANAGER J. ROOT

QSAT REVIEW 03/08/17

SITE FORMER PENTHOUSE DRAPERY

LOCATION SEATTLE, WASHINGTON

CLIENT PENTHOUSE DRAPERY

SITE PLAN
PRE-ERH SOIL CONTAMINATION CONCENTRATIONS

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-1A

APPROVED

For Construction

PENTHOUSE/SCC PROPERTY

BUILDING

IMMOVABLE POST

RAINIER AVENUE SOUTH

SCC1 (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
27.5-37.5	**27**	<0.20

PH-SB-2 (µg/L) 8/15/2010

DEPTH (ft)	PCE	TCE
32	0.58	<0.20
40	4.8	<0.20

PH-SB-4 (µg/L) 8/22/2010

DEPTH (ft)	PCE	TCE
24	**3,200**	<50
30	**1,500**	<20
40	**14,000**	<100

PH-SB-3 (µg/L) 9/12/2010

DEPTH (ft)	PCE	TCE
35	**450**	<4.0
40	**1000**	<4.0
40	**970**	<4.0
45	**630**	<4.0

SCC2 (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
25-35	**5,900**	*<30*

PH-SB-8 (µg/L) 9/10/2012

DEPTH (ft)	PCE	TCE
25	**740**	<0.40
35	**110**	<10
45	**91**	<10
55	**56**	<0.40
65	**18**	<0.20

MW24S (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
15-20	**170**	<1.0

MW24D (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
44-49	**19**	3.0

MW25S (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
13-18	**89**	**1.6**

MW25I (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
29-34	**290**	**7.4**

MW25D (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
44-49	**170**	**10**

PH-SB-15 (µg/L) 1/3/2013

DEPTH (ft)	PCE	TCE
70-80	**6.2**	<0.20
80-90	1.0	<0.20
100-106.5	<0.20	<0.20

PH-SB-7 (µg/L) 9/4/2012

DEPTH (ft)	PCE	TCE
30	0.37	<0.20
48	0.62	<0.20
75	<0.20	<0.20

PH-SB-13 1/7/2013

DEPTH (ft)	PCE	TCE
70-80	<0.20	<0.20
80-90	1.2	<0.20
100-110	0.56	<0.20
100-110	0.57	<0.20

PH-SB-6 (µg/L) 9/6/2012

DEPTH (ft)	PCE	TCE
35	**130**	<0.40
50	**920**	<10
70	**270**	<2.0
80	**450**	<2.0

MW29 (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
33-38	**12,000**	*<60*

MW14 (µg/L) 8/7/2012

DEPTH (ft)	PCE	TCE
25-35	**7,900**	*<50*

PH-SB-14 (µg/L) 12/28/2012

DEPTH (ft)	PCE	TCE
30-40	<0.20	<0.20
40-50	**8.6**	<0.20
70-80	2.7	<0.20
80-90	0.41	<0.20
100-110	<0.20	<0.20

PH-SB-9 (µg/L) 9/7/2012

DEPTH (ft)	PCE	TCE
65	**83**	<0.40
75	**26**	<2.0

MW18 (µg/L) 7/24/2012

DEPTH (ft)	PCE	TCE
14-17	1.6	<0.020
22-25	3.7	<0.020
30-40	**89**	<0.40

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- SOIL BORING ADVANCED 2010
- EXISTING MONITORING WELL
- MONITORING WELL (QTY. 3)
- EXTENT OF COCS IN GROUNDWATER ABOVE SITE PSL
- AREA OF HEATING INFLUENCE
- AREA OF DEEP HEATING INFLUENCE

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE FORMER PENTHOUSE DRAPERY

LOCATION SEATTLE, WASHINGTON

CLIENT PENTHOUSE DRAPERY

SITE PLAN
PRE-ERH GROUNDWATER CONTAMINATION CONCENTRATIONS

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-1B

APPROVED

For Construction

PENTHOUSE/SCC PROPERTY

RAINIER AVENUE SOUTH

BUILDING

IMMOVABLE POST

CSB-1 (mg/kg) 7/15/2018		
DEPTH (ft)	PCE	TCE
10.0-11.0	0.0094	<0.00093
15.0-15.75	0.0160	<0.0011
15.75-16.5	<0.00099	<0.00099
40.0-40.75	0.0033	<0.0011
40.75-41.5	0.0032	<0.0014

CSB-10 (mg/kg) 9/27/2018		
DEPTH (ft)	PCE	TCE
45.0-45.75	0.0037	0.0022
45.75-46.5	0.030	0.0140

CSB-2 (mg/kg) 7/16/2018		
DEPTH (ft)	PCE	TCE
14.0-15.0	<0.0013	<0.0013
15.0-16.0	<0.0013	<0.0013
45.0-45.75	**0.1400**	0.020
45.75-46.5	**0.1400**	0.0150

CSB-8 (mg/kg) 8/25/2018		
DEPTH (ft)	PCE	TCE
45.0-45.75	0.0190	0.0042
45.75-46.5	**0.0550**	0.0017

CSB-9 (mg/kg) 8/25/2018		
DEPTH (ft)	PCE	TCE
52.0-52.5	<0.0013	<0.0013
54.5-55.0	**0.18**	0.0030

CSB-6 (mg/kg) 7/14/2018		
DEPTH (ft)	PCE	TCE
5.0-5.5	**0.057**	<0.0015
5.5-6.5	**0.060**	<0.0013
35.0-35.5	0.0069	<0.0014
35.5-36.0	0.0066	<0.00097

CSB-7 (mg/kg) 8/25/2018		
DEPTH (ft)	PCE	TCE
5.0-5.5	0.036	0.0016
6.0-6.5	0.045	<0.0015

CSB-5 (mg/kg) 7/14/2018		
DEPTH (ft)	PCE	TCE
25.0-25.5	0.0021	<0.00091
25.5-26.5	<0.0011	<0.0011
35.0-35.75	<0.0011	<0.0011
35.75-36.5	<0.0014	<0.0014

CSB-4 (mg/kg) 7/17/2018		
DEPTH (ft)	PCE	TCE
17.0-17.75	<0.0015	<0.0015
17.75-18.5	<0.00094	<0.00094
40.0-40.75	0.040	0.0082
40.75-41.5	0.0021	<0.0013

CSB-11 (mg/kg) 9/27/2018		
DEPTH (ft)	PCE	TCE
50.0-51.0	0.0049	<0.0011
54.0-55.0	0.0016	<0.0010

CSB-3 (mg/kg) 7/16/2018		
DEPTH (ft)	PCE	TCE
5.0-10.0	0.0080	0.0024
50.0-51.5	**0.15**	0.0033
55.0-56.25	**0.089**	<0.0016

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- SOIL BORING ADVANCED 2010
- EXISTING MONITORING WELL
- MONITORING WELL (QTY. 3)
- CONFIRMATION MONITORING WELL (QTY. 7)
- CONFIRMATION SOIL BORING
- EXTENT OF COCS IN GROUNDWATER ABOVE SITE PSL
- AREA OF HEATING INFLUENCE
- AREA OF DEEP HEATING INFLUENCE

0 15 30

SCALE IN FEET

ERH REMEDIAL GOAL:
0.05 mg/kg PCE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

SITE PLAN
CONFIRMATION SOIL CONTAMINATION CONCENTRATIONS

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-1C

APPROVED

For Construction

SCC-3 (µg/L) 23'-28'		
SAMPLE DATE	PCE	TCE
7/30/2017	1,200	<10
6/12/2018	52	3.6
7/12/2018	5.2	0.6
8/8/2018	1,100	400
8/22/2018	830	390
9/26/2018	450	340
11/8/2018	12	6.5
3/20/2019	14	14
6/18/2019	5.4	12

MW-33S (µg/L) 15'-20'		
SAMPLE DATE	PCE	TCE
8/1/2017	490	<2.0
6/12/2018	1,400	15
7/13/2018	480	45
8/8/2018	210	45
8/24/2018	100	30
9/26/2018	310	140
11/8/2018	73	28
3/20/2019	25	14
6/20/2019	1.3	12

MW-33I (µg/L) 40'-50'		
SAMPLE DATE	PCE	TCE
8/1/2017	360	6.4
6/12/2018	360	17
7/13/2018	1,200	280
8/8/2018	8.5	2.6
8/24/2018	5.7	2.2
9/26/2018	1.3	0.67
11/8/2018	26	23
3/20/2019	15	23
6/20/2019	3.7	9.5

MW-33D (µg/L) 95'-100'		
SAMPLE DATE	PCE	TCE
8/1/2017	0.9200	<0.20
6/12/2018	0.20	<0.20
7/13/2018	<0.20	<0.20
8/24/2018	<0.20	<0.20
6/20/2019	<1	<1

MW-34D (µg/L) 95'-100'		
SAMPLE DATE	PCE	TCE
8/1/2017	3.2000	<0.20
6/12/2018	<0.20	<0.20
7/12/2018	3.0	<0.20
8/8/2018	<0.20	<0.20
8/23/2018	<0.20	<0.20
8/23/2018	<0.20	<0.20
9/26/2018	<0.20	<0.20
6/20/2019	<1	<1

MW-34I (µg/L) 34'-39'		
SAMPLE DATE	PCE	TCE
8/1/2017	1,800	<10
6/12/2018	24,000	810
7/12/2018	6,900	1,600
8/8/2018	2,200	710
8/23/2018	1.1	0.63
9/26/2018	1,000	760
11/8/2018	38	27
3/20/2019	19	27
6/20/2019	3.5	9.8

MW-34S (µg/L) 15'-20'		
SAMPLE DATE	PCE	TCE
8/1/2017	13	<0.40
6/12/2018	410	20
7/12/2018	<0.20	<0.20
8/8/2018	260	58
8/24/2018	270	81
9/26/2018	120	61
11/8/2018	1.50	0.71
3/20/2019	0.71	0.46
6/20/2019	<1	<1

MW-35S (µg/L) 30'-35'		
SAMPLE DATE	PCE	TCE
8/1/2017	300	<2.0
6/12/2018	990	250
7/12/2018	230	100
8/8/2018	0.4700	<0.20
8/23/2018	<0.20	<0.20
9/26/2018	<0.20	<0.20
6/20/2019	1.6	3.6

MW-35I (µg/L) 45'-50'		
SAMPLE DATE	PCE	TCE
8/1/2017	1,700	<10
6/12/2018	690	250
7/12/2018	100	51
8/8/2018	34	18
8/23/2018	15	10
9/26/2018	35	17
6/20/2019	7.9	6.8

PENTHOUSE/SCC PROPERTY

BUILDING

IMMOVABLE POST

RAINIER AVENUE SOUTH

CSB-6 SCC-1 CSB-7 A5 A6 A7 PH-SB-12 PH-SB-11 PH-SB-10 CSB-1 B3 B4 B5 B6 CSB-5 B7 B8 SCC-2 SCC-3 PH-SB-7 PH-SB-13 PH-SB-6 C8 MW-34D MW-34I C6 C7 MW-34S PH-SB-8 C3 MW24S C4 C5 MW-24 MW24D MW-33S CSB-2 CSB-10 CSB-8 CSB-4 MW-35D MW-35S MW-35I MW-33I MW-33D D3 D4 D5 D6 D7 D8 MW25I MW25S MW-25 MW25D CSB-9 CSB-11 CSB-3 MW-18 PH-SB-14 PH-SB-15 MW-17 MW-26 MW-31 MW31D

N

0 15 30

SCALE IN FEET

LEG

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- SOIL BORING ADVANCED 2010
- EXISTING MONITORING WELL
- MONITORING WELL (QTY. 3)
- CONFIRMATION MONITORING WELL (QTY. 7)
- CONFIRMATION SOIL BORING
- EXTENT OF COCS IN GROUNDWATER ABOVE SITE PSL
- AREA OF HEATING INFLUENCE
- AREA OF DEEP HEATING INFLUENCE

ERH REMEDIAL GOAL:
50µg/L PCE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

SITE PLAN
GROUNDWATER CONTAMINATION CONCENTRATIONS

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

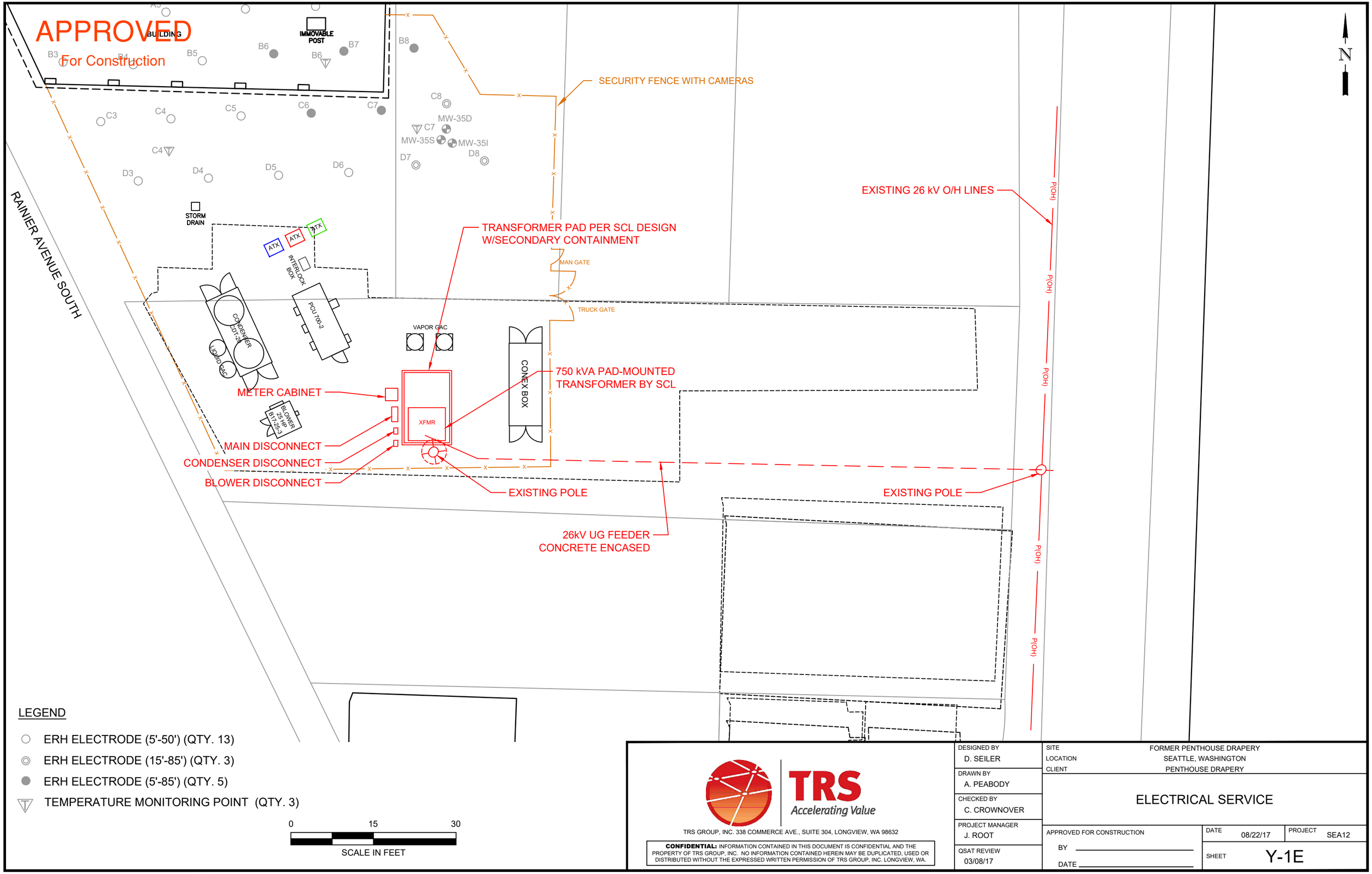
DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-1D

APPROVED

For Construction



LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

ELECTRICAL SERVICE

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 08/22/17

PROJECT SEA12

SHEET Y-1E

APPROVED

For Construction

PENTHOUSE/SCC PROPERTY

BUILDING

IMMOVABLE POST

SECURITY FENCE WITH CAMERAS

MAN GATE

TRUCK GATE

RAINIER AVENUE SOUTH

STORM DRAIN

INTERLOCK BOX

CONDENSER CDT-20

LIQUID GAC

SECONDARY CONTAINMENT

PCU 700-2

VAPOR GAC

BLOWER 25 HP B17-25-3

XFMR

CONEX BOX

45° FITTING

ROLLED 90° FITTING

A5 A6 A7 B3 B4 B5 B6 B7 B8 C3 C4 C5 C6 C7 C8 D3 D4 D5 D6 D7 D8

C4 C7 B6

ATX ATX ATX ATX

N

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- 1" CHEMICAL HOSE (4' SECTIONS)
- 1" CPVC (1 WELL)
- 2" CPVC (1 TO 4 WELLS)
- 3" CPVC (5 TO 9 WELLS)
- 4" CPVC (10 TO 21WELLS)
- 1" 0.020 SLOTTED CPVC PIPE (3' LENGTHS)
- TRENCH

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

VAPOR RECOVERY PIPING

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-2

APPROVED
For Construction

RAINIER AVENUE SOUTH

C4
D3
D4
D5
D6
D7
D8
SWITCH

N

STORM DRAIN

ATX
ATX
ATX

INTERLOCK BOX

PCU 700-2

CONDENSER CDT-20

LIQUID GAC

SECONDARY CONTAINMENT

BLOWER 25 HP B17-25-3

MAKEUP WATER

4" X 15' PVC STACK WITH TEE

VAPOR GAC

CONEX BOX

XFMR

MAN GATE

TRUCK GATE

RESISTANCE TEMPERATURE DETECTOR - RTD (TYPICAL)

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- 1" CPVC
- 4" PVC FLEXIBLE HOSE
- 4" CPVC
- 6" CPVC

0 10 20
SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

EQUIPMENT PIPING PLAN

APPROVED FOR CONSTRUCTION
BY _____
DATE _____

DATE 11/15/17
PROJECT SEA12
SHEET Y-3

APPROVED

For Construction

PENTHOUSE/SCC PROPERTY

CSB-6

A5 A6 A7

BUILDING

IMMOVABLE POST

B3 B4 B5 B6 B6 B7 B8

DRIP FB11

RTD FB32

C3 C4 C5 C6 C7 C8

RTD FB33

C7

VACUUM SWITCH

C4 D3 D4 D5 D6 D7 D8

SECURITY FENCE WITH CAMERAS

RAINIER AVENUE SOUTH

STORM DRAIN

ATX ATX ATX

INTERLOCK BOX

MAN GATE

TRUCK GATE

CONDENSER CDT-20

LIQUID GAC

PCU 700-2

VAPOR GAC

CONEX BOX

BLOWER 25 HP BT7-25-3

N

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- RTD FIELD BOX (QTY. 2)
- DRIP FIELD BOX (QTY. 1)
- VACUUM SWITCH
- E-STOP
- ETHERNET CABLE
- 12/3 SOOW CABLE
- 18/2 SOOW CABLE IN
- 18/2 SOOW CABLE OUT

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

FIELD BOX AND ETHERNET PLAN

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

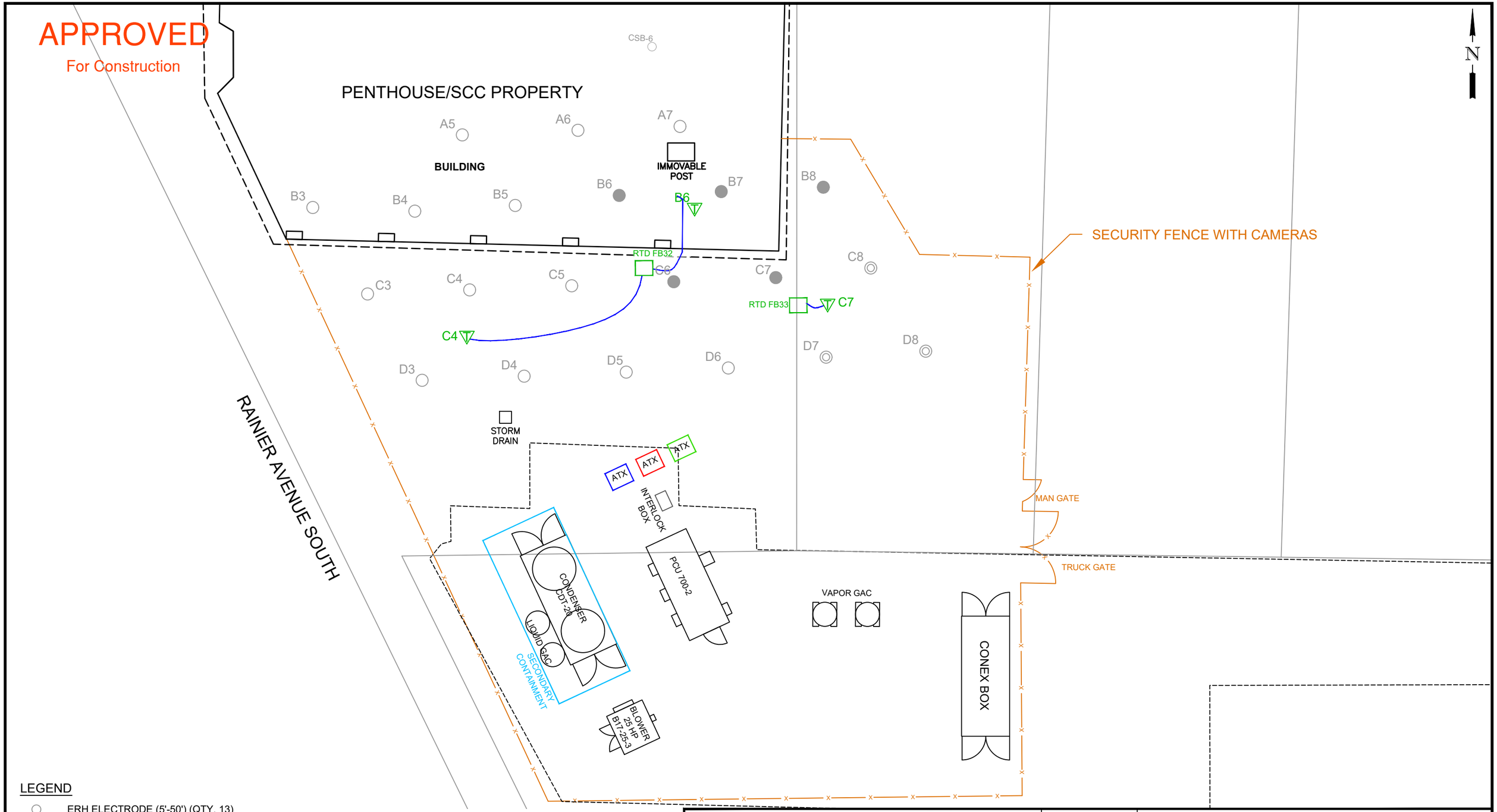
DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-4

APPROVED

For Construction



LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- RTD FIELD BOX (QTY. 2) — RTD FBx
- THERMOCOUPLE WIRING

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

THERMOCOUPLE WIRING PLAN

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

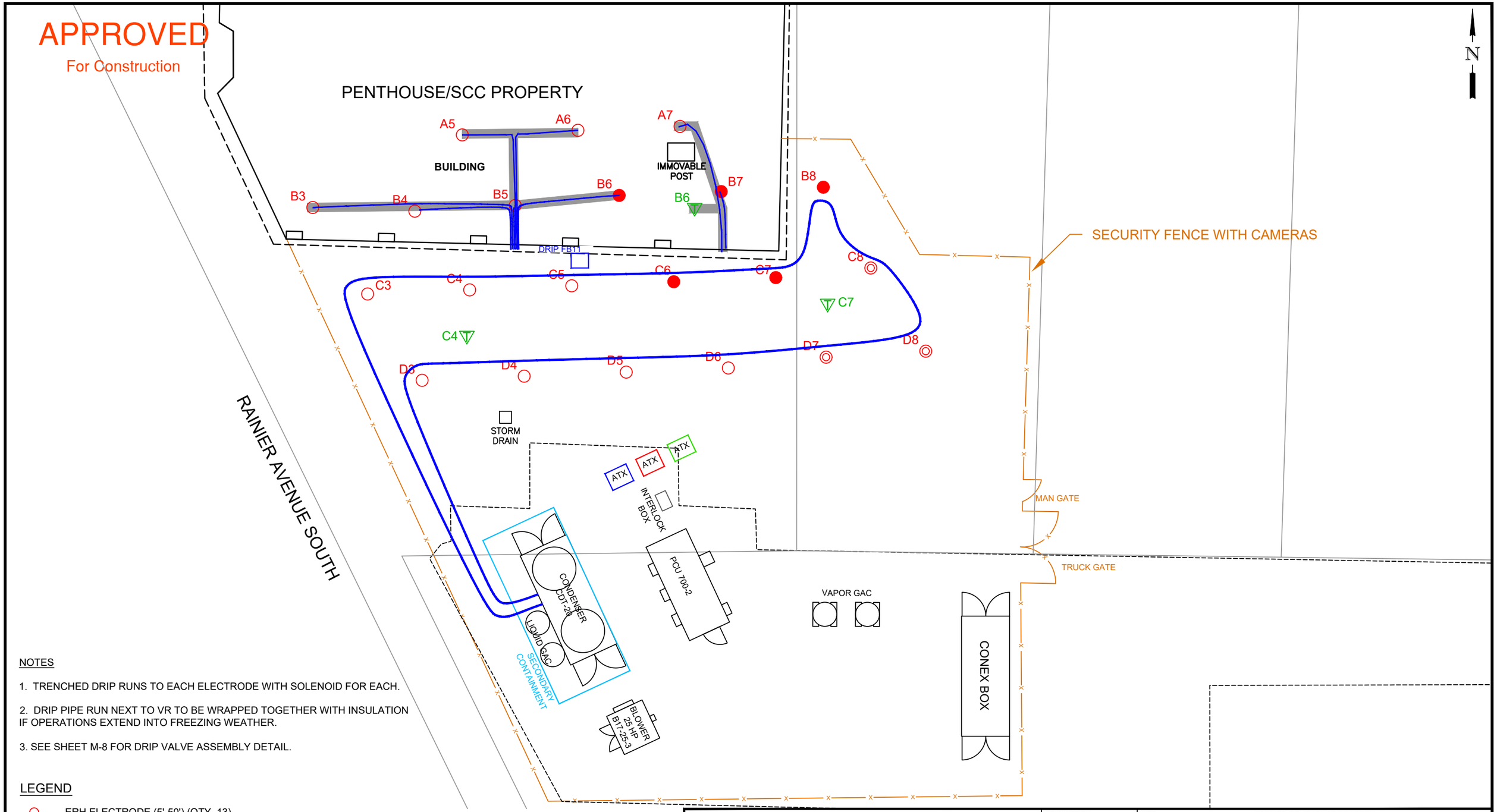
DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-5

APPROVED

For Construction



NOTES

1. TRENCHED DRIP RUNS TO EACH ELECTRODE WITH SOLENOID FOR EACH.

2. DRIP PIPE RUN NEXT TO VR TO BE WRAPPED TOGETHER WITH INSULATION IF OPERATIONS EXTEND INTO FREEZING WEATHER.

3. SEE SHEET M-8 FOR DRIP VALVE ASSEMBLY DETAIL.

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- DRIP FBx — DRIP FIELD BOX (QTY. 1)
- 1" PVC DRIP PIPE

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

DRIP PLAN

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

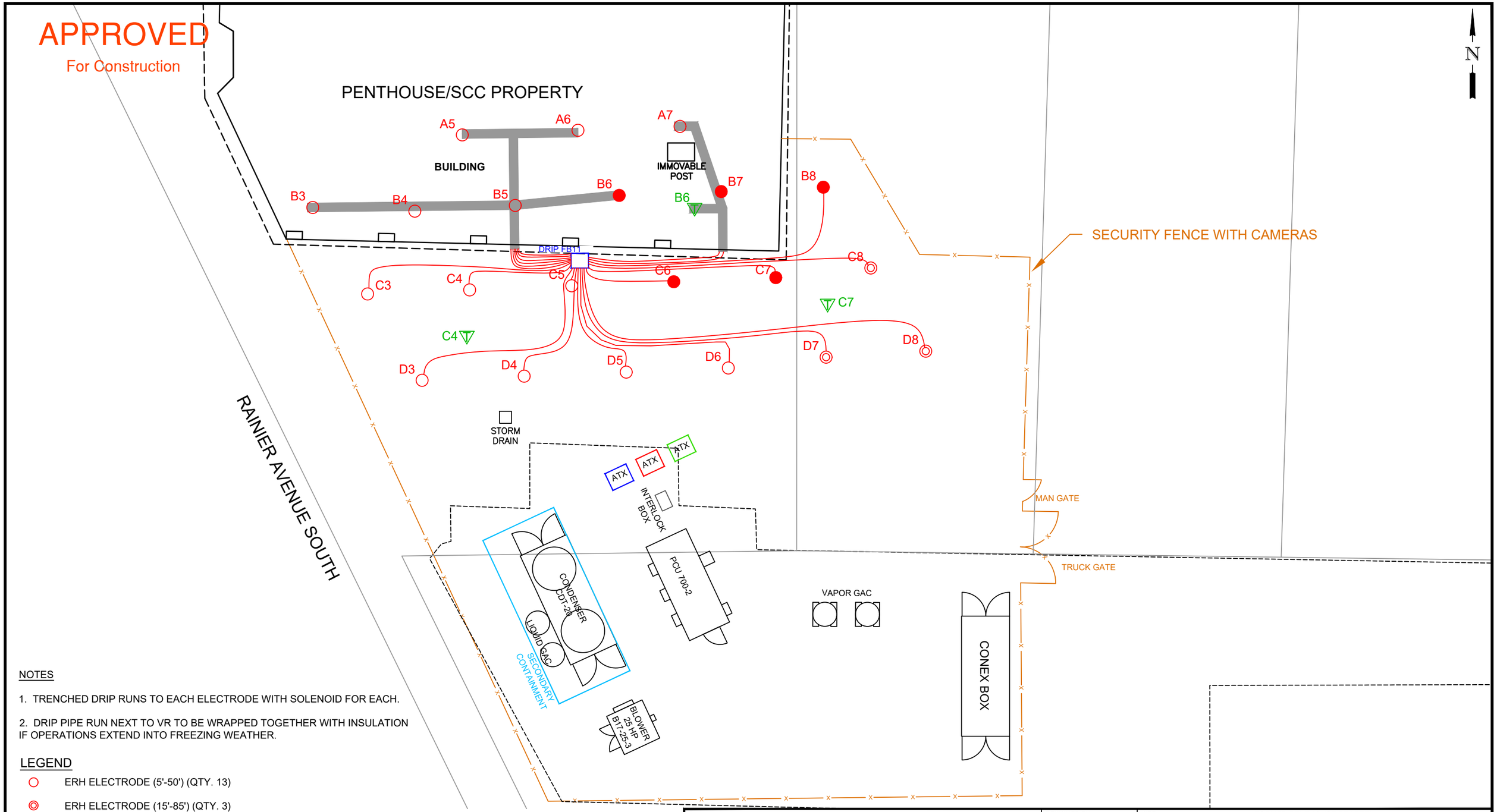
DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-6

APPROVED

For Construction



NOTES

1. TRENCHED DRIP RUNS TO EACH ELECTRODE WITH SOLENOID FOR EACH.

2. DRIP PIPE RUN NEXT TO VR TO BE WRAPPED TOGETHER WITH INSULATION IF OPERATIONS EXTEND INTO FREEZING WEATHER.

LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- DRIP FBx — DRIP FIELD BOX (QTY. 1)
- 18/2 SOOW CABLE (STANDARD LENGTHS ARE 25' -ORANGE BAND, 50'-GREEN BAND OR 100'-NO BAND) (ADD A 10' SAFETY FACTOR TO EACH CABLE LENGTH).

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

SOLENOID WIRING PLAN

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

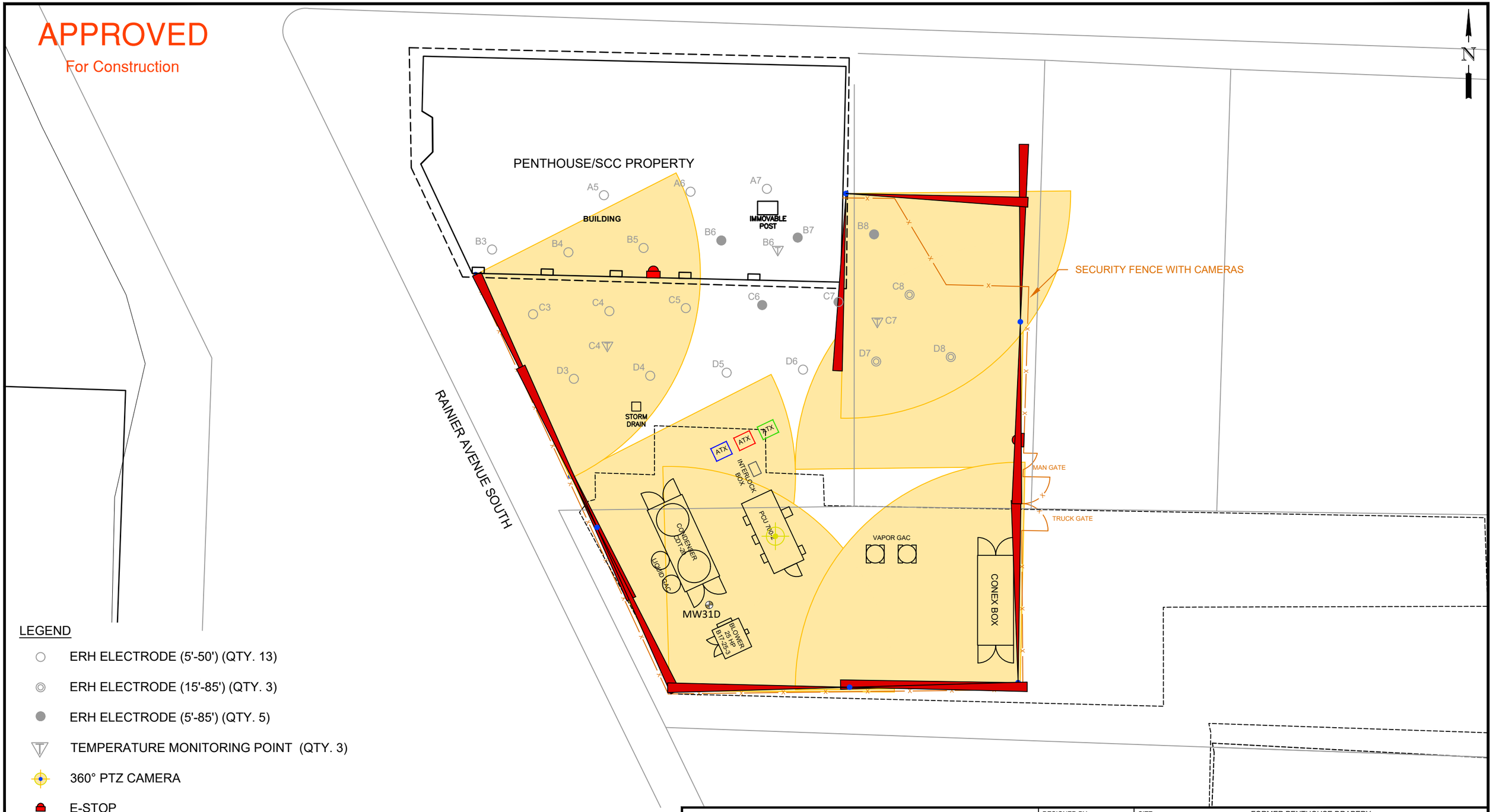
DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-7

APPROVED

For Construction



LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- 360° PTZ CAMERA
- E-STOP
- FIRE ONE CORNER MOTION SENSOR
- FIRE ONE MOTION SENSOR
- VIDEOFIED CORNER MOUNT CAMERA

0 15 30

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

SECURITY PLAN

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 2019.AUG.30

PROJECT SEA12

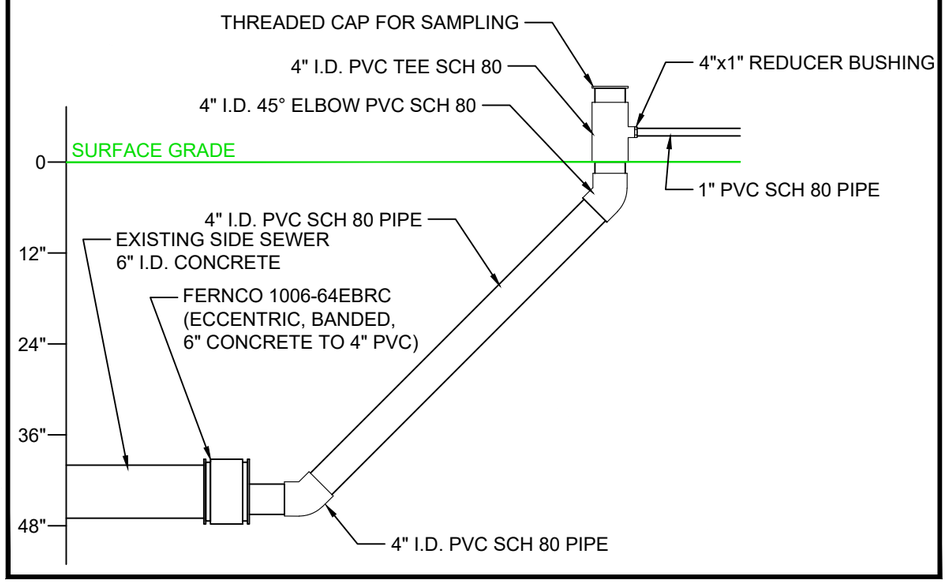
SHEET Y-8

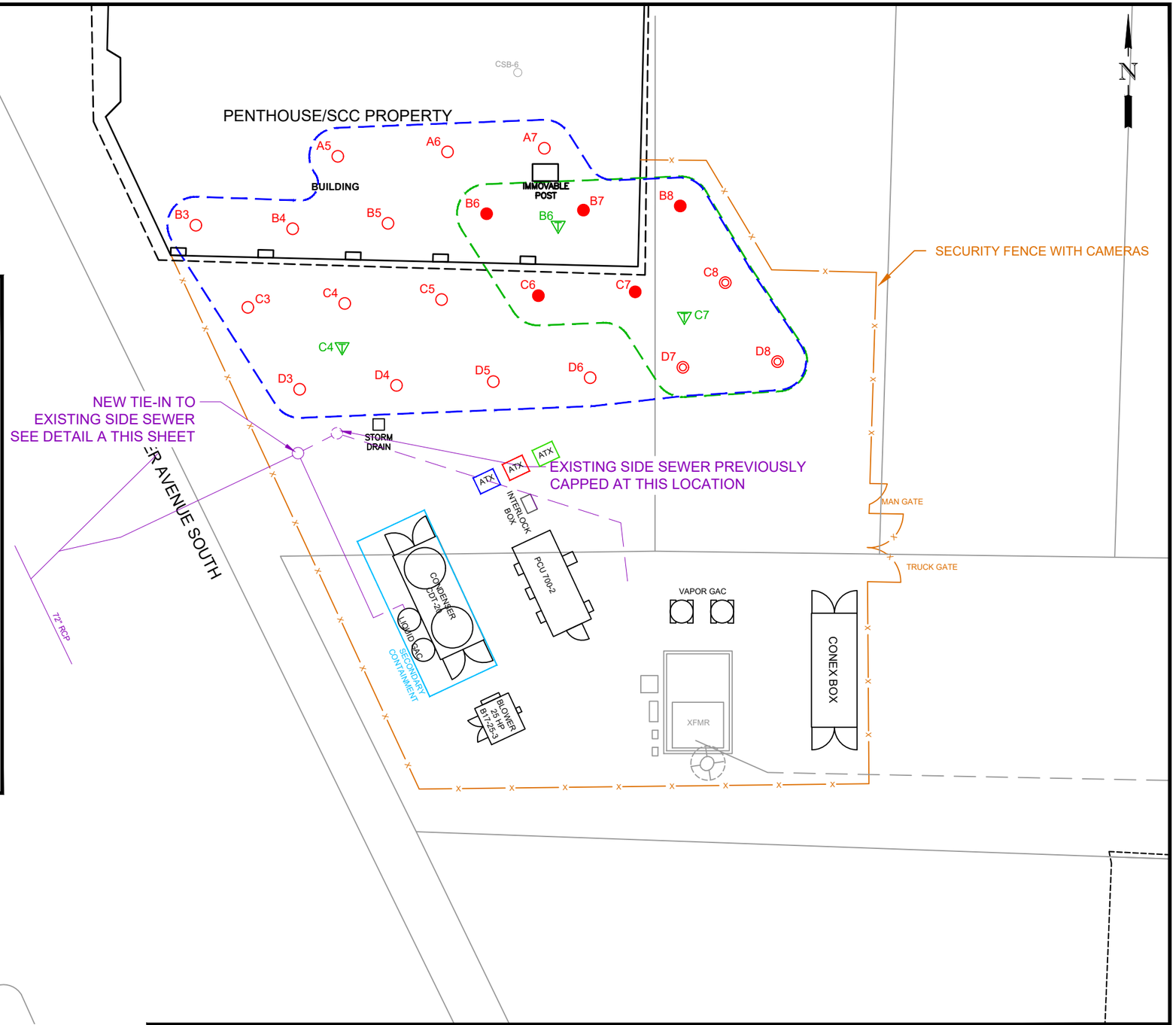
APPROVED

For Construction

DETAIL A

FOR DISCHARGE OF TREATED GROUND WATER THRU MAY 25, 2018 IN ACCORDANCE WITH KING COUNTY INDUSTRIAL WASTE PROGRAM LETTER OF AUTHORIZATION 1065-01





LEGEND

- ERH ELECTRODE (5'-50') (QTY. 13)
- ERH ELECTRODE (15'-85') (QTY. 3)
- ERH ELECTRODE (5'-85') (QTY. 5)
- TEMPERATURE MONITORING POINT (QTY. 3)
- ERH CONFIRMATION SOIL BORING (QTY. 5)
- ERH CONFIRMATION MONITORING WELL (QTY. 7)
- MONITORING WELL (QTY. 3)
- AREA OF HEATING INFLUENCE
- AREA OF DEEP HEATING INFLUENCE

0 20 40

SCALE IN FEET

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

SIDE SEWER CONNECTION - TEMPORARY

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 2019.AUG.30

PROJECT SEA12

SHEET Y-10

APPROVED

For Construction

LEGEND

- ELECTRONIC SIGNAL
- ELECTRICAL CABLE
- PROCESS LINE LABELING SEE SHEET P-2 FOR DESCRIPTION
- SOLENOID
- BALL VALVE
- BUTTERFLY VALVE
- SAMPLE PORT
- CHECK VALVE
- SELF-CONTAINED PRESSURE REGULATOR
- SPIGOT
- BACKFLOW PREVENTER
- FLANGE
- XX — XX PIPING SPEC. # CHANGE
- PUMP
- BLOWER
- ROTARY LOBE BLOWER
- DIAPHRAGM PUMP
- COMPRESSED AIR FILTER
- HEATER COIL

- COMPUTER OPERATED MONITORING, DATA COLLECTION AND CONTROLS
- HARDWIRE CONTROLS
- PI PRESSURE INDICATOR
- PCV PRESSURE CONTROL VALVE
- PSL PRESSURE SWITCH LOW
- FE FLOW ELEMENT
- FI FLOW INDICATOR
- FQI FLOW QUANTITY INDICATOR
- FT FLOW TRANSMITTER
- FQI FLOW QUANTITY INDICATOR
- LI LEVEL INDICATOR
- LSH LEVEL SWITCH HIGH
- LSHH LEVEL SWITCH HIGH-HIGH
- LSL LEVEL SWITCH LOW
- LSLL LEVEL SWITCH LOW-LOW
- TAH TEMPERATURE ALARM HIGH
- TE TEMPERATURE ELEMENT
- TSL TEMPERATURE SWITCH LOW
- TI TEMPERATURE INDICATOR
- TSH TEMPERATURE SWITCH HIGH
- YC CONTROLLER
- T TEMPERATURE DETECTOR
- CS CARBON STEEL
- CPVC SCH 40. CPVC PIPE
- PEX PEX TUBING
- FCV FLOW CONTROL VALVE

P&ID LINE COLORS

- SOFTENED/POTABLE/CLEAN WATER
- PROCESS WATER
- AIR
- STEAM
- AIR/STEAM MIX
- SOLVENT/CHEMICALS
- BLOWDOWN
- COMPUTER OPERATED CONTROLS
- HARDWIRE CONTROLS

NOTES

1. THIS IS AN ALL INCLUSIVE LEGEND SHEET. NOT ALL SYMBOLS WILL APPEAR ON EACH SHEET.

ENGINEER SIGNATURE / DATE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

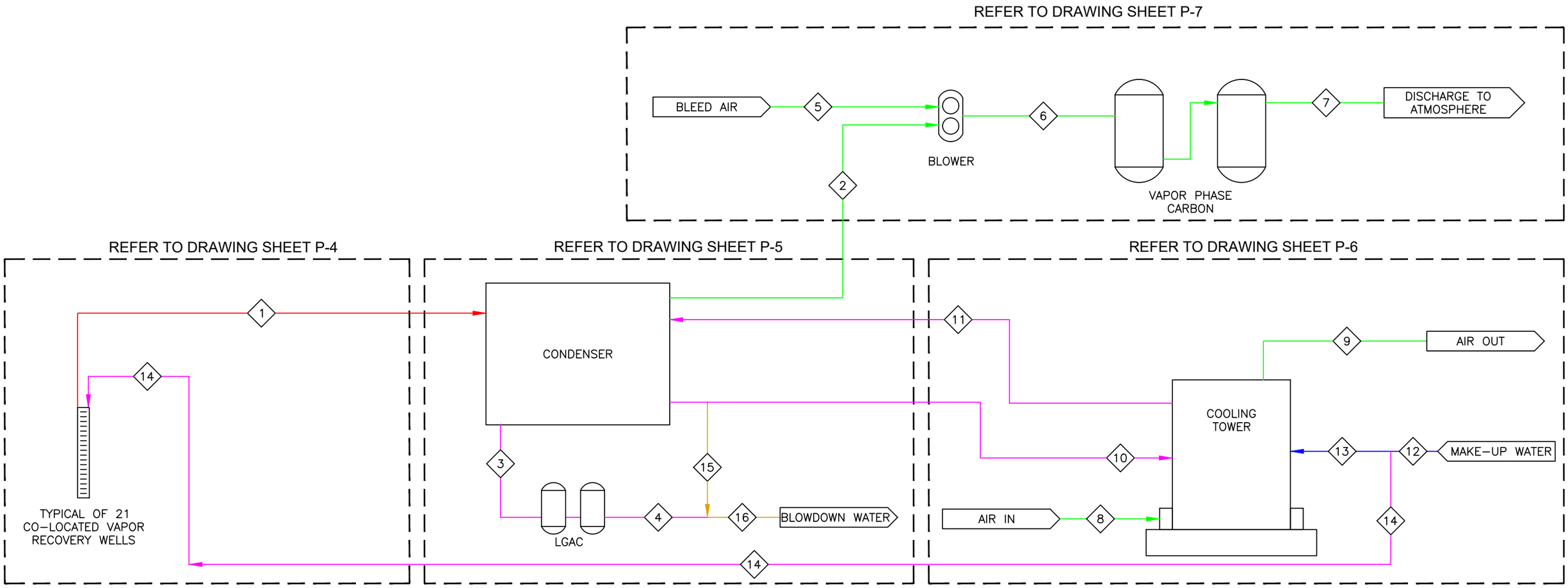
SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	FORMER PENTHOUSE

LEGEND
PROCESS AND INSTRUMENTATION DIAGRAM

APPROVED FOR CONSTRUCTION	DATE 03/27/17	PROJECT SEA12
BY _____ DATE _____	SHEET P-1	

APPROVED

For Construction



ENGINEER SIGNATURE / DATE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	FORMER PENTHOUSE

PROCESS FLOW DIAGRAM

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 03/27/17

PROJECT SEA12

SHEET P-2

APPROVED

For Construction

Process Stream	Location	Air		Water Vapor		Water		CVOCs		Temperature		Pressure
Description	#	(lb/min)	(scfm)	(lb/min)	(scfm)	(lb/min)	(gpm)	(lb/min)	(ppm)	°C	°F	(Δ from barometric)
Extracted air and steam from vapor recovery system	1	28	370	12.2	260	1.9	0.23	3.65E-05	0.13	77	171	4" Hg Vac
Discharge air from condenser after steam removal	2	28	370	0.9	19	0	0	3.65E-05	0.22	33	91	7" Hg Vac
Condensate discharge from condenser	3	0	0	0	0	13.2	1.58	2.99E-08	2.27E-03	33	91	10 psig
Condensate discharge from LGAC	4	0	0	0	0	13.2	1.58	1.50E-09	1.13E-04	33	91	10 psig
Bleed air to rotary lobe blower	5	0	0	0	0	0	0	0	0	22	72	N/A
Discharge air from rotary lobe blower	6	28	370	0.90	19	0	0	3.6E-05	2.19E-01	65	149	1 psig
Discharge from carbon vessels	7	28	370	0.90	19	0	0	3.6E-07	2.19E-03	45	113	N/A
Cooling air into cooling tower	8	2250	30,000	25.9	550	0	0	0	0	22	72	N/A
Air exhaust from cooling tower	9	2250	30,000	37.5	797	0	0	0	0	22	72	N/A
Recirculation water from condenser to cooling tower	10	0	0	0	0	4996	600	0	0	24	75	10 psig
Recirculation from cooling tower to condenser	11	0	0	0	0	4998	600	0	0	23	73	10 psig
Make-up water from potable source	12	0	0	0	0	19.9	2.39	0	0	20	68	15 psig
Water for cooling tower	13	0	0	0	0	14.1	1.69	0	0	20	68	50 psig
Drip water to electrodes	14	0	0	0	0	5.8	0.70	0	0	20	68	10 psig
Cooling tower Blowdown	15	0	0	0	0	2.5	0.30	0	0	23	73	10 psig
Blowdown water	16	0	0	0	0	15.7	1.88	1.50E-09	9.53E-05	20	68	10 psig

NOTES

1. LOCATIONS INDICATED IN THIS TABLE CORRESPOND TO THE LOCATION NUMBERS PROVIDED ON SHEET P-2.

2. THE MASS BALANCE IS DYNAMIC AND WILL CHANGE WITH TIME. VALUES SHOWN ARE THE ANTICIPATED AVERAGES.

ENGINEER SIGNATURE / DATE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY D. SEILER
DRAWN BY A. PEABODY
CHECKED BY C. CROWNOVER
PROJECT MANAGER J. ROOT
QSAT REVIEW 03/08/17

SITE FORMER PENTHOUSE DRAPERY
LOCATION SEATTLE, WASHINGTON
CLIENT FORMER PENTHOUSE

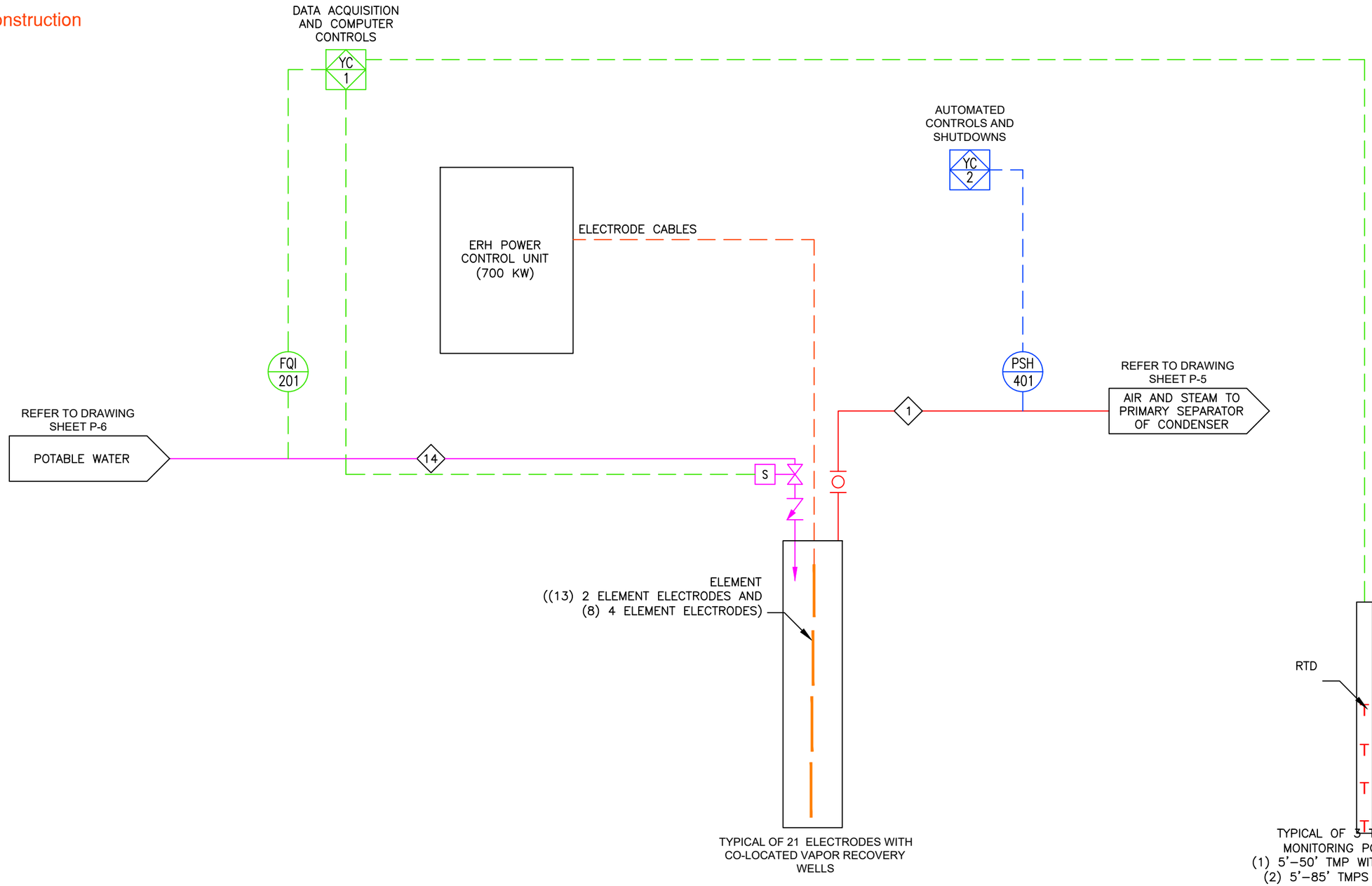
PROCESS FLOW MASS BALANCE

APPROVED FOR CONSTRUCTION
BY
DATE

DATE 03/30/17
PROJECT SEA12
SHEET P-3

APPROVED

For Construction



TYPICAL OF 21 ELECTRODES WITH CO-LOCATED VAPOR RECOVERY WELLS

TYPICAL OF 3 TEMPERATURE MONITORING POINTS (TMP)
(1) 5'–50' TMP WITH 10 RTDS AND
(2) 5'–85' TMPS WITH 17 RTDS

NOTES

1. SEE THE ELECTRODE AND TEMPERATURE MONITORING POINT DETAILS FOR MORE INFORMATION ON THEIR CONSTRUCTION.

2. PSH-401 WILL SHUT DOWN THE PCU IN THE EVENT OF A LOW FIELD VACUUM (LESS THAN 2" H_20).

ENGINEER SIGNATURE / DATE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE FORMER PENTHOUSE DRAPERY
LOCATION SEATTLE, WASHINGTON
CLIENT FORMER PENTHOUSE

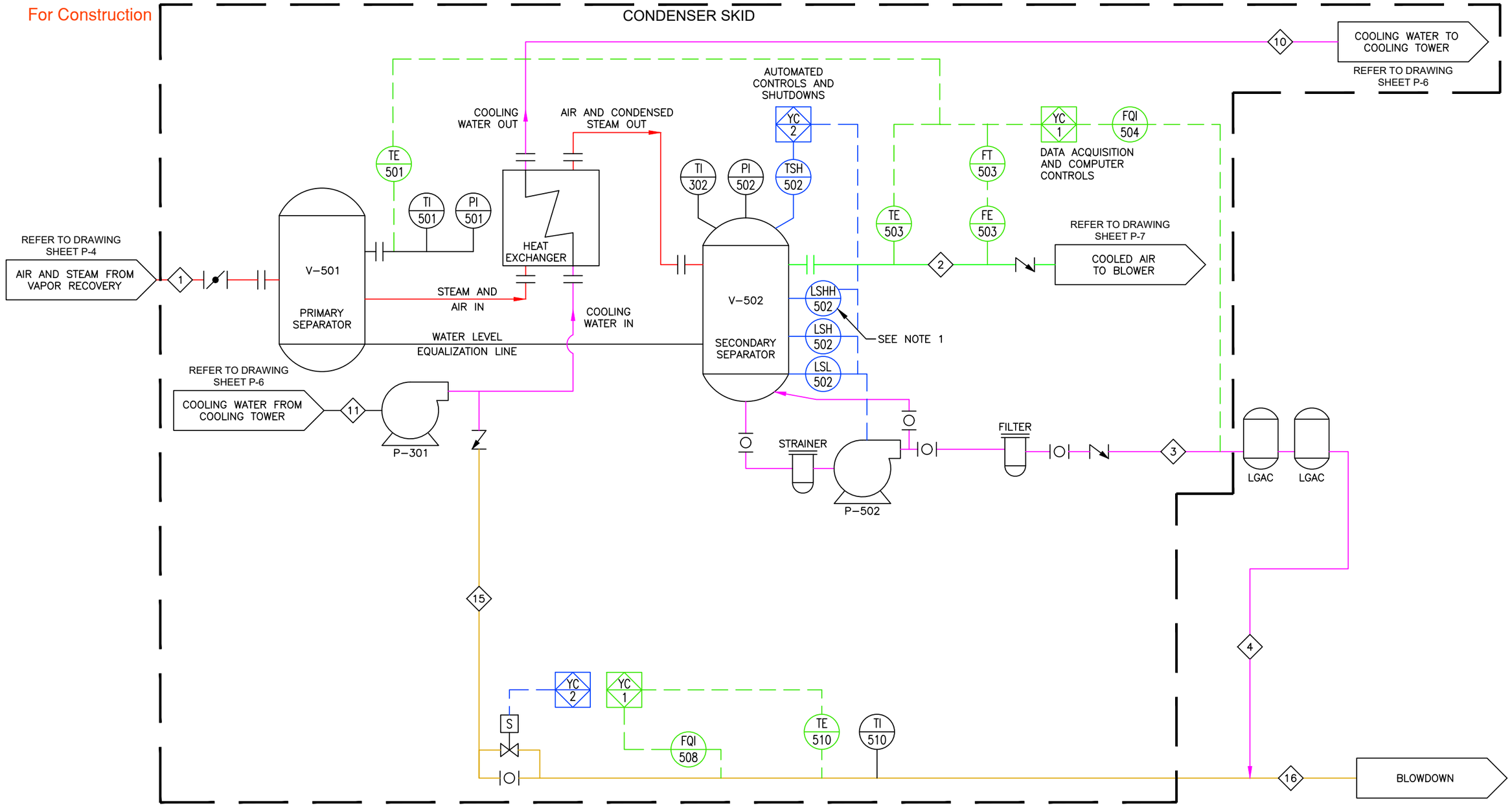
FIELD PROCESS AND INSTRUMENTATION DIAGRAM

APPROVED FOR CONSTRUCTION
BY _____
DATE _____

DATE 03/27/17
PROJECT SEA12
SHEET P-4

APPROVED

For Construction



NOTES:
1. LSHH-501 WILL SHUT DOWN THE VAPOR RECOVERY BLOWER AND POWER TO THE ELECTRODES.
2. TSH-502 WILL SHUT DOWN THE VAPOR RECOVERY BLOWER. TEMPERATURE SET POINT IS 140°F.
3. PROCESS LINE 10 SPLITS WITH HALF THE TOTAL FLOW (PROCESS LINE 10A) GOING TO EACH COOLING TOWER (SEE P-6).
4. THE HEAT EXCHANGER IS ASME 2 RATED.

ENGINEER SIGNATURE / DATE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	FORMER PENTHOUSE

CONDENSER PROCESS AND INSTRUMENTATION DIAGRAM

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

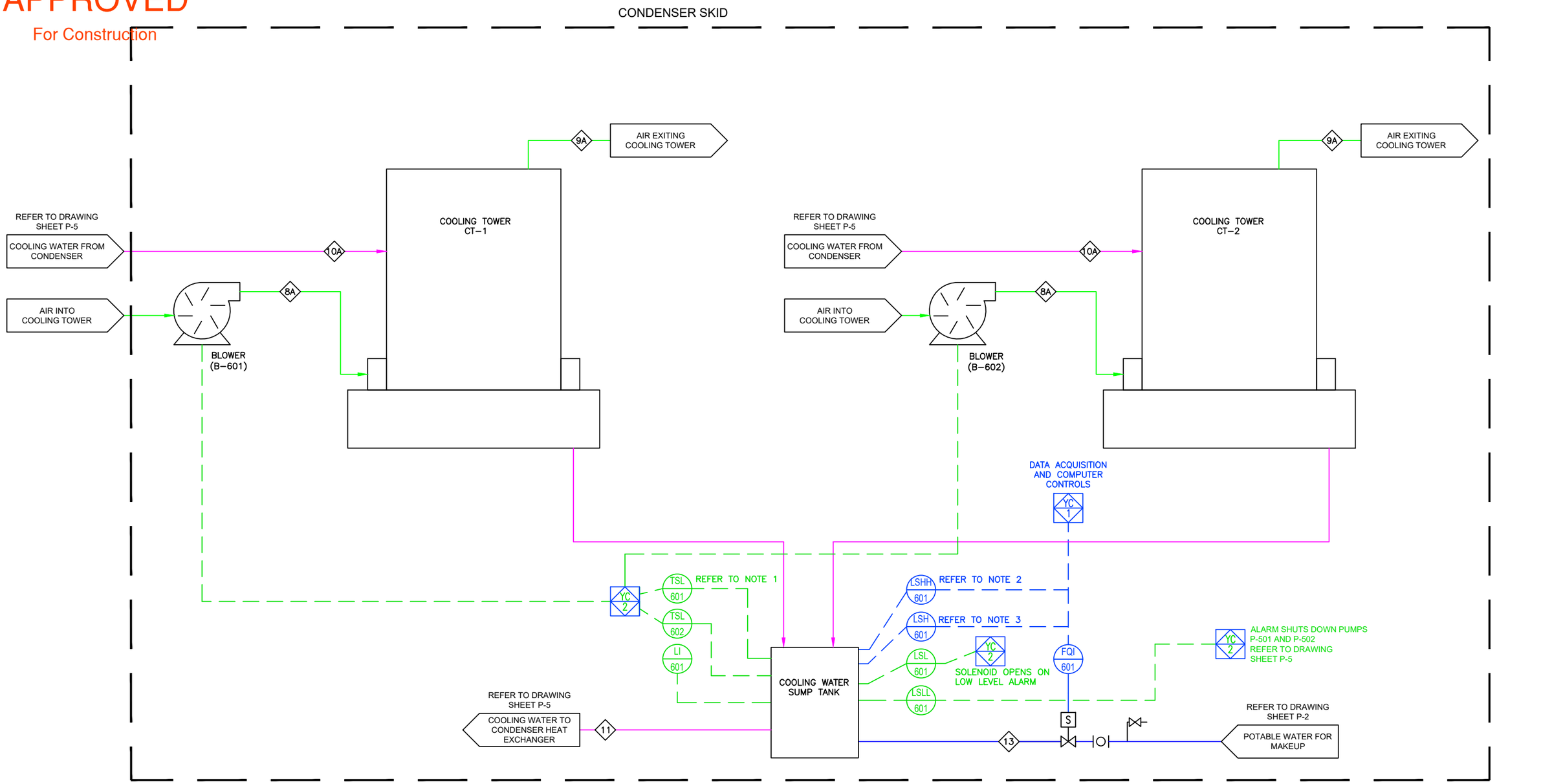
DATE 03/27/17

PROJECT SEA12

SHEET P-5

APPROVED

For Construction



NOTES

1. TSL-601 AUTOMATICALLY SHUTS DOWN THE COOLING TOWER FAN AT 45° F. TSL-602 TURNS ON AN IMMERSION HEATER IN THE COOLING TOWER SUMP.
2. LSHH-601 SHUTS DOWN SYSTEM
3. LSH-601 OPENS BLOWDOWN SOLENOID AT CONDENSER.
4. LSL-601 MUST BE AT LEAST 2 FEET ABOVE PUMP INTAKE.
5. POTABLE MAKEUP WATER IS SUPPLIED TO THE COOLING WATER SUMP TANK AT AN AVERAGE RATE OF 3-5 GPM IN 30 SECOND INCREMENTS.
6. PROCESS LINE 8 SPLITS WITH HALF THE TOTAL FLOW (PROCESS LINE 8A) GOING TO EACH COOLING TOWER (SEE P-2).
7. PROCESS LINE 9 IS THE COMBINATION OF PROCESS LINES 9A (ONE FROM EACH COOLING TOWER, SEE P-2).
8. PROCESS LINE 10 SPLITS WITH HALF THE TOTAL FLOW (PROCESS LINE 10A) GOING TO EACH COOLING TOWER (SEE P-2)

ENGINEER SIGNATURE / DATE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	FORMER PENTHOUSE

COOLING TOWER PROCESS AND INSTRUMENTATION DIAGRAM

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

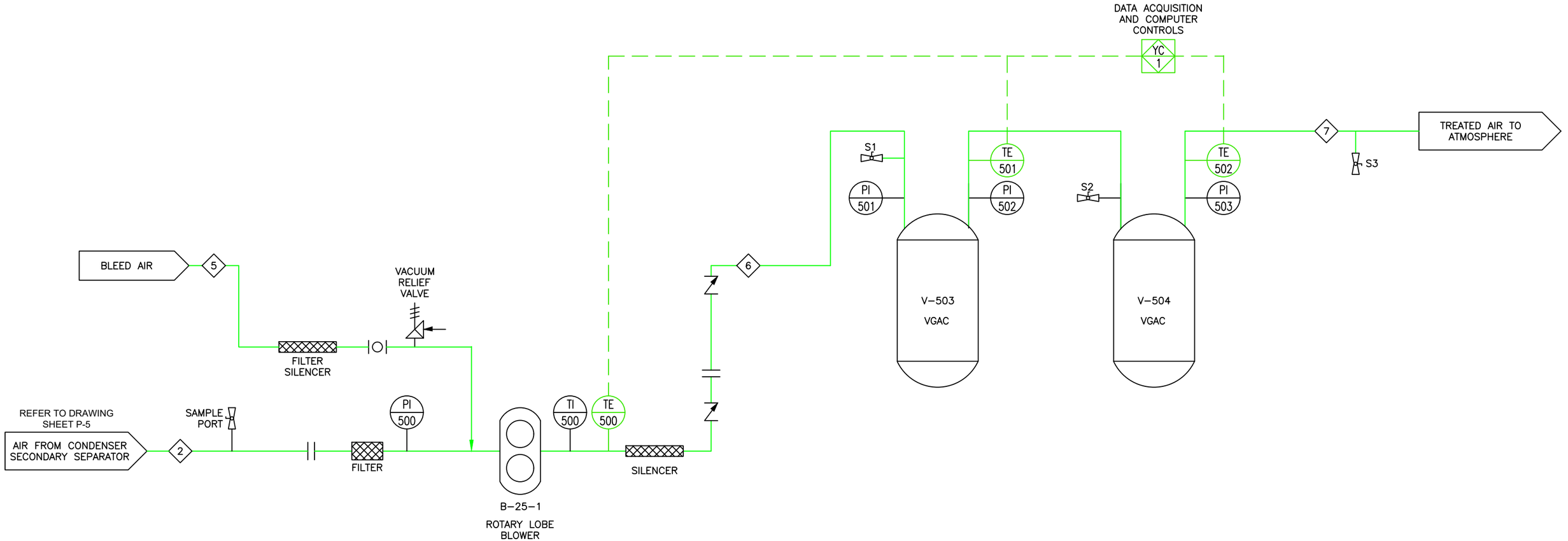
DATE 03/27/17

PROJECT SEA12

SHEET P-6

APPROVED

For Construction



ENGINEER SIGNATURE / DATE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	FORMER PENTHOUSE

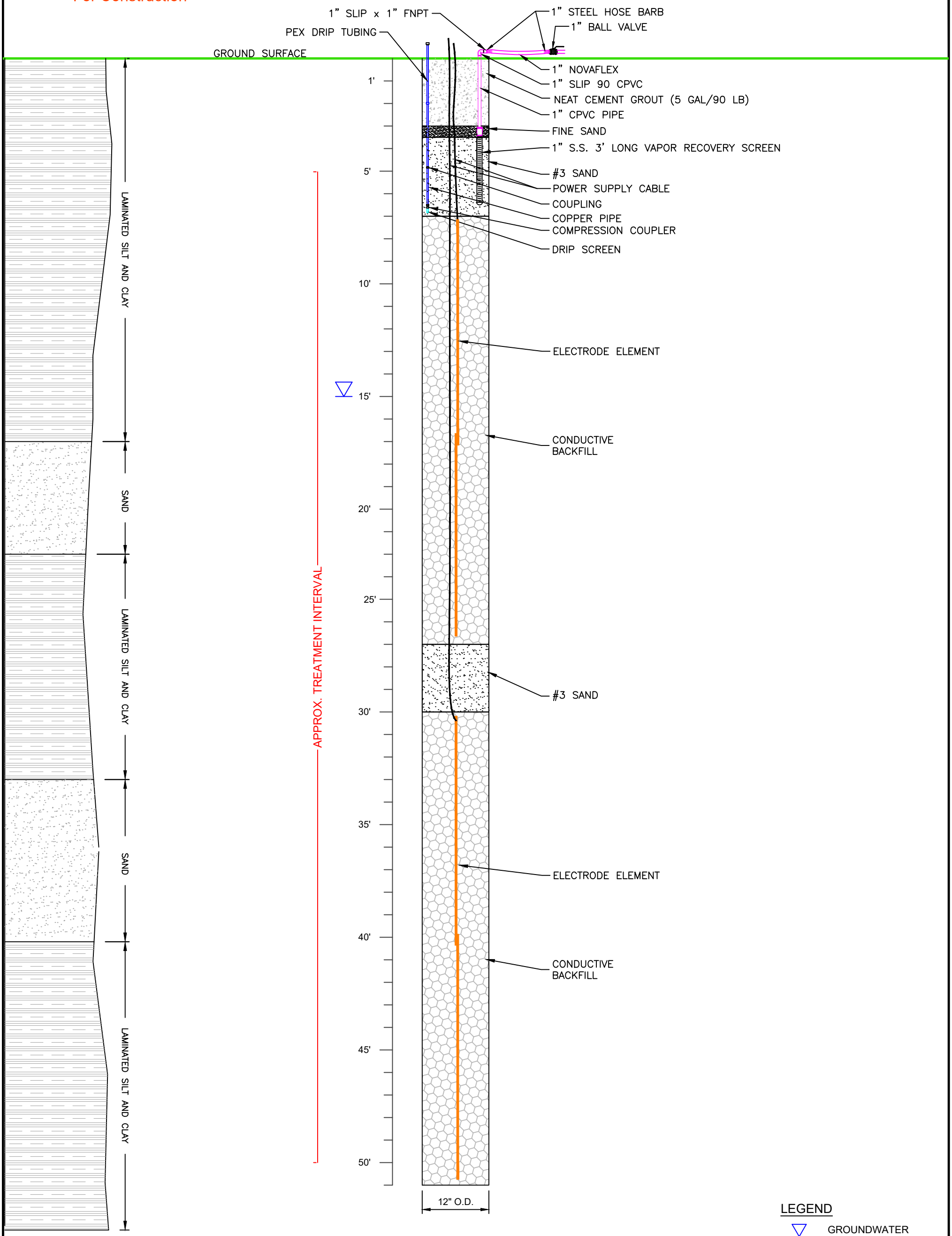
VAPOR TREATMENT PROCESS AND INSTRUMENTATION DIAGRAM

APPROVED FOR CONSTRUCTION	DATE 03/27/17	PROJECT SEA12
BY _____ DATE _____	SHEET P-7	

APPROVED

For Construction

ELECTRODE
(TYPICAL OF 7 ABOVE GRADE)
(6 COMPLETED BELOW GRADE - SEE M-6)



LEGEND

▽ GROUNDWATER ELEVATION

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

ELECTRODE DETAIL

APPROVED FOR CONSTRUCTION

BY _____

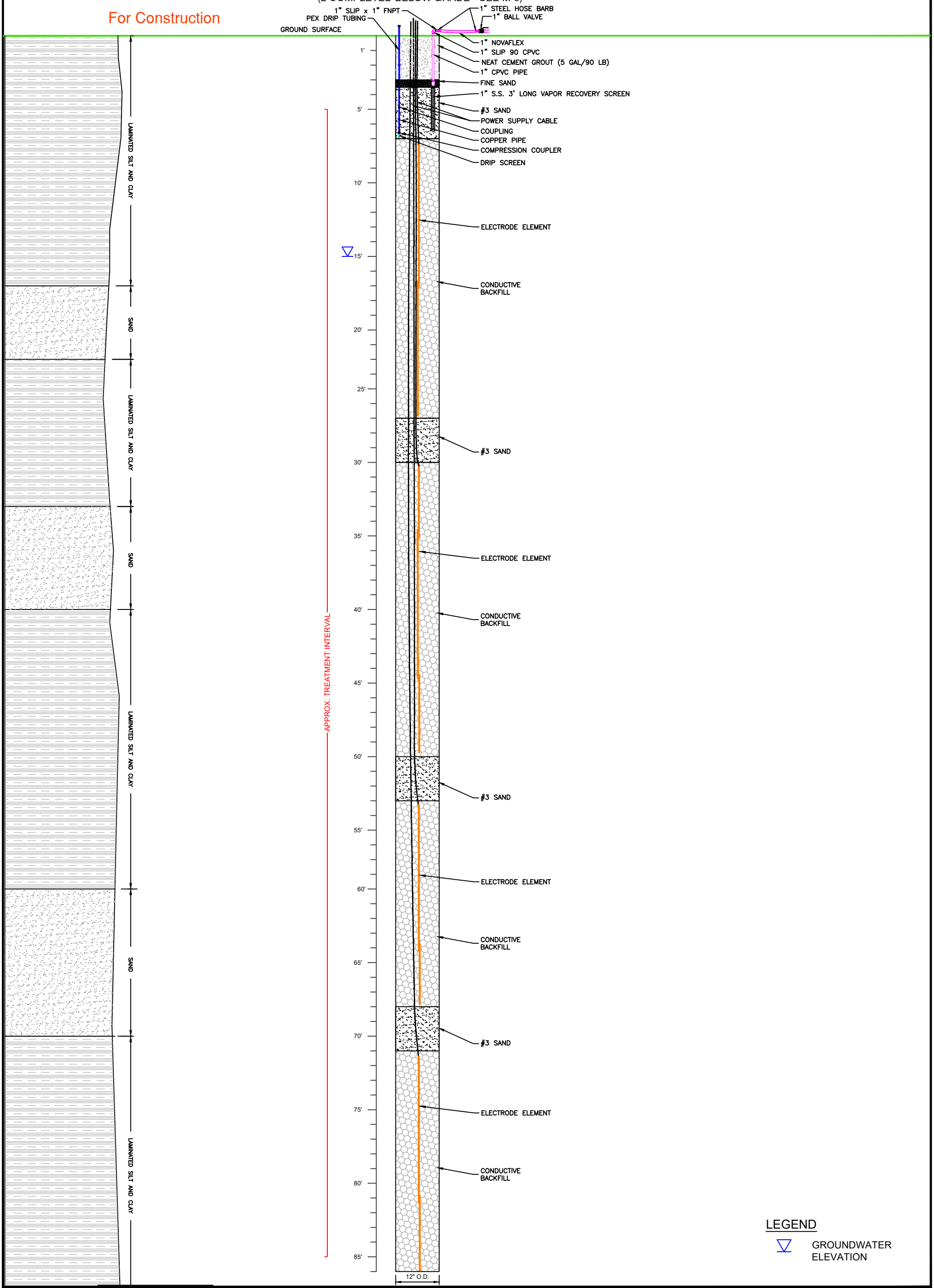
DATE _____

DATE	05/04/17
PROJECT	SEA12
SHEET	M-1

APPROVED

For Construction

ELECTRODE
(TYPICAL OF 3 ABOVE GRADE)
(2 COMPLETED BELOW GRADE - SEE M-6)



LEGEND

▽ GROUNDWATER ELEVATION

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

ELECTRODE DETAIL

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 05/04/17

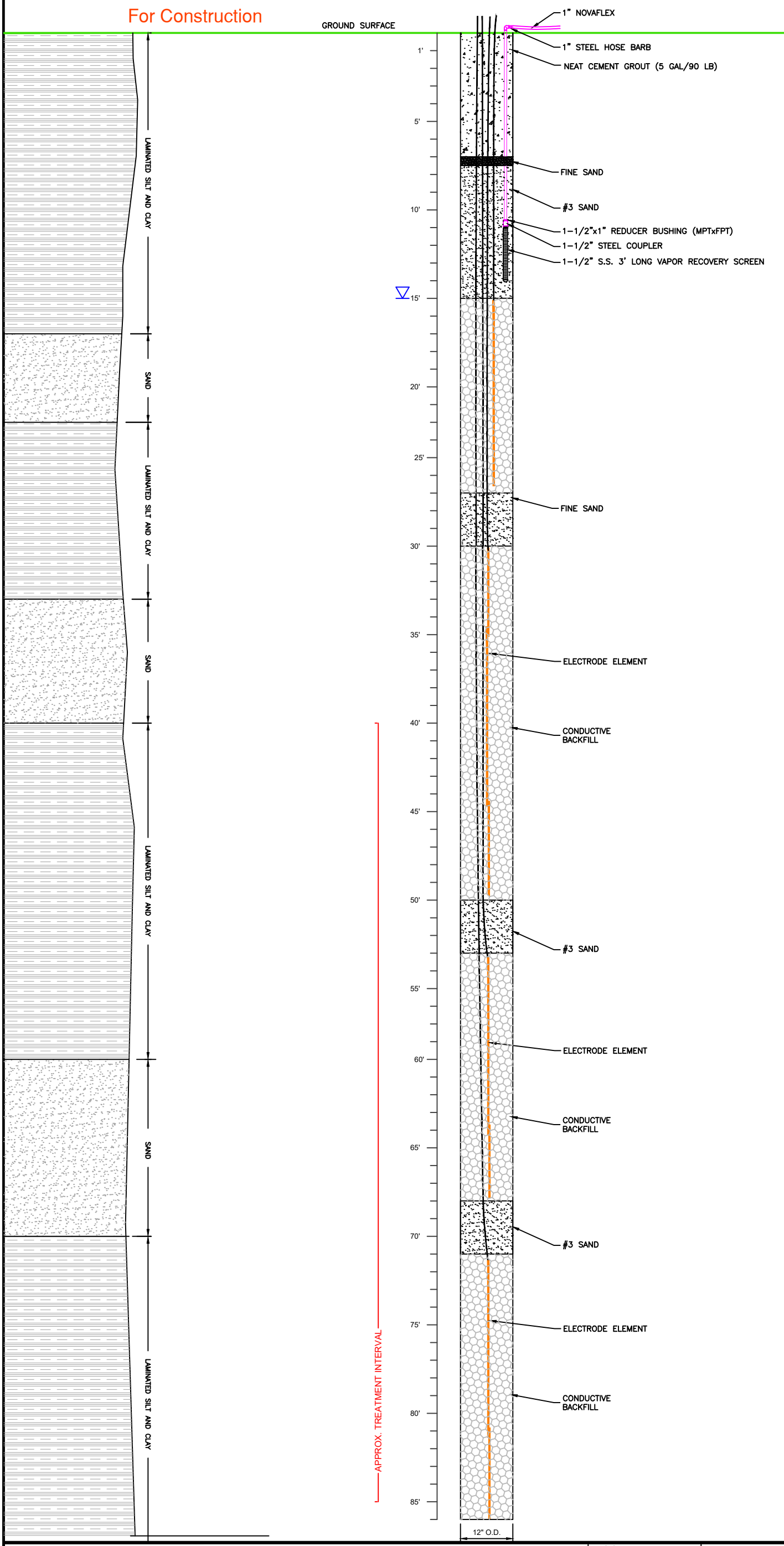
PROJECT SEA12

SHEET M-2

APPROVED

For Construction

ELECTRODE
(TYPICAL OF 3)



LEGEND

▽ GROUNDWATER ELEVATION

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

ELECTRODE DETAIL

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 05/04/17

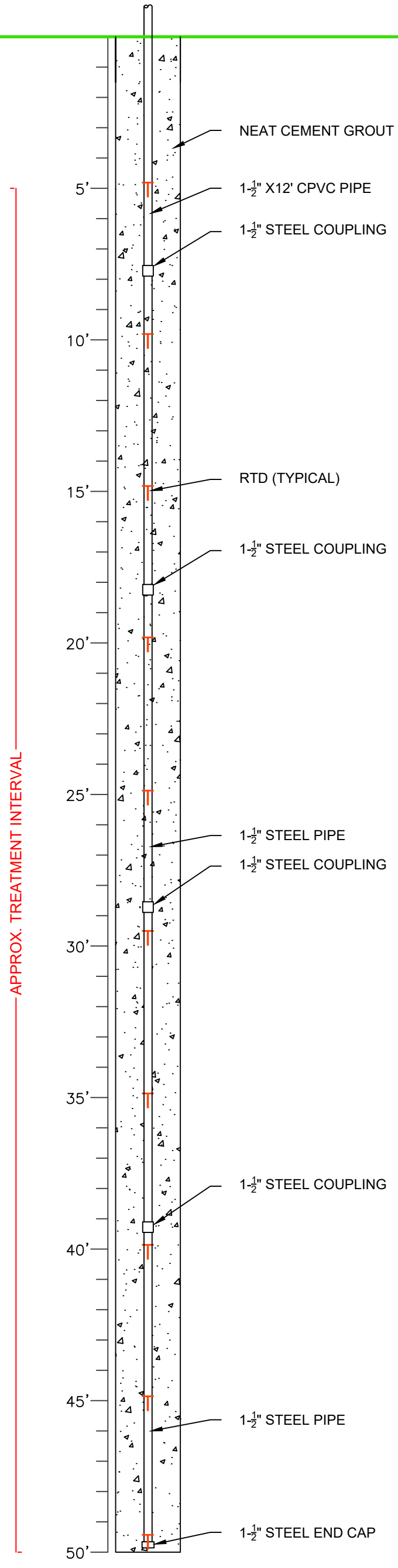
PROJECT SEA12

SHEET M-3

APPROVED

For Construction

TMP
(TYPICAL OF C4)



LEGEND

▽ GROUNDWATER ELEVATION

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

TEMPERATURE MONIITORING POINT DETAIL

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 05/04/17

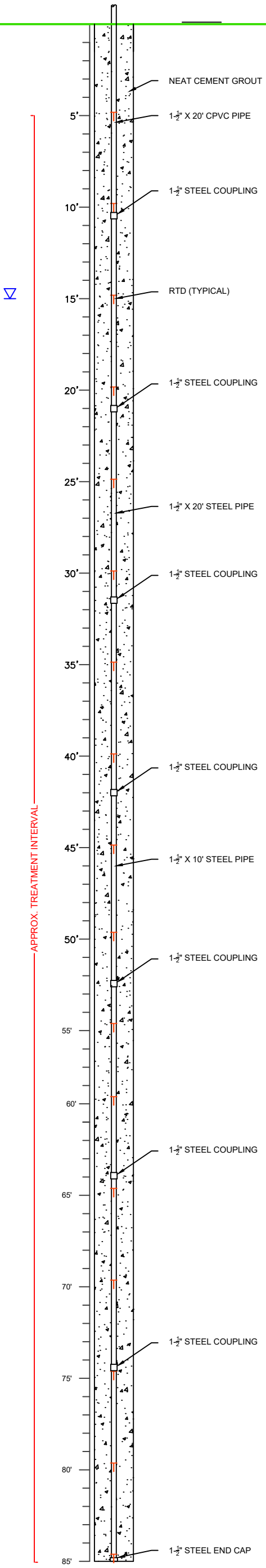
PROJECT SEA12

SHEET M-4

APPROVED

For Construction

TMP
(TYPICAL OF B6, C7)



LEGEND

▽ GROUNDWATER ELEVATION

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

TEMPERATURE MONITORING POINT DETAIL

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

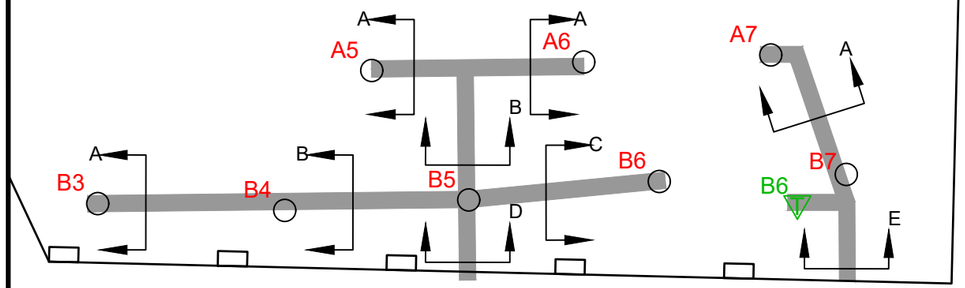
DATE 05/04/17

PROJECT SEA12

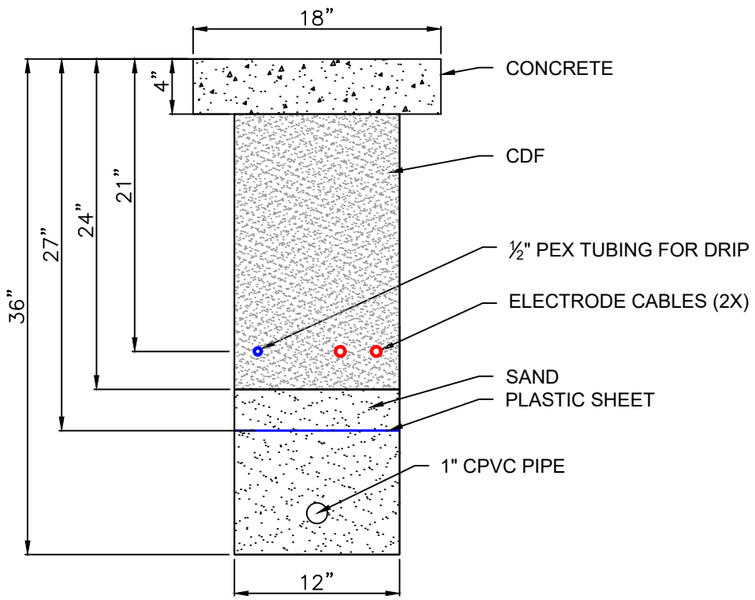
SHEET M-5

APPROVED

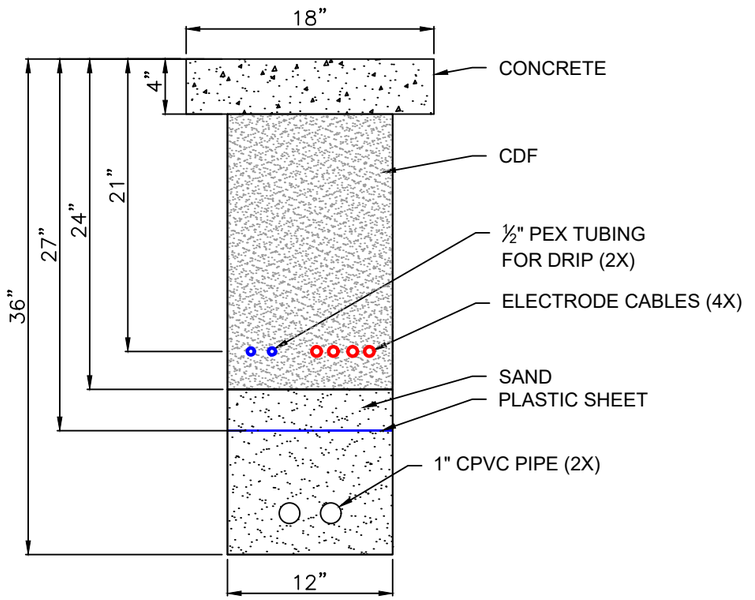
For Construction



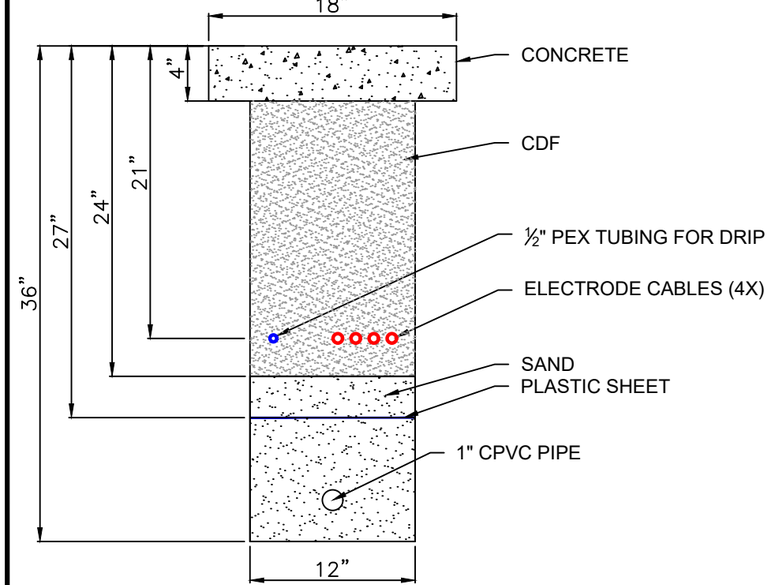
CROSS SECTION TRENCH DETAIL
(APPROXIMATELY 140 lf)



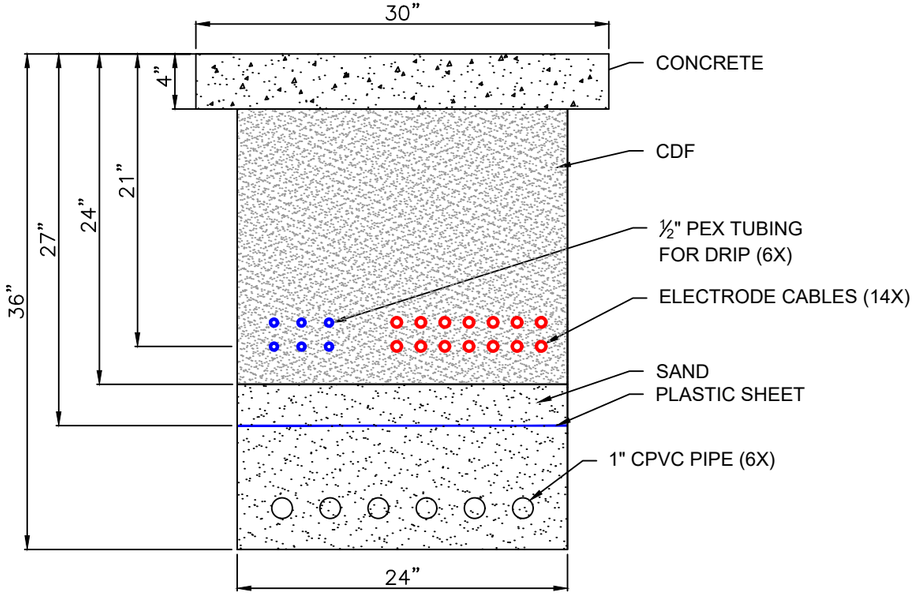
CROSS SECTION A



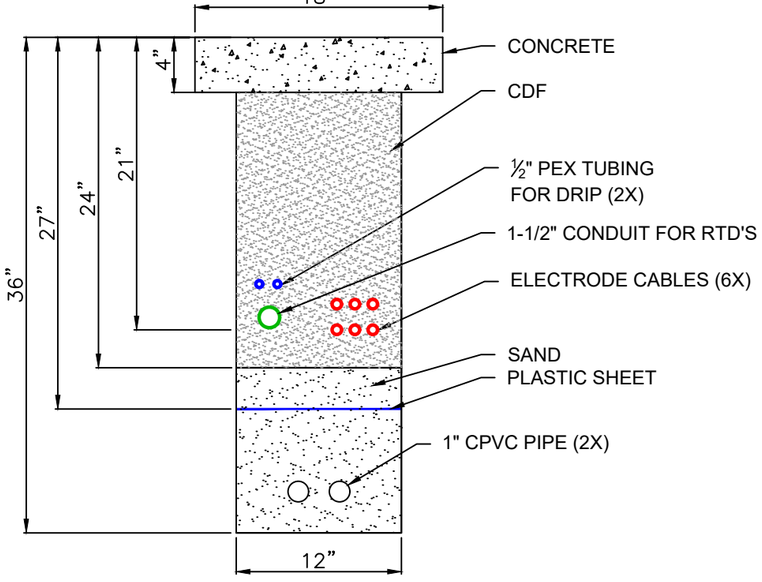
CROSS SECTION B



CROSS SECTION C



CROSS SECTION D



CROSS SECTION E

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

TRENCH DETAILS

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

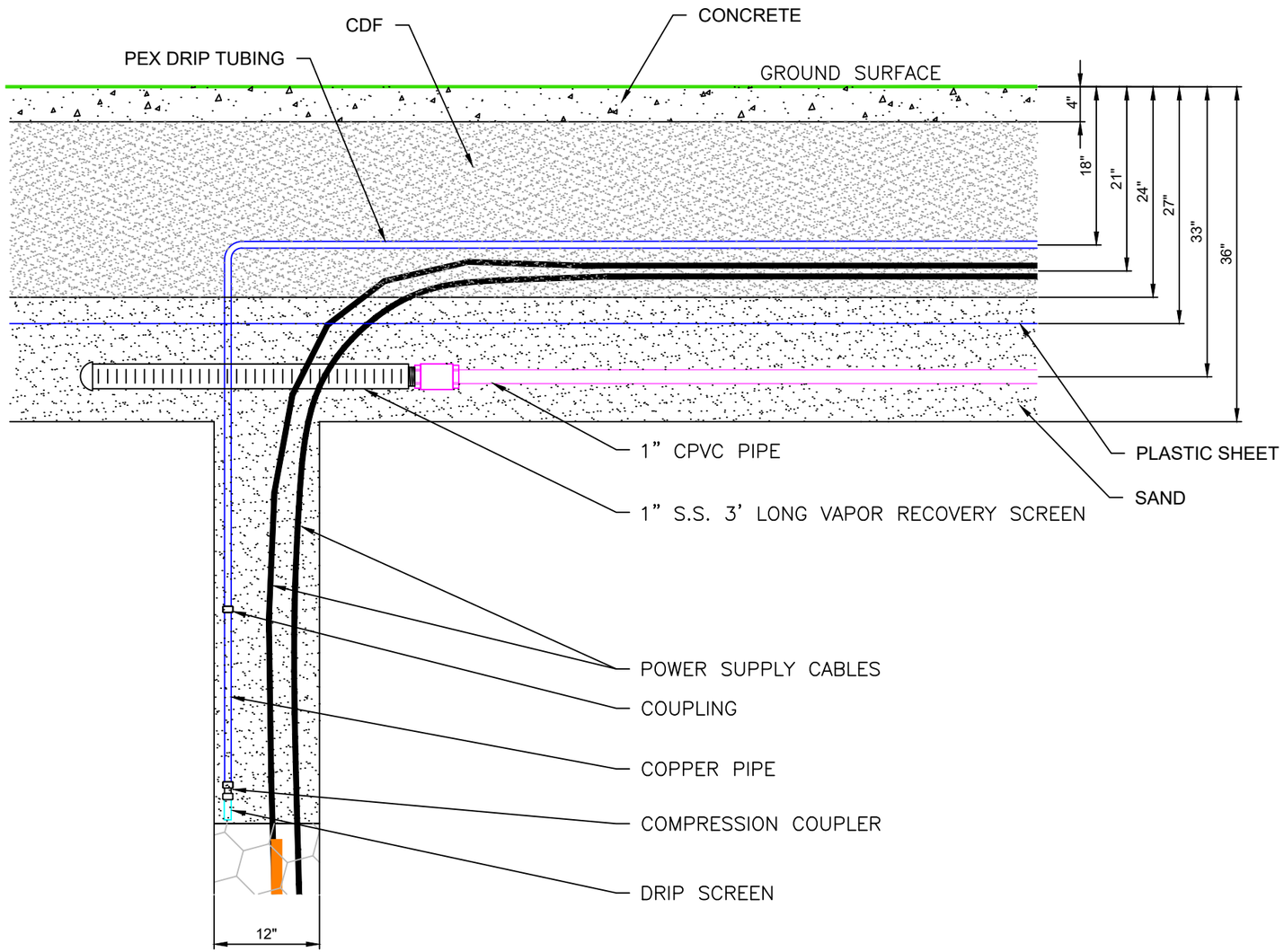
DATE 05/04/17

PROJECT SEA12

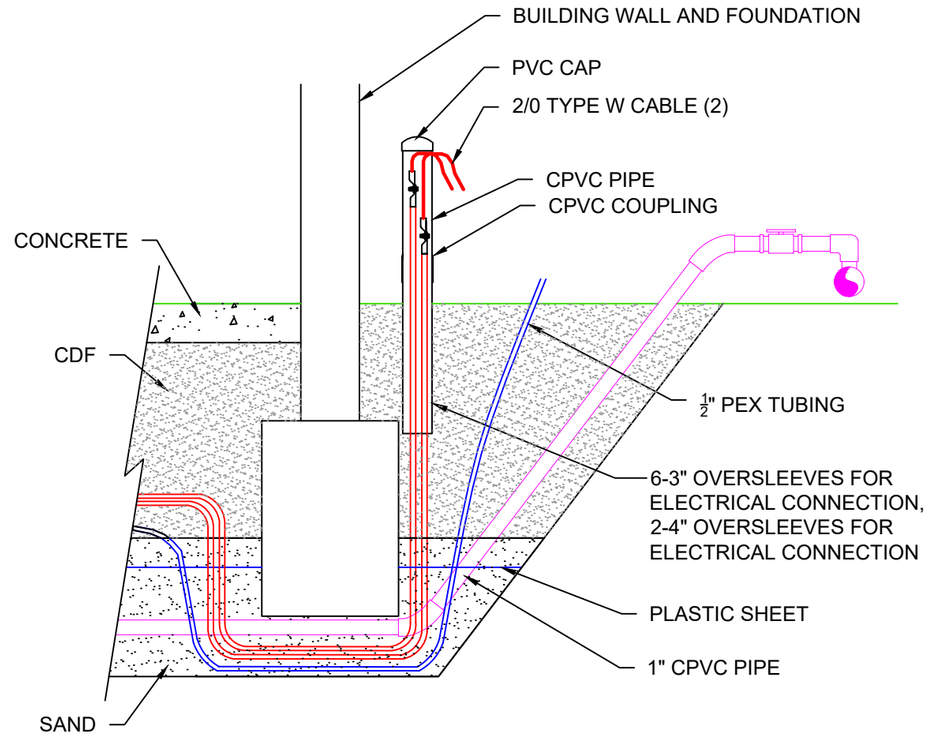
SHEET M-6

APPROVED

For Construction



ELECTRODE BELOW GRADE DETAIL
(TYPICAL OF 8)



TYPICAL TRENCH
COMPLETION DETAIL

NOTES:
1. BUILDING FOUNDATION DETAIL IS UNKNOWN, WILL REQUIRE FIELD ADJUSTMENT
2. 1'x1'x140' = 140ft^3 SAND
3. 1'x2'x140' = 280ft^3 CDF
4. 0.33'x1.5'x140' = 70ft^3 CONCRETE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

TRENCH DETAILS

APPROVED FOR CONSTRUCTION
BY _____
DATE _____

DATE 05/04/17

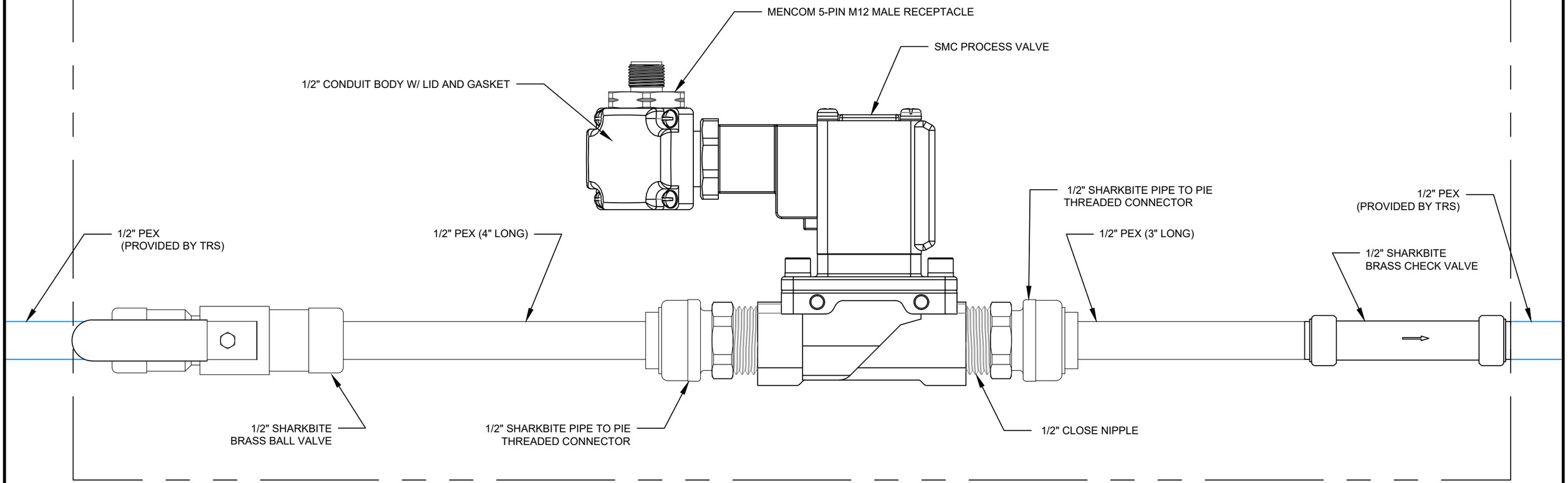
PROJECT SEA12

SHEET M-7

APPROVED

For Construction

DRIP VALVE ASSEMBLY
MQAUTOMATION PART NUMBER MPS3687



TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

DRIP VALVE ASSEMBLY DETAIL

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

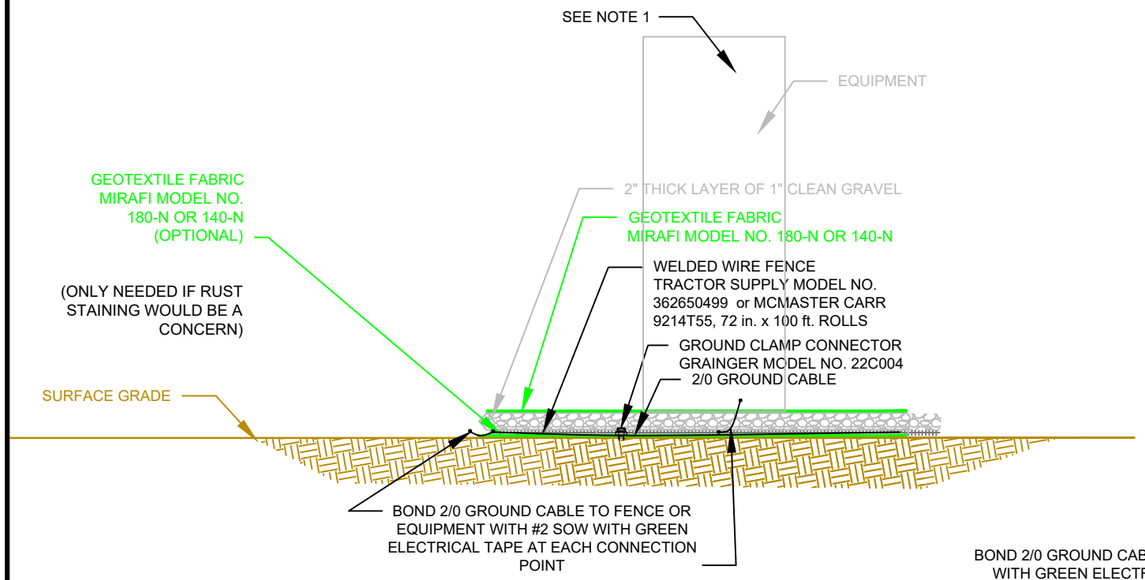
DATE 10/30/17

PROJECT SEA12

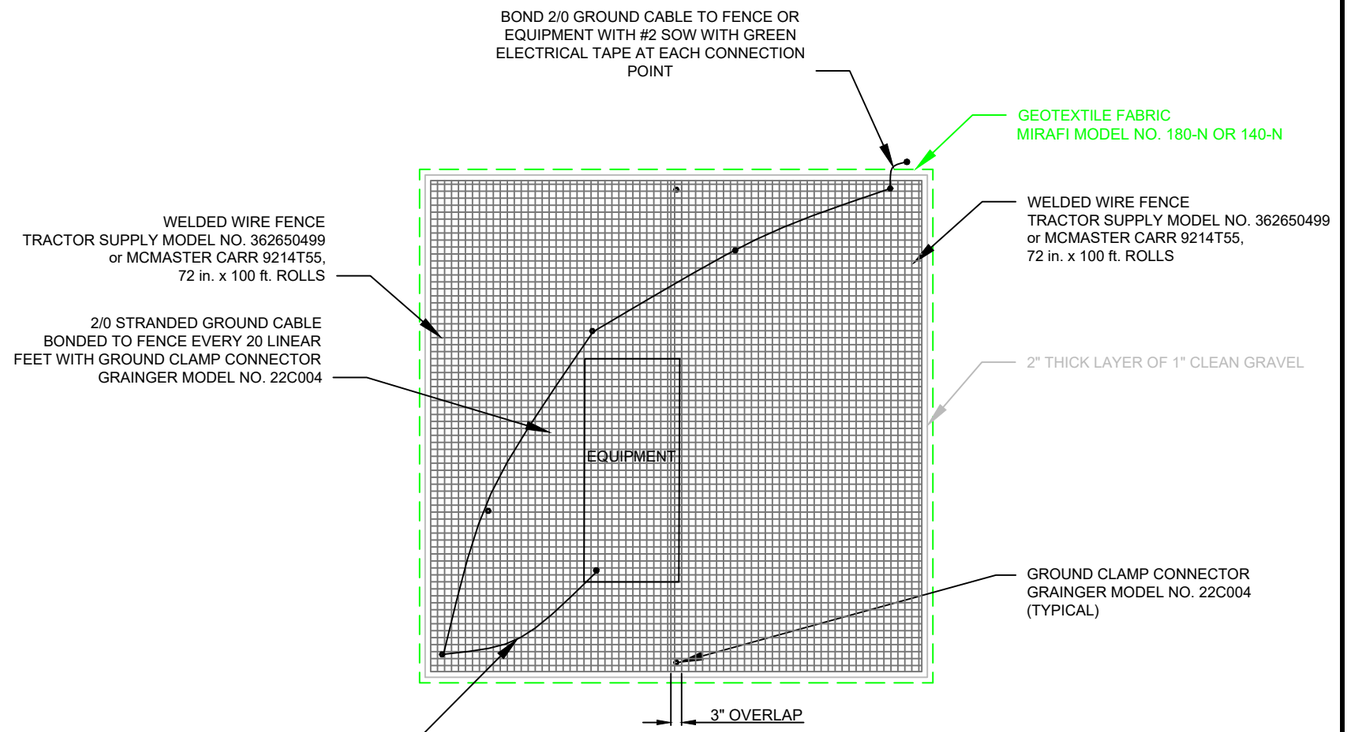
SHEET M-8

APPROVED

For Construction



SECTION VIEW



PLAN VIEW

NOTES:

1. A 3' MINIMUM PERIMETER OF GROUNDING GRID WILL BE REQUIRED AROUND EACH PIECE OF EQUIPMENT AS DEPICTED ON THE SP, Y-9A.

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	PENTHOUSE DRAPERY

GROUNDING PLAN

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 11/15/17 | PROJECT SEA12

SHEET M-9

APPROVED

For Construction

SYMBOLS

UTILITY METERING

MEDIUM VOLTAGE DRAW OUT CIRCUIT BREAKER

FUSE

DISCONNECT SWITCH

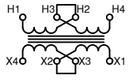
FUSED DISCONNECT SWITCH

CIRCUIT BREAKER

N.O. CONTACT

THERMAL OVERLOAD

PUMP/MOTOR



TRANSFORMER

VARIABLE OUTPUT
3 PHASE
TRANSFORMER

GENERATOR

AUTOMATIC
TRANSFER SWITCH

ABBREVIATIONS

A	AMPERES
ATS	AUTOMATIC TRANSFER SWITCH
FLA	FULL LOAD AMPS
HP	HORSEPOWER
KW	KILOWATT
KVA	KILOVOLT–AMPERES
KV	KILO–VOLTS
N.O.	NORMALLY OPEN
OL	OVERLOAD
P	POLE
PH, ø	PHASE
SRGAC	STEAM REGENERATED GAS ACTIVATED CARBON
VAC	VOLTAGE ALTERNATING CURRENT
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WATTS, WIRE

NOTE: THIS IS AN ALL INCLUSIVE LEGEND SHEET. NOT ALL SYMBOLS/ABBREVIATIONS WILL APPEAR ON EACH SHEET.

ENGINEER SIGNATURE / DATE

TRS Accelerating Value

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	FORMER PENTHOUSE

PRIMARY SERVICE ONE-LINE DIAGRAM LEGEND

APPROVED FOR CONSTRUCTION

BY _____

DATE _____

DATE 05/03/17

PROJECT SEA12

SHEET E-1

APPROVED

For Construction

SERVICE DROP

ELECTRICAL SERVICE
PROVIDED BY SEATTLE CITY LIGHT (SCL)
750kVA PAD MOUNTED TRANSFORMER

FUSE

H1 H3 H2 H4 26kV

X4 X2 X3 X1 480 VAC

METER CABINET
CT=800AMP

1200A DISC. SWITCH
NEMA 3R STAINLESS STEEL ENCLOSURE
FUSED @ 800A

PCU 700-2
SUPPLIED BY TRS
SERVICE REQUIREMENTS:
480 VAC
1040 AMPS MAX FULL LOAD
3 PHASE
NO NEUTRAL REQUIRED

1200 AMP CIRCUIT BREAKER

MAIN CONTACTOR

VARIABLE OUTPUT
864 KVA

80 AMP
CIRCUIT BREAKER

SPARE

40 AMP
CIRCUIT BREAKER

SPARE

(3) FUSE

(3) 350 MCM TYPE W

OPTIONAL:
FIELD LOCATED TRANSFORMER

21 ELECTRODES

ELECTRICAL LOAD SUMMARY

	Number		Connected Load		Load Factor		Design Load
ERH Electrodes (High Triad) - Peak	3	x	30 KVA	x	1.25	=	112.5 KVA
ERH Electrodes (Remainder) - Peak	18	x	30 KVA	x	1	=	540 KVA
ERH Condenser	1	x	59.9 KVA	x	1	=	59.9 KVA
ERH Blower	1	x	30.8 KVA	x	1	=	30.8 KVA
					Total Load		**743.2 KVA**

#2 AWG SOOW
(4-WIRE)

ERH CONDENSER CDT-22; SUPPLIED BY TRS (72 FLA)

CB-30A	CB-25A	CB-25A	CB-15A	CB-15A	CB-15A	CB-20A
VFD1	VFD2	VFD3	M314	MS216	M507	480 V
OL100	OL104	OL108	OL200	OL204	OL208	120 V
15 HP	10 HP	10 HP	1.5 HP	1 HP	0.33 HP	
RECYCLE PUMP 21 FLA	COOLING TOWER FAN 14 FLA	COOLING TOWER FAN 14 FLA	CONDENSATE PUMP 3 FLA	DRIP PUMP 2 FLA	EXHAUST FAN 1 FLA	CONDENSER CONTROL POWER 16 FLA (PRIMARY)

100A DISC. SWITCH
NEMA 3R STAINLESS STEEL ENCLOSURE
FUSED @ 80A

60A DISC. SWITCH
NEMA 3R STAINLESS STEEL ENCLOSURE
FUSED @ 45A

#6 AWG SOOW
(4-WIRE)

CB-60A

VFD
MS

CB-1A
H1 H3 H2 H4 480 V
X4 X2 X3 X1 120 V

CB-15A
MS138
OL116

25 HP
34 FLA

1/2 HP
1.1 FLA

ERH BLOWER B-17-25-3
SUPPLIED BY TRS
(37 FLA)

ENGINEER SIGNATURE / DATE

TRS GROUP, INC. 338 COMMERCE AVE., SUITE 304, LONGVIEW, WA 98632

DESIGNED BY	D. SEILER
DRAWN BY	A. PEABODY
CHECKED BY	C. CROWNOVER
PROJECT MANAGER	J. ROOT
QSAT REVIEW	03/08/17

SITE	FORMER PENTHOUSE DRAPERY
LOCATION	SEATTLE, WASHINGTON
CLIENT	FORMER PENTHOUSE

PRIMARY SERVICE ONE-LINE DIAGRAM

APPROVED FOR CONSTRUCTION
BY _____
DATE _____

DATE 08/22/17 | PROJECT SEA12

SHEET E-2

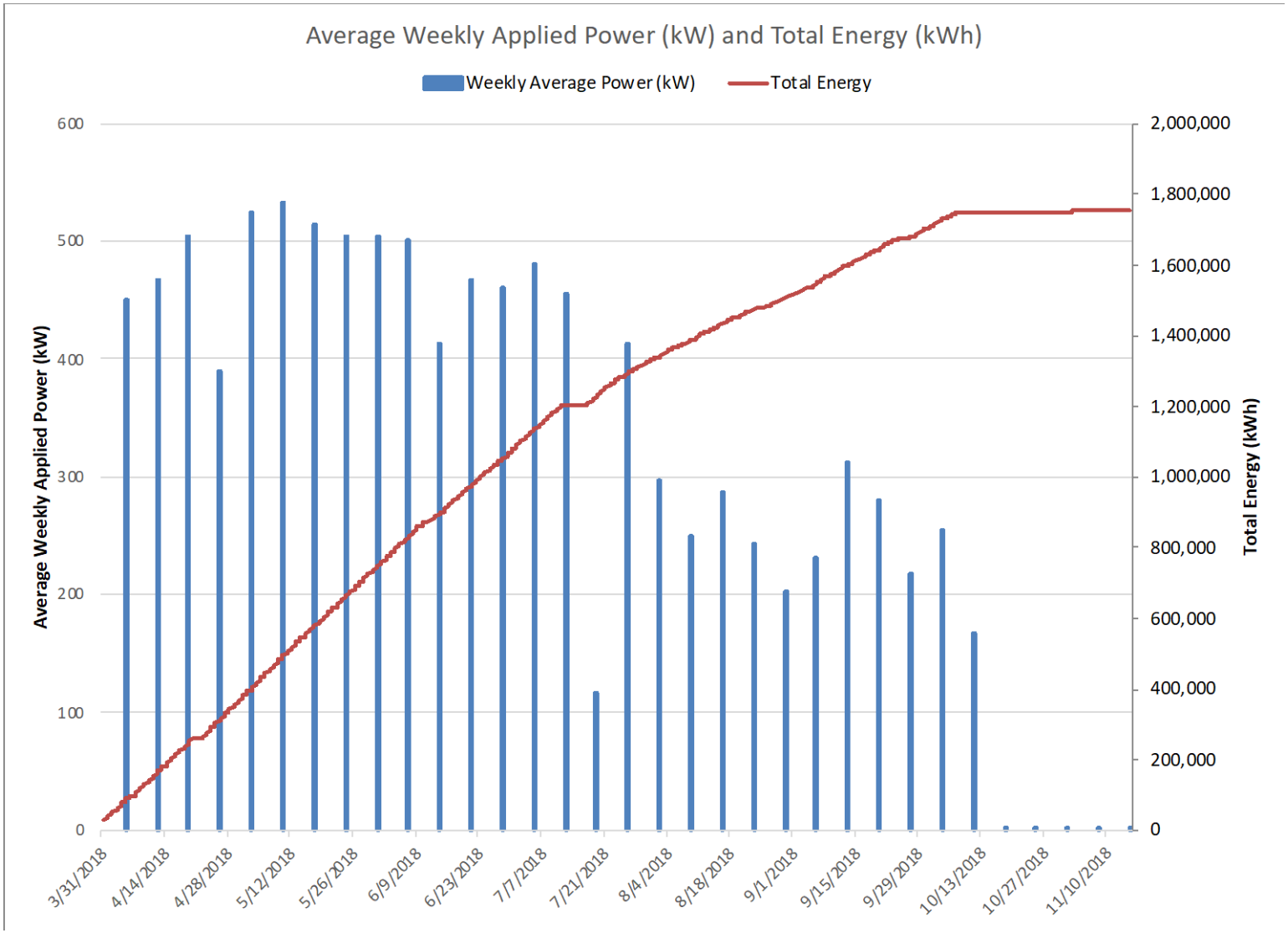


Figure 1. Average Daily Applied Power and Total Energy

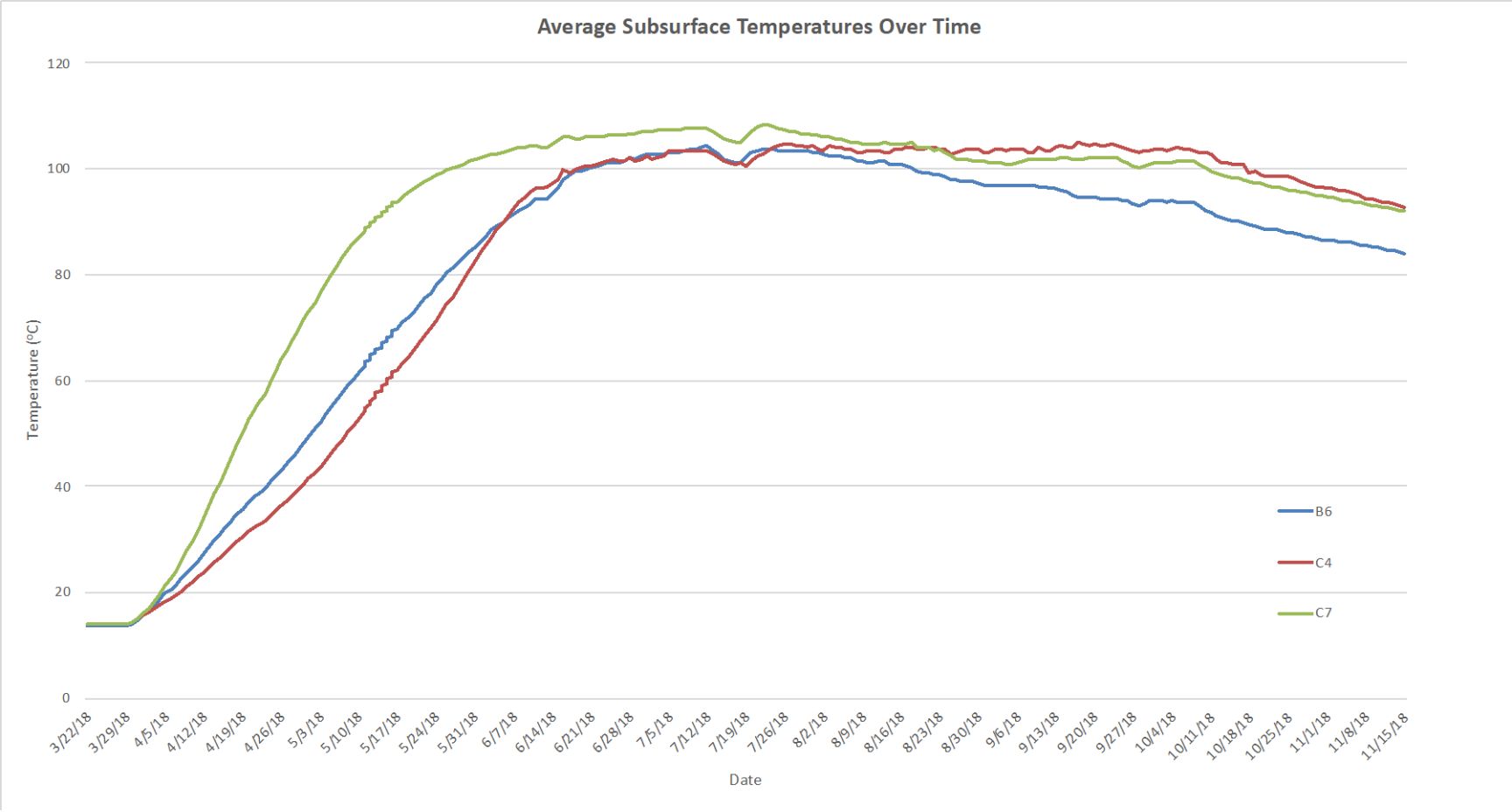


Figure 2. Average Site Subsurface Temperature vs. Time

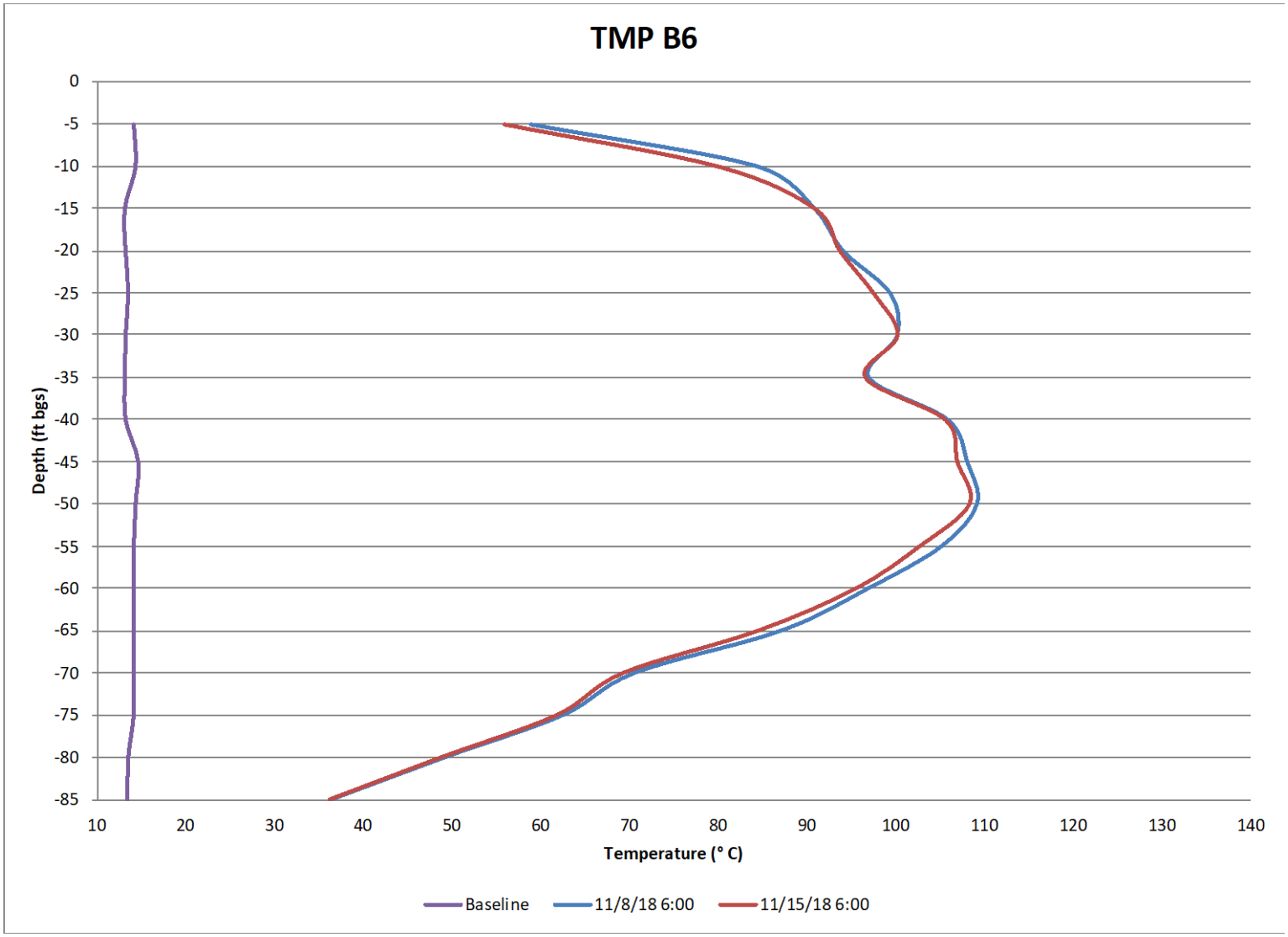


Figure 3a. TMP-B6 Temperature vs. Depth

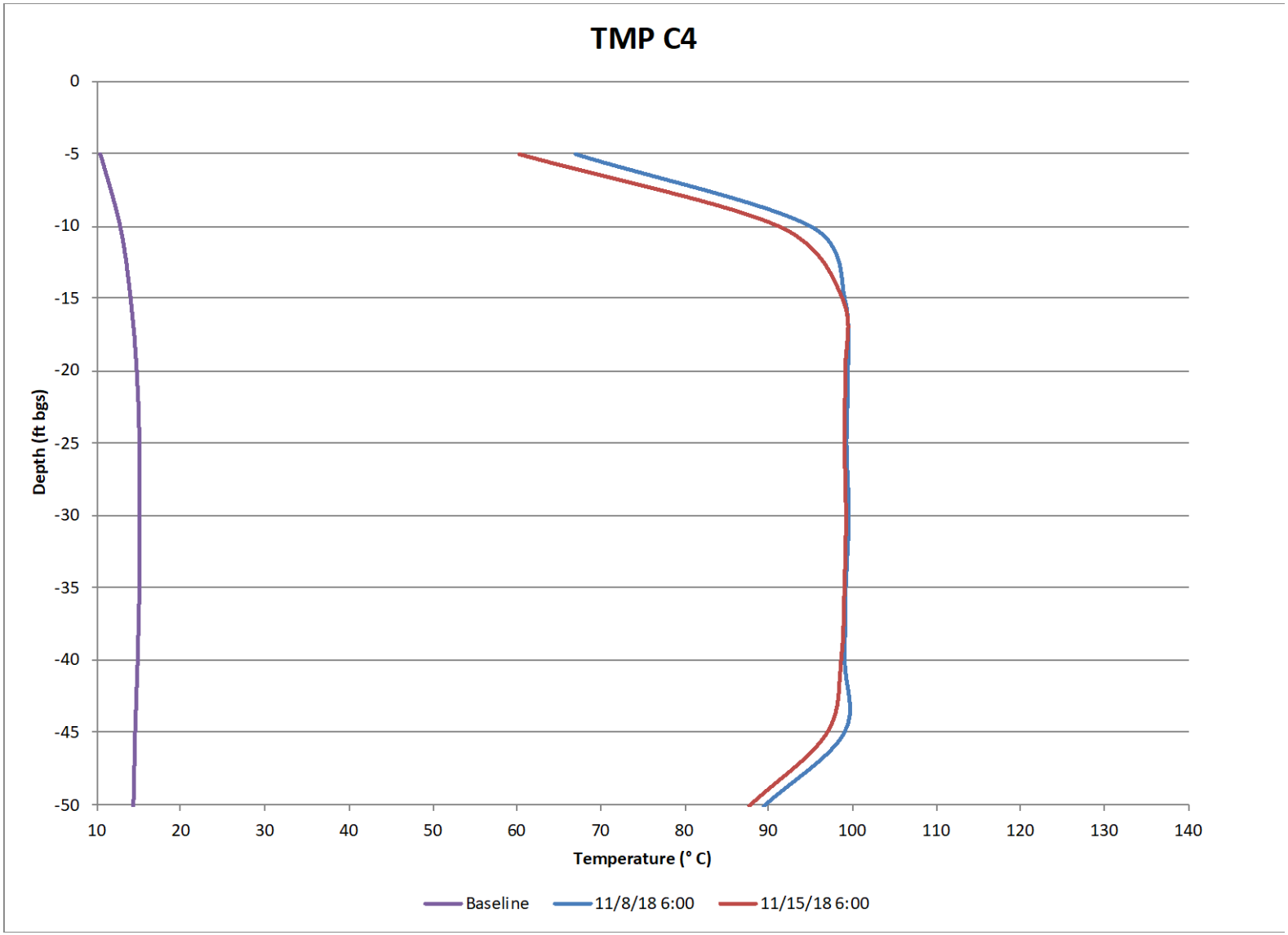


Figure 3b. TMP-C4 Temperature vs. Depth

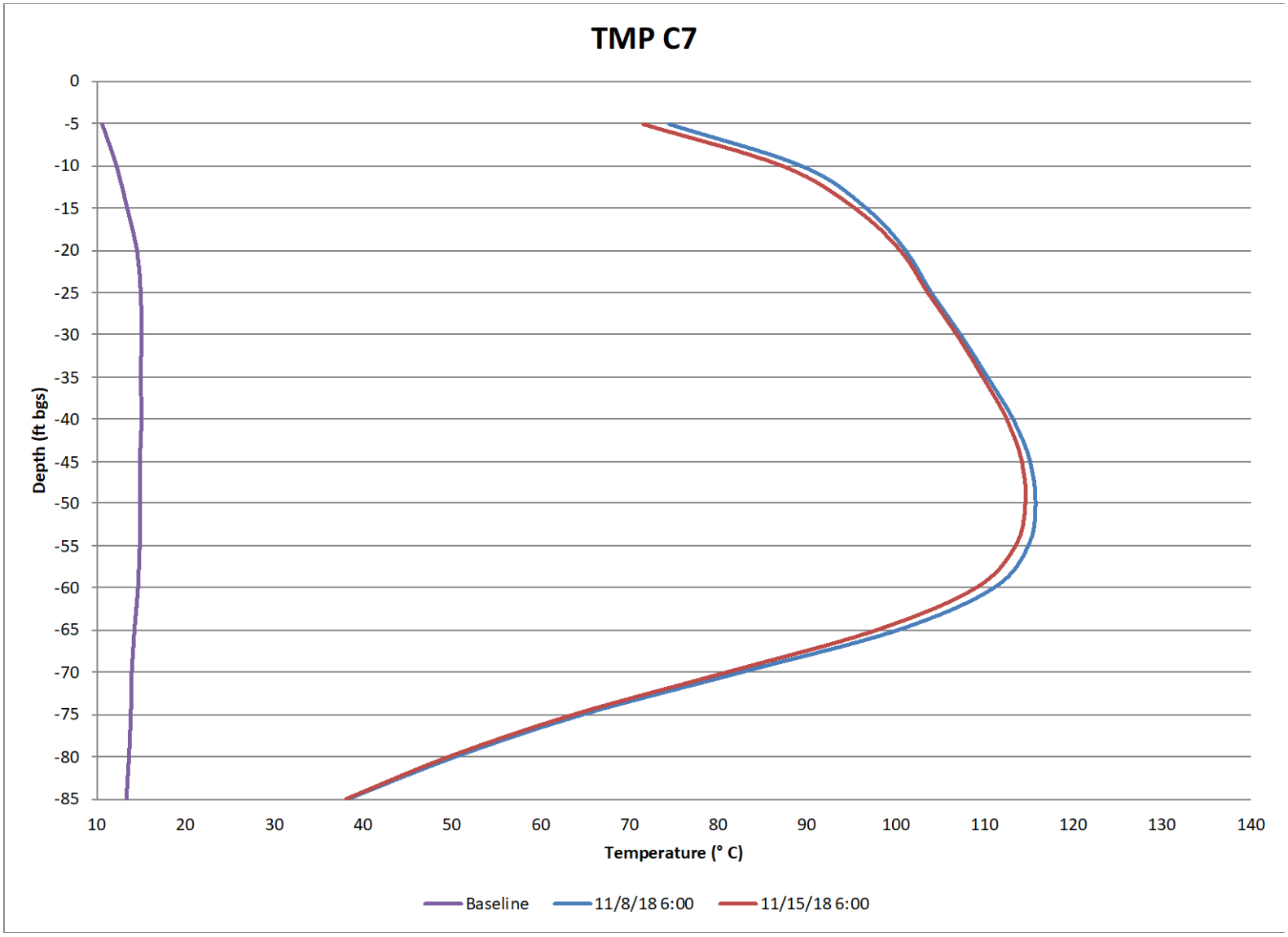


Figure 3c. TMP-C7 Temperature vs. Depth

APPENDIX B
LABORATORY ANALYTICAL REPORTS

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

Pacific Crest No: 105-003

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 28, 2019

Bill Carroll
Pacific Crest Environmental, LLC
P.O. Box 952
North Bend, WA 98045

Re: Analytical Data for Project 105-003 T23
Laboratory Reference No. 1903-191

Dear Bill:

Enclosed are the analytical results and associated quality control data for samples submitted on March 21, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

Case Narrative

Samples were collected on March 20, 2019 and received by the laboratory on March 21, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW31S-032019**					
Laboratory ID:	03-191-01					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	1.4	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	13	0.20	EPA 8260C	3-22-19	3-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*92*	*75-127*				
Toluene-d8	*98*	*80-127*				
4-Bromofluorobenzene	*102*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW31I-032019**					
Laboratory ID:	03-191-02					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	0.25	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	4.5	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	10	0.20	EPA 8260C	3-22-19	3-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*75-127*				
Toluene-d8	*101*	*80-127*				
4-Bromofluorobenzene	*103*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW33S-032019**					
Laboratory ID:	03-191-03					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	0.20	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	1.9	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	14	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	25	0.20	EPA 8260C	3-22-19	3-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*93*	*75-127*				
Toluene-d8	*98*	*80-127*				
4-Bromofluorobenzene	*102*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW33I-032019**					
Laboratory ID:	03-191-04					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	0.66	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	13	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	23	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	15	0.20	EPA 8260C	3-22-19	3-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*92*	*75-127*				
Toluene-d8	*97*	*80-127*				
4-Bromofluorobenzene	*99*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW34S-032019**					
Laboratory ID:	03-191-05					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	0.46	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	0.71	0.20	EPA 8260C	3-22-19	3-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*91*	*75-127*				
Toluene-d8	*96*	*80-127*				
4-Bromofluorobenzene	*103*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW34I-032019**					
Laboratory ID:	03-191-06					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	0.98	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	11	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	27	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	19	0.20	EPA 8260C	3-22-19	3-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*75-127*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*105*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC1-032019**					
Laboratory ID:	03-191-07					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	2.1	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	68	1.0	EPA 8260C	3-25-19	3-25-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*75-127*				
Toluene-d8	*102*	*80-127*				
4-Bromofluorobenzene	*104*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC3-032019**					
Laboratory ID:	03-191-08					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	0.53	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	3.1	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	14	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	14	0.20	EPA 8260C	3-22-19	3-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*93*	*75-127*				
Toluene-d8	*94*	*80-127*				
4-Bromofluorobenzene	*97*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0322W1					
Vinyl Chloride	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
Trichloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
Tetrachloroethene	ND	0.20	EPA 8260C	3-22-19	3-22-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*75-127*				
Toluene-d8	*94*	*80-127*				
4-Bromofluorobenzene	*95*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0325W1					
Vinyl Chloride	ND	0.20	EPA 8260C	3-25-19	3-25-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-25-19	3-25-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	3-25-19	3-25-19	
Trichloroethene	ND	0.20	EPA 8260C	3-25-19	3-25-19	
Tetrachloroethene	ND	0.20	EPA 8260C	3-25-19	3-25-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*75-127*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*106*	*78-125*				

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0322W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**10.8**	**10.3**	10.0	10.0	108	103	62-129	5	15	
Benzene	**10.2**	**9.71**	10.0	10.0	102	97	77-127	5	15	
Trichloroethene	**11.1**	**10.6**	10.0	10.0	111	106	70-120	5	15	
Toluene	**10.9**	**10.4**	10.0	10.0	109	104	82-123	5	15	
Chlorobenzene	**11.3**	**10.6**	10.0	10.0	113	106	79-120	6	15	
Surrogate:										
Dibromofluoromethane					*94*	*99*	*75-127*			
Toluene-d8					*95*	*98*	*80-127*			
4-Bromofluorobenzene					*101*	*104*	*78-125*			

Date of Report: March 28, 2019
Samples Submitted: March 21, 2019
Laboratory Reference: 1903-191
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0325W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**11.1**	**9.74**	10.0	10.0	111	97	62-129	13	15	
Benzene	**10.3**	**9.51**	10.0	10.0	103	95	77-127	8	15	
Trichloroethene	**11.0**	**9.86**	10.0	10.0	110	99	70-120	11	15	
Toluene	**10.6**	**9.71**	10.0	10.0	106	97	82-123	9	15	
Chlorobenzene	**10.8**	**9.65**	10.0	10.0	108	97	79-120	11	15	
Surrogate:										
Dibromofluoromethane					*102*	*102*	*75-127*			
Toluene-d8					*97*	*99*	*80-127*			
4-Bromofluorobenzene					*100*	*105*	*78-125*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: PACIFIC CREST
Project Number: 105-003 T23
Project Name: PENTHOUSE
Project Manager: W CARROLL
Sampled by: MB

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Laboratory Number: 03-191

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	MW31S – 032019	3/20/19	1020	H_2O	3						X																
2	MW31I – 032019		1105								X																
3	MW33S – 032019		1200								X																
4	MW33I – 032019		1410								X																
5	MW34S – 032019		1450								X																
6	MW34I – 032019		1525								X																
7	SCC1 – 032019		1745								X																
8	SCC3 – 032019		1830								X																

	Signature	Company	Date	Time
Relinquished		PACIFIC CREST	3/21/19	1050
Received	Helen Liseen	OSE	3/21/19	1050
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* PCE, TCE, cis-1,2-DCE ONLY *
TRANS-1-2-DCE, VC.

CC MBLACK@PCENV.COM

Data Package: Standard ☒ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☒

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

June 24, 2019

Bill Carroll
Pacific Crest Environmental, LLC
P.O. Box 952
North Bend, WA 98045

Re: Analytical Data for Project 105-003
Laboratory Reference No. 1906-167

Dear Bill:

Enclosed are the analytical results and associated quality control data for samples submitted on June 18, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: June 24, 2019
Samples Submitted: June 18, 2019
Laboratory Reference: 1906-167
Project: 105-003

Case Narrative

Samples were collected on June 18, 2019 and received by the laboratory on June 18, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: June 24, 2019
Samples Submitted: June 18, 2019
Laboratory Reference: 1906-167
Project: 105-003

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC1-061819**					
Laboratory ID:	06-167-01					
Dichlorodifluoromethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Chloromethane	ND	2.0	EPA 8260C	6-20-19	6-20-19	
Vinyl Chloride	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Bromomethane	ND	0.58	EPA 8260C	6-20-19	6-20-19	
Chloroethane	ND	2.0	EPA 8260C	6-20-19	6-20-19	
Trichlorofluoromethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloroethene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Iodomethane	ND	4.2	EPA 8260C	6-20-19	6-20-19	
Methylene Chloride	ND	2.0	EPA 8260C	6-20-19	6-20-19	
(trans) 1,2-Dichloroethene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloroethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
2,2-Dichloropropane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
(cis) 1,2-Dichloroethene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Bromochloromethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Chloroform	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,1,1-Trichloroethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Carbon Tetrachloride	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloropropene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,2-Dichloroethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Trichloroethene	1.6	0.40	EPA 8260C	6-20-19	6-20-19	
1,2-Dichloropropane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Dibromomethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Bromodichloromethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
2-Chloroethyl Vinyl Ether	ND	2.0	EPA 8260C	6-20-19	6-20-19	
(cis) 1,3-Dichloropropene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
(trans) 1,3-Dichloropropene	ND	0.40	EPA 8260C	6-20-19	6-20-19	

Date of Report: June 24, 2019
Samples Submitted: June 18, 2019
Laboratory Reference: 1906-167
Project: 105-003

VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC1-061819**					
Laboratory ID:	06-167-01					
1,1,2-Trichloroethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Tetrachloroethene	54	0.40	EPA 8260C	6-20-19	6-20-19	
1,3-Dichloropropane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Dibromochloromethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,2-Dibromoethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Chlorobenzene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,1,1,2-Tetrachloroethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Bromoform	ND	2.0	EPA 8260C	6-20-19	6-20-19	
Bromobenzene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,1,2,2-Tetrachloroethane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,2,3-Trichloropropane	ND	0.40	EPA 8260C	6-20-19	6-20-19	
2-Chlorotoluene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
4-Chlorotoluene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,3-Dichlorobenzene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,4-Dichlorobenzene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,2-Dichlorobenzene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
1,2-Dibromo-3-chloropropane	ND	2.0	EPA 8260C	6-20-19	6-20-19	
1,2,4-Trichlorobenzene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Hexachlorobutadiene	ND	2.0	EPA 8260C	6-20-19	6-20-19	
1,2,3-Trichlorobenzene	ND	0.40	EPA 8260C	6-20-19	6-20-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*100*	*75-127*				
Toluene-d8	*99*	*80-127*				
4-Bromofluorobenzene	*93*	*78-125*				

Date of Report: June 24, 2019
Samples Submitted: June 18, 2019
Laboratory Reference: 1906-167
Project: 105-003

VOLATILE ORGANICS EPA 8260C
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC3-061819**					
Laboratory ID:	06-167-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Chloromethane	ND	1.0	EPA 8260C	6-20-19	6-20-19	
Vinyl Chloride	0.39	0.20	EPA 8260C	6-20-19	6-20-19	
Bromomethane	ND	0.29	EPA 8260C	6-20-19	6-20-19	
Chloroethane	ND	1.0	EPA 8260C	6-20-19	6-20-19	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloroethene	1.4	0.20	EPA 8260C	6-20-19	6-20-19	
Iodomethane	ND	2.1	EPA 8260C	6-20-19	6-20-19	
Methylene Chloride	ND	1.0	EPA 8260C	6-20-19	6-20-19	
(trans) 1,2-Dichloroethene	0.45	0.20	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
(cis) 1,2-Dichloroethene	3.7	0.20	EPA 8260C	6-20-19	6-20-19	
Bromochloromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Chloroform	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Trichloroethene	12	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Dibromomethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Bromodichloromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-20-19	6-20-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-20-19	6-20-19	

Date of Report: June 24, 2019
Samples Submitted: June 18, 2019
Laboratory Reference: 1906-167
Project: 105-003

VOLATILE ORGANICS EPA 8260C
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC3-061819**					
Laboratory ID:	06-167-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Tetrachloroethene	5.4	0.20	EPA 8260C	6-20-19	6-20-19	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Dibromochloromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Chlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Bromoform	ND	1.0	EPA 8260C	6-20-19	6-20-19	
Bromobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-20-19	6-20-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Hexachlorobutadiene	ND	1.0	EPA 8260C	6-20-19	6-20-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*102*	*75-127*				
Toluene-d8	*97*	*80-127*				
4-Bromofluorobenzene	*91*	*78-125*				

Date of Report: June 24, 2019
Samples Submitted: June 18, 2019
Laboratory Reference: 1906-167
Project: 105-003

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0620W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Chloromethane	ND	1.0	EPA 8260C	6-20-19	6-20-19	
Vinyl Chloride	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Bromomethane	ND	0.29	EPA 8260C	6-20-19	6-20-19	
Chloroethane	ND	1.0	EPA 8260C	6-20-19	6-20-19	
Trichlorofluoromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloroethene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Iodomethane	ND	2.1	EPA 8260C	6-20-19	6-20-19	
Methylene Chloride	ND	1.0	EPA 8260C	6-20-19	6-20-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
2,2-Dichloropropane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Bromochloromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Chloroform	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Carbon Tetrachloride	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1-Dichloropropene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dichloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Trichloroethene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dichloropropane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Dibromomethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Bromodichloromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	6-20-19	6-20-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260C	6-20-19	6-20-19	

Date of Report: June 24, 2019
Samples Submitted: June 18, 2019
Laboratory Reference: 1906-167
Project: 105-003

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0620W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Tetrachloroethene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,3-Dichloropropane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Dibromochloromethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dibromoethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Chlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Bromoform	ND	1.0	EPA 8260C	6-20-19	6-20-19	
Bromobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260C	6-20-19	6-20-19	
2-Chlorotoluene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
4-Chlorotoluene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	6-20-19	6-20-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Hexachlorobutadiene	ND	1.0	EPA 8260C	6-20-19	6-20-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	6-20-19	6-20-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*105*	*75-127*				
Toluene-d8	*99*	*80-127*				
4-Bromofluorobenzene	*92*	*78-125*				

Date of Report: June 24, 2019
Samples Submitted: June 18, 2019
Laboratory Reference: 1906-167
Project: 105-003

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0620W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**9.47**	**8.92**	10.0	10.0	95	89	63-130	6	17	
Benzene	**9.95**	**9.33**	10.0	10.0	100	93	76-125	6	19	
Trichloroethene	**10.3**	**9.74**	10.0	10.0	103	97	76-121	6	18	
Toluene	**9.94**	**9.44**	10.0	10.0	99	94	80-124	5	18	
Chlorobenzene	**10.8**	**10.1**	10.0	10.0	108	101	75-120	7	19	
Surrogate:										
Dibromofluoromethane					*101*	*103*	*75-127*			
Toluene-d8					*98*	*97*	*80-127*			
4-Bromofluorobenzene					*93*	*91*	*78-125*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Pacific Crest
Project Number: 105-003
Project Name: Penthouse
Project Manager: W. Carroll
Sampled by: S. Truitt

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☑ Standard (7 Days)
- ☐ _____ (other)

Laboratory Number: 06-167

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	SCC1-061819	6-18-19	1318	GW	3						X																
2	SCC3-061819	↓	1213	↓	3						X																

	Signature	Company	Date	Time
Relinquished	[signature]	Pacific Crest	6-18-19	1457
Received	Karen Lissen	OSE	6/18/19	1457
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

struitt@pcenv.com

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 15, 2019

Bill Carroll
Pacific Crest Environmental, LLC
P.O. Box 952
North Bend, WA 98045

Re: Analytical Data for Project 105-003 T23
Laboratory Reference No. 1911-128

Dear Bill:

Enclosed are the analytical results and associated quality control data for samples submitted on November 12, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 15, 2019
Samples Submitted: November 12, 2019
Laboratory Reference: 1911-128
Project: 105-003 T23

Case Narrative

Samples were collected on November 11 and 12, 2019 and received by the laboratory on November 12, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Halogenated Volatiles EPA 8260C**:**

All VOA vials provided for sample MW34I-111219 contained headspace. Some loss of volatiles may have occurred.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: November 15, 2019
Samples Submitted: November 12, 2019
Laboratory Reference: 1911-128
Project: 105-003 T23

VOLATILE ORGANICS EPA 8260D
Page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW27S-111119**					
Laboratory ID:	11-128-01					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	0.23	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	0.87	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW27S-111119**					
Laboratory ID:	11-128-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	13	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*75-127*				
Toluene-d8	*103*	*80-127*				
4-Bromofluorobenzene	*99*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW27I-111119**					
Laboratory ID:	11-128-02					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	0.33	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	2.3	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW27I-111119**					
Laboratory ID:	11-128-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	23	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*75-127*				
Toluene-d8	*102*	*80-127*				
4-Bromofluorobenzene	*99*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW31S-111119**					
Laboratory ID:	11-128-03					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	2.9	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW31S-111119**					
Laboratory ID:	11-128-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	14	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*75-127*				
Toluene-d8	*103*	*80-127*				
4-Bromofluorobenzene	*98*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW31I-111119**					
Laboratory ID:	11-128-04					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	0.31	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	0.48	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	0.73	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	3.8	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW31I-111119**					
Laboratory ID:	11-128-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	7.8	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*75-127*				
Toluene-d8	*102*	*80-127*				
4-Bromofluorobenzene	*98*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW33S-111119**					
Laboratory ID:	11-128-05					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	0.39	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	2.7	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	5.5	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW33S-111119**					
Laboratory ID:	11-128-05					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	7.2	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*75-127*				
Toluene-d8	*101*	*80-127*				
4-Bromofluorobenzene	*99*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW33I-111119**					
Laboratory ID:	11-128-06					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	0.31	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	1.2	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	0.46	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	10	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	11	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW33I-111119**					
Laboratory ID:	11-128-06					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	3.6	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*75-127*				
Toluene-d8	*102*	*80-127*				
4-Bromofluorobenzene	*101*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW34S-111219**					
Laboratory ID:	11-128-07					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	0.26	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW34S-111219**					
Laboratory ID:	11-128-07					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*118*	*75-127*				
Toluene-d8	*113*	*80-127*				
4-Bromofluorobenzene	*109*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW34I-111219**					
Laboratory ID:	11-128-08					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	0.33	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	2.1	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	1.4	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	9.1	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	17	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW34I-111219**					
Laboratory ID:	11-128-08					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	1.4	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*103*	*75-127*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*96*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW35S-111219**					
Laboratory ID:	11-128-09					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	0.49	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	1.3	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	2.7	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW35S-111219**					
Laboratory ID:	11-128-09					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	0.33	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*104*	*75-127*				
Toluene-d8	*100*	*80-127*				
4-Bromofluorobenzene	*97*	*78-125*				

Date of Report: November 15, 2019
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Project: 105-003 T23

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW35I-111219**					
Laboratory ID:	11-128-10					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	0.48	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	0.23	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	1.7	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	3.5	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW35I-111219**					
Laboratory ID:	11-128-10					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	1.9	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*75-127*				
Toluene-d8	*103*	*80-127*				
4-Bromofluorobenzene	*100*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC1-111219**					
Laboratory ID:	11-128-11					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	0.39	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	1.1	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC1-111219**					
Laboratory ID:	11-128-11					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	34	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*75-127*				
Toluene-d8	*101*	*80-127*				
4-Bromofluorobenzene	*98*	*78-125*				

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC3-111219**					
Laboratory ID:	11-128-12					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	0.57	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	2.7	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	0.78	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	5.6	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	14	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SCC3-111219**					
Laboratory ID:	11-128-12					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	1.4	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*106*	*75-127*				
Toluene-d8	*101*	*80-127*				
4-Bromofluorobenzene	*99*	*78-125*				

Date of Report: November 15, 2019
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QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1113W1					
Dichlorodifluoromethane	ND	0.27	EPA 8260D	11-13-19	11-13-19	
Chloromethane	ND	1.3	EPA 8260D	11-13-19	11-13-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroethane	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Iodomethane	ND	1.6	EPA 8260D	11-13-19	11-13-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chloroform	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Trichloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromomethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-13-19	11-13-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-13-19	11-13-19	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1113W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Tetrachloroethene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Bromoform	ND	1.0	EPA 8260D	11-13-19	11-13-19	
Bromobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-13-19	11-13-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
1,2-Dibromo-3-chloropropane	ND	1.4	EPA 8260D	11-13-19	11-13-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-13-19	11-13-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-13-19	11-13-19	
1,2,3-Trichlorobenzene	ND	0.28	EPA 8260D	11-13-19	11-13-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*107*	*75-127*				
Toluene-d8	*103*	*80-127*				
4-Bromofluorobenzene	*98*	*78-125*				

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VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1113W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**11.2**	**11.3**	10.0	10.0	112	113	63-130	1	17	
Benzene	**10.5**	**10.6**	10.0	10.0	105	106	76-125	1	19	
Trichloroethene	**10.0**	**10.2**	10.0	10.0	100	102	76-121	2	18	
Toluene	**10.0**	**10.2**	10.0	10.0	100	102	80-124	2	18	
Chlorobenzene	**9.85**	**10.2**	10.0	10.0	99	102	75-120	3	19	
Surrogate:										
Dibromofluoromethane					*109*	*108*	*75-127*			
Toluene-d8					*103*	*104*	*80-127*			
4-Bromofluorobenzene					*99*	*101*	*78-125*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 2

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: PACIFIC CREST
Project Number: 105-003 T23
Project Name: PENTHOUSE
Project Manager: W CARROLL
Sampled by: M BLACK

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☑ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 11-128

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	MW27S - 111119	11/11/19	1280	H_2O	3						X																
2	MW27I - 111119		1330								X																
3	MW31S - 111119		1435								X																
4	MW31I - 111119		1505								X																
5	MW33S - 111119		1610								X																
6	MW33I - 111119		1651								X																
7	MW34S - 111219	11/12/19	1050								X																
8	MW34I - 111219		1135								X																
9	MW35S - 111219		1225								X																
10	MW35I - 111219		1310								X																

	Signature	Company	Date	Time
Relinquished		PACIFIC CREST	11/12/19	1625
Received		OSE	11/12/19	1625
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* PCE, TCE, cis-1,2-DCE, trans-1,2-PCE, VC ONLY *
PLEASE CC MBLACK@PCENV.COM

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: SEE PAGE 1
Project Number:
Project Name:
Project Manager:
Sampled by:

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☑ Standard (7 Days)
- ☐ _____ (other)

Laboratory Number: 11-128

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers
11	SCC1 - 111219	11/12/19	1430	H_2O	3
12	SCC3 - 111219	"	1515	"	"

Lab ID	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
11						Y																
12						Y																

	Signature	Company	Date	Time
Relinquished		PACIFIC CREST	11/12/19	1625
Received		OSE	11/12/19	1625
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

SEE PAGE 1

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

December 5, 2019

Bill Carroll
Pacific Crest Environmental, LLC
P.O. Box 952
North Bend, WA 98045

Re: Analytical Data for Project 105-003
Laboratory Reference No. 1911-251

Dear Bill:

Enclosed are the analytical results and associated quality control data for samples submitted on November 25, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

Case Narrative

Samples were collected on November 25, 2019 and received by the laboratory on November 25, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Volatiles EPA 8260D Analysis

Some MTCA Method A cleanup levels are non-achievable for sample MW33D-112519 due to the necessary dilution of the sample.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW35D-112519**					
Laboratory ID:	11-251-01					
Dichlorodifluoromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chloromethane	ND	1.3	EPA 8260D	11-27-19	11-27-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromomethane	ND	0.51	EPA 8260D	11-27-19	11-27-19	
Chloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Iodomethane	ND	2.9	EPA 8260D	11-27-19	11-27-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chloroform	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Trichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Dibromomethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW35D-112519**					
Laboratory ID:	11-251-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Tetrachloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromoform	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Bromobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromo-3-chloropropane	ND	1.3	EPA 8260D	11-27-19	11-27-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*75-127*				
Toluene-d8	*104*	*80-127*				
4-Bromofluorobenzene	*104*	*78-125*				

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW34D-112519**					
Laboratory ID:	11-251-02					
Dichlorodifluoromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chloromethane	ND	1.3	EPA 8260D	11-27-19	11-27-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromomethane	ND	0.51	EPA 8260D	11-27-19	11-27-19	
Chloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Iodomethane	ND	2.9	EPA 8260D	11-27-19	11-27-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chloroform	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Trichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Dibromomethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW34D-112519**					
Laboratory ID:	11-251-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Tetrachloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromoform	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Bromobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromo-3-chloropropane	ND	1.3	EPA 8260D	11-27-19	11-27-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*75-127*				
Toluene-d8	*104*	*80-127*				
4-Bromofluorobenzene	*104*	*78-125*				

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW33D-112519**					
Laboratory ID:	11-251-03					
Dichlorodifluoromethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Chloromethane	ND	6.5	EPA 8260D	11-27-19	11-27-19	
Vinyl Chloride	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Bromomethane	ND	2.6	EPA 8260D	11-27-19	11-27-19	
Chloroethane	ND	5.0	EPA 8260D	11-27-19	11-27-19	
Trichlorofluoromethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Iodomethane	ND	15	EPA 8260D	11-27-19	11-27-19	
Methylene Chloride	ND	5.0	EPA 8260D	11-27-19	11-27-19	
(trans) 1,2-Dichloroethene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
2,2-Dichloropropane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(cis) 1,2-Dichloroethene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Bromochloromethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Chloroform	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,1,1-Trichloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Carbon Tetrachloride	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloropropene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Trichloroethene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloropropane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Dibromomethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Bromodichloromethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
2-Chloroethyl Vinyl Ether	ND	5.0	EPA 8260D	11-27-19	11-27-19	
(cis) 1,3-Dichloropropene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(trans) 1,3-Dichloropropene	ND	1.0	EPA 8260D	11-27-19	11-27-19	

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW33D-112519**					
Laboratory ID:	11-251-03					
1,1,2-Trichloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Tetrachloroethene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,3-Dichloropropane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Dibromochloromethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromoethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Chlorobenzene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,1,1,2-Tetrachloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Bromoform	ND	5.0	EPA 8260D	11-27-19	11-27-19	
Bromobenzene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,1,2,2-Tetrachloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichloropropane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
2-Chlorotoluene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
4-Chlorotoluene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,3-Dichlorobenzene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,4-Dichlorobenzene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2-Dichlorobenzene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromo-3-chloropropane	ND	6.5	EPA 8260D	11-27-19	11-27-19	
1,2,4-Trichlorobenzene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Hexachlorobutadiene	ND	5.0	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichlorobenzene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*108*	*75-127*				
Toluene-d8	*103*	*80-127*				
4-Bromofluorobenzene	*103*	*78-125*				

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW31D-112519**					
Laboratory ID:	11-251-04					
Dichlorodifluoromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chloromethane	ND	1.3	EPA 8260D	11-27-19	11-27-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromomethane	ND	0.51	EPA 8260D	11-27-19	11-27-19	
Chloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Iodomethane	ND	2.9	EPA 8260D	11-27-19	11-27-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chloroform	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Trichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Dibromomethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MW31D-112519**					
Laboratory ID:	11-251-04					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Tetrachloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromoform	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Bromobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromo-3-chloropropane	ND	1.3	EPA 8260D	11-27-19	11-27-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*75-127*				
Toluene-d8	*102*	*80-127*				
4-Bromofluorobenzene	*101*	*78-125*				

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1127W1					
Dichlorodifluoromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chloromethane	ND	1.3	EPA 8260D	11-27-19	11-27-19	
Vinyl Chloride	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromomethane	ND	0.51	EPA 8260D	11-27-19	11-27-19	
Chloroethane	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Trichlorofluoromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Iodomethane	ND	2.9	EPA 8260D	11-27-19	11-27-19	
Methylene Chloride	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2,2-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromochloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chloroform	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Carbon Tetrachloride	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Trichloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Dibromomethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromodichloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260D	11-27-19	11-27-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
(trans) 1,3-Dichloropropene	ND	0.20	EPA 8260D	11-27-19	11-27-19	

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1127W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Tetrachloroethene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,3-Dichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Dibromochloromethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromoethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Chlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Bromoform	ND	1.0	EPA 8260D	11-27-19	11-27-19	
Bromobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichloropropane	ND	0.20	EPA 8260D	11-27-19	11-27-19	
2-Chlorotoluene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
4-Chlorotoluene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
1,2-Dibromo-3-chloropropane	ND	1.3	EPA 8260D	11-27-19	11-27-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Hexachlorobutadiene	ND	1.0	EPA 8260D	11-27-19	11-27-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260D	11-27-19	11-27-19	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*112*	*75-127*				
Toluene-d8	*106*	*80-127*				
4-Bromofluorobenzene	*104*	*78-125*				

Date of Report: December 5, 2019
Samples Submitted: November 25, 2019
Laboratory Reference: 1911-251
Project: 105-003

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1127W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**11.3**	**10.8**	10.0	10.0	113	108	63-130	5	17	
Benzene	**11.0**	**10.6**	10.0	10.0	110	106	76-125	4	19	
Trichloroethene	**10.0**	**10.0**	10.0	10.0	100	100	76-121	0	18	
Toluene	**10.2**	**9.98**	10.0	10.0	102	100	80-124	2	18	
Chlorobenzene	**9.37**	**9.11**	10.0	10.0	94	91	75-120	3	19	
Surrogate:										
Dibromofluoromethane					*112*	*112*	*75-127*			
Toluene-d8					*106*	*107*	*80-127*			
4-Bromofluorobenzene					*105*	*106*	*78-125*			

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 1

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Pacific Crest Env.
Project Number: ~~103-0~~ 105-003
Project Name: Penthouse
Project Manager: W. Carroll
Sampled by: J. Harrington

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 11-251

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers
1	MW35D-112519	11/25/19	1150	H_2O	3
2	MW34D-112519	11/25/19	1232	H_2O	3
3	MW33D-112519	11/25/19	1311	H_2O	3
4	MW31D-112519	11/25/19	1357	H_2O	3

Lab ID	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1						X																
2						X																
3						X																
4						X																

	Signature	Company	Date	Time
Relinquished		Pacific Crest	11/25/19	1520
Received		ORE	11/25/19	1520
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Pacific Crest
William Carroll
1531 Bendigo BLVD N
North Bend, WA 98045

RE: Penthouse
Work Order Number: 1903310

March 28, 2019

Attention William Carroll:

Fremont Analytical, Inc. received 3 sample(s) on 3/21/2019 for the analyses presented in the following report.

Volatile Organic Compounds by EPA Method TO-15

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

Date: *03/28/2019*

CLIENT: Pacific Crest
Project: Penthouse
Work Order: 1903310

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1903310-001	IA1-032119	03/20/2019 6:45 PM	03/21/2019 9:53 AM
1903310-002	IA2-032119	03/20/2019 6:45 PM	03/21/2019 9:53 AM
1903310-003	OA1-032119	03/20/2019 7:05 PM	03/21/2019 9:53 AM

Case Narrative

WO#: **1903310**
Date: **3/28/2019**

CLIENT: Pacific Crest
Project: Penthouse

WorkOrder Narrative:
I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Air samples are reported in ppbv and ug/m3.

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Standard temperature and pressure assumes 24.45 = (25C and 1 atm).

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Client: **Pacific Crest**
WorkOrder: 1903310
Project: Penthouse

Client Sample ID: IA1-032119
Lab ID: 1903310-001A
Sample Type: Summa Canister

Date Sampled: 3/20/2019
Date Received: 3/21/2019

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
cis-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	03/23/2019	AD
Tetrachloroethene (PCE)	1.06	7.19	0.300	2.03		EPA-TO-15	03/27/2019	AD
trans-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	03/23/2019	AD
Trichloroethene (TCE)	<0.200	<1.07	0.200	1.07		EPA-TO-15	03/23/2019	AD
Vinyl chloride	<0.200	<0.511	0.200	0.511		EPA-TO-15	03/23/2019	AD
Surr: 4-Bromofluorobenzene	103 %Rec	--	70-130	--		EPA-TO-15	03/23/2019	AD

Client: **Pacific Crest**
WorkOrder: 1903310
Project: Penthouse

Client Sample ID: IA2-032119
Lab ID: 1903310-002A
Sample Type: Summa Canister

Date Sampled: 3/20/2019
Date Received: 3/21/2019

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
cis-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	03/23/2019	AD
Tetrachloroethene (PCE)	2.76	18.7	0.300	2.03		EPA-TO-15	03/27/2019	AD
trans-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	03/23/2019	AD
Trichloroethene (TCE)	<0.200	<1.07	0.200	1.07		EPA-TO-15	03/23/2019	AD
Vinyl chloride	<0.200	<0.511	0.200	0.511		EPA-TO-15	03/23/2019	AD
Surr: 4-Bromofluorobenzene	114 %Rec	--	70-130	--		EPA-TO-15	03/23/2019	AD

Client: **Pacific Crest**
WorkOrder: 1903310
Project: Penthouse

Client Sample ID: OA1-032119
Lab ID: 1903310-003A
Sample Type: Summa Canister

Date Sampled: 3/20/2019
Date Received: 3/21/2019

Analyte	Concentration		Reporting Limit		Qual	Method	Date/Analyst	
Volatile Organic Compounds by EPA Method TO-15								
	(ppbv)	(ug/m³)	(ppbv)	(ug/m³)				
cis-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	03/23/2019	AD
Tetrachloroethene (PCE)	<0.300	<2.03	0.300	2.03		EPA-TO-15	03/27/2019	AD
trans-1,2-Dichloroethene	<0.200	<0.793	0.200	0.793		EPA-TO-15	03/23/2019	AD
Trichloroethene (TCE)	<0.200	<1.07	0.200	1.07		EPA-TO-15	03/23/2019	AD
Vinyl chloride	<0.200	<0.511	0.200	0.511		EPA-TO-15	03/23/2019	AD
Surr: 4-Bromofluorobenzene	92.0 %Rec	--	70-130	--		EPA-TO-15	03/23/2019	AD

Work Order: 1903310
CLIENT: Pacific Crest
Project: Penthouse

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS-50291A** SampType: **LCS** Units: **ppbv** Prep Date: **3/23/2019** RunNo: **50291**
Client ID: **LCSW** Batch ID: **R50291** Analysis Date: **3/23/2019** SeqNo: **987722**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	2.09	0.107	2.000	0	104	70	130				
trans-1,2-Dichloroethene	1.90	0.200	2.000	0	95.1	70	130				
cis-1,2-Dichloroethene	2.23	0.200	2.000	0	111	70	130				
Trichloroethene (TCE)	1.99	0.0649	2.000	0	99.6	70	130				
Surr: 4-Bromofluorobenzene	3.99		4.000		99.7	70	130				

Sample ID **MB-R50291A** SampType: **MBLK** Units: **ppbv** Prep Date: **3/23/2019** RunNo: **50291**
Client ID: **MBLKW** Batch ID: **R50291** Analysis Date: **3/23/2019** SeqNo: **987723**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.107									
trans-1,2-Dichloroethene	ND	0.200									
cis-1,2-Dichloroethene	ND	0.200									
Trichloroethene (TCE)	ND	0.0649									
Surr: 4-Bromofluorobenzene	3.69		4.000		92.3	70	130				

Sample ID **1903315-004AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/23/2019** RunNo: **50291**
Client ID: **BATCH** Batch ID: **R50291** Analysis Date: **3/23/2019** SeqNo: **987726**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.107						0		30	
trans-1,2-Dichloroethene	ND	0.200						0		30	
cis-1,2-Dichloroethene	0.832	0.200						0.8040	3.49	30	
Trichloroethene (TCE)	7.26	0.0649						7.208	0.770	30	
Surr: 4-Bromofluorobenzene	4.79		4.000		120	70	130		0		

Work Order: 1903310
CLIENT: Pacific Crest
Project: Penthouse

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS-R50291B** SampType: **LCS** Units: **ppbv** Prep Date: **3/25/2019** RunNo: **50291**
Client ID: **LCSW** Batch ID: **R50291** Analysis Date: **3/25/2019** SeqNo: **987737**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	1.88	0.107	2.000	0	94.2	70	130				
trans-1,2-Dichloroethene	1.84	0.200	2.000	0	92.1	70	130				
cis-1,2-Dichloroethene	1.97	0.200	2.000	0	98.5	70	130				
Trichloroethene (TCE)	1.90	0.0649	2.000	0	94.9	70	130				
Surr: 4-Bromofluorobenzene	4.04		4.000		101	70	130				

Sample ID **MB-R50291B** SampType: **MBLK** Units: **ppbv** Prep Date: **3/25/2019** RunNo: **50291**
Client ID: **MBLKW** Batch ID: **R50291** Analysis Date: **3/25/2019** SeqNo: **987738**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.107									
trans-1,2-Dichloroethene	ND	0.200									
cis-1,2-Dichloroethene	ND	0.200									
Trichloroethene (TCE)	ND	0.0649									
Surr: 4-Bromofluorobenzene	3.64		4.000		90.9	70	130				

Sample ID **1903315-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **3/25/2019** RunNo: **50291**
Client ID: **BATCH** Batch ID: **R50291** Analysis Date: **3/25/2019** SeqNo: **987741**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.107						0		30	H
trans-1,2-Dichloroethene	ND	0.200						0		30	H
cis-1,2-Dichloroethene	0.480	0.200						0.5076	5.51	30	H
Trichloroethene (TCE)	0.746	0.0649						0.7256	2.80	30	H
Surr: 4-Bromofluorobenzene	4.97		4.000		124	70	130		0		H

Work Order: 1903310
CLIENT: Pacific Crest
Project: Penthouse

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID **LCS-R50340**	SampType: **LCS**	Units: **ppbv**	Prep Date: **3/26/2019**	RunNo: **50340**
Client ID: **LCSW**	Batch ID: **R50340**		Analysis Date: **3/26/2019**	SeqNo: **988893**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	2.59	0.200	2.000	0	130	70	130				
Surr: 4-Bromofluorobenzene	3.99		4.000		99.6	70	130				

Sample ID **1903264-001AREP**	SampType: **REP**	Units: **ppbv**	Prep Date: **3/26/2019**	RunNo: **50340**
Client ID: **BATCH**	Batch ID: **R50340**		Analysis Date: **3/26/2019**	SeqNo: **988896**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	1.17	0.200						1.310	11.1	30	H
Surr: 4-Bromofluorobenzene	4.97		4.000		124	70	130		0		H

Sample ID **MB-R50340**	SampType: **MBLK**	Units: **ppbv**	Prep Date: **3/27/2019**	RunNo: **50340**
Client ID: **MBLKW**	Batch ID: **R50340**		Analysis Date: **3/27/2019**	SeqNo: **988905**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Tetrachloroethene (PCE)	ND	0.200									
Surr: 4-Bromofluorobenzene	3.99		4.000		99.7	70	130				

Sample Log-In Check List

Client Name:	**PACIFIC**	Work Order Number:	**1903310**
Logged by:	**Brianna Barnes**	Date Received:	**3/21/2019 9:53:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐	
2.	How was the sample delivered?	Client			

Log In

3.	Coolers are present?	Yes ☐	No ☑	NA ☐	
		Air samples.			
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐		
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Required ☑	
6.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑	
7.	Were all items received at a temperature of >0°C to 10.0°C*	Yes ☐	No ☐	NA ☑	
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐		
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐		
10.	Are samples properly preserved?	Yes ☑	No ☐		
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐	
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑	
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐		
14.	Does paperwork match bottle labels?	Yes ☑	No ☐		
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐		
16.	Is it clear what analyses were requested?	Yes ☑	No ☐		
17.	Were all holding times able to be met?	Yes ☑	No ☐		

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑	

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

3/27/19 - Client added trans-1,2-DCE & VC

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 3/21/19 Page: 1 of: 1

Laboratory Project No (Internal): 1903310

Project Name: PENTHOUSE

Special Remarks:

Project No: 105-005

Client: PACIFIC CROST

Location: SEATTLE, WA

Address: PO BOX 952

Collected by: MB

City, State, Zip: NORTH BEND, WA 98045

Reports to (PM): WC

Air samples are disposed of one week after report is submitted to client unless otherwise requested. ☐ OK to Dispose ☐ Hold (fees may apply)

Telephone: 425 888 4990

Email (PM): WCARROLL@ARLOWORM.COM

Fax: 425 888 4994

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure ("Hg)
1	IA1- 032119	17635 Canister FR8-07 Flow Reg	3/20/19 - 3/21/19 Date 1845 - 0930 Time	IA	6L	8hr	10mtorr Pressure 3/7/2019 Date	-30 Pressure 3/20/19 Date	-1 Pressure 3/21/19 Date	X										PCE, TCE, cis-1,2-DCE	-3
2	IA2- 032119	15900 Canister FR8-30 Flow Reg	3/20/19 - 3/21/19 Date 1945 - 0900 Time	IA	6L	8hr	10mtorr Pressure 3/11/2019 Date	-30 Pressure 3/20/19 Date	-2 Pressure 3/21/19 Date	✓										PCE, TCE, cis-1,2-DCE	-2
3	OA1- 032119	17239 Canister FR8-18 Flow Reg	3/20/19 - 3/21/19 Date 1905 - 0920 Time	AA	6L	8hr	10mtorr Pressure 3/13/2019 Date	-30 Pressure 3/20/19 Date	Pressure 3/21/19 Date	✓										PCE, TCE, cis-1,2-DCE	-1
4		Canister Flow Reg	Date Time				Pressure Date	Pressure Date	Pressure Date												
5		Canister Flow Reg	Date Time				Pressure Date	Pressure Date	Pressure Date												

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x	3/21/19 0953	x	3/21/19 0953
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-Around Time:

- ☑ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day ____ (specify)

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): 1903310

Date: 3/21/19 Page: 1 of: 1

Special Remarks:

Project Name: PENTHOUSE

Project No: 105-005

Location: SEATTLE, WA

Collected by: MB

Reports to (PM): WC

Air samples are disposed of one week after report is submitted to client unless otherwise requested. ☐ OK to Dispose ☐ Hold (fees may apply)

Client: PACIFIC CREST

Address: PO. BOX 952

City, State, Zip: NORTH BEND, WA 98045

Telephone: 425 888 4980

Fax: 425 888 4994

Email (PM): WCARROLL@ARLOWENV.COM

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure ("Hg)	Field Final Sample Pressure ("Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure ("Hg)
1	IA1-032119	17635 / FR8-07	3/20/19 - 3/21/19 / 1845 - 0900	IA	6L	8hr	10mtorr / 3/7/2019	-30 / 3/20/19	-1 / 3/21/19	X										PCE, TCE, cis-1,2 DCE [Trans 1,2 DCE + VC]	-3
2	IA2-032119	15900 / FR8-30	3/20/19 - 3/21/19 / 1945 - 0900	IA	6L	8hr	10mtorr / 3/11/2019	-30 / 3/20/19	-2 / 3/21/19	X										PCE, TCE, cis-1,2-DCE	-2
3	OA1-032119	17239 / FR8-18	3/20/19 - 3/21/19 / 1905 - 0920	AA	6L	8hr	10mtorr / 3/13/2019	-30 / 3/20/19	/ 3/21/19	X										PCE, TCE, cis-1,2-DCE	-1
4																				Added per Mike 3/29/19 cg	
5																					

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished x	Date/Time 3/21/19 0953	Received x	Date/Time 3/21/19 0953
Relinquished x	Date/Time	Received x	Date/Time

Turn-Around Time:

- ☑ Standard
- ☐ 3 Day
- ☐ 2 Day
- ☐ Next Day
- Same Day _____ (specify)

SiREM
Leading Science · Lasting Solutions

130 Stone Rd. W
Guelph, ON N1G 3Z2
(519) 822-2265

Certificate of Analysis: Gene-Trac® *Dehalococcoides* Assay

Customer: William Carroll, Pacific Crest Environmental
Project: Penthouse
Customer Reference: 105-003

SiREM Reference: S-5255
Report Date: 1-Apr-19
Data Files: iQ5B-DHCT-TM-QPCR-1641
iQ5B-DB-DHC-TM-QPCR-0966

Table 1: Test Results

Sample ID	*Dehalococcoides* (Dhc)	
	Percent Dhc(1)	**Enumeration/Liter(2)**
MW31s-032019	NA	3×10^3 U
MW33s-032019	NA	3×10^3 U

See final page for notes.

Analyst: Taylor Aris, B.Sc.
Laboratory Technician

Approved: Ximena Druar, B.Sc.
Genetic Testing Coordinator

Table 2: Detailed Test Parameters, Gene-Trac Test Reference S-5255

Customer Sample ID	MW31s-032019	MW33s-032019
SiREM Dhc Test ID	DHC-17211	DHC-17212
Date Sampled [3]	20-Mar-19	20-Mar-19
Matrix	Groundwater	Groundwater
Date Received [3]	25-Mar-19	25-Mar-19
Sample Temperature	16.1 ºC	16.1 ºC
Filtration Date [3]	25-Mar-19	25-Mar-19
Volume Used for DNA Extraction	500 mL	500 mL
DNA Extraction Date	27-Mar-19	27-Mar-19
DNA Concentration in Sample (extractable)	163 ng/L	758 ng/L
PCR Amplifiable DNA	Detected	Detected
Dhc qPCR Date Analyzed	28-Mar-19	28-Mar-19
Laboratory Controls (see Table 3)	Passed	Passed
Comments	FGA testing was not performed as sample was ND for Dhc	FGA testing was not performed as sample was ND for Dhc

See final page for notes

Table 3: Gene-Trac Dhc Control Results, Test Reference S-5255

Laboratory Control	Analysis Date	Control Description	Spiked Dhc 16S rRNA Gene Copies per Liter	Recovered Dhc 16S rRNA Gene Copies per Liter	Comments
Positive Control Low Concentration	28-Mar-19	Genomic DNA (CSLD-1279)	3.0×10^{6}	3.1×10^{6}	Passed
Positive Control High Concentration	28-Mar-19	Genomic DNA (CSHD-1279)	2.9×10^{8}	2.4×10^{8}	Passed
Extraction Control	28-Mar-19	Extraction Control (KB-0658)	1.2×10^{11}	9.7×10^{10}	Passed
DNA Extraction Blank	28-Mar-19	Sterile Water (FB-3257)	0	2.6×10^{3} U	Passed
Negative Control	28-Mar-19	Reagent Blank (TBD-1238)	0	2.6×10^{3} U	Passed

See final page for notes.

Notes:
Dhc = *Dehalococcoides*
J The associated value is an estimated quantity between the method detection limit and quantitation limit.
U Not detected, associated value is the quantitation limit.
B Analyte was detected in the method blank within an order of magnitude of the test sample.
E Extracted genomic DNA was not detected in the sample.
I Sample inhibited the test reaction based on inability to PCR amplify extracted DNA with universal primers.
ng/L = nanograms per liter
mL = milliliter
NA = not applicable
ND = not detected
DNA = deoxyribonucleic acid
16S rRNA = 16S ribosomal ribonucleic acid
PCR = polymerase chain reaction
qPCR = quantitative PCR
°C = degrees Celsius

[1]Percent *Dehalococcoides* (Dhc) in microbial population. This value is calculated by dividing the number of Dhc 16S ribosomal ribonucleic acid (rRNA) gene copies by the total number of bacteria as estimated by the mass of DNA extracted from the sample. Range represents normal variation in Dhc enumeration.

[2]Based on quantification of Dhc 16S rRNA gene copies. Dhc are generally reported to contain one 16S rRNA gene copy per cell; therefore, this number is often interpreted to represent the number of Dhc cells present in the sample.

[3]Samples are stabilized by freezing at -80 °C upon sample reception (field filters) or in-lab filtration (groundwater). Hold time not exceeded if sampling date is within 7 days of date received or filtration date.

SiREM

Chain-of-Custody Form

siremlab.com

180A Market Place Blvd.
Knoxville, TN 37922
(865) 330-0037

Lab # S-5255

Project Name	PENTHOUSE
Project #	105-003
Project Manager	WILLIAM "BILL" CARROLL
Email	WCARROLL@ARROWENV.COM
Company	PACIFIC CREST ENVIRONMENTAL
Address	PO BOX 1452 NORTH BEND, WA 98045
Phone #	425 888 4990
Sampler's Signature	
Sampler's Printed Name	MIKE BLACK

Analysis

Preservative	0	0										
	DEHALOCOCCOIDES	CHLOROETHENE FGA										
Client Sample ID	Lab ID	Sampling Date	Sampling Time	Matrix	# of Containers									Other Information
MW31S - 032019		3/20/19	1020	H_2O	1	X	X							Client bottles
MW33S - 032019		"	1200	"	2	X	X							

Preservative Key
0. None
1. HCL
2. Other
3. Other
4. Other
5. Other
6. Other

Sample Receipt

Cooler Condition: Good - melted wet ice

Cooler Temperature: 16.1 °C

Custody Seals: Yes ☐ No ☑

Invoice Information

P.O. #

Bill To:

For Lab Use Only

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Susan Thomas	Susan Thomas	J. Wilkinson		
Printed Name MIKE BLACK	Printed Name Susan Thomas	Printed Name Susan Thomas	Printed Name J. Wilkinson	Printed Name	Printed Name
Firm PACIFIC CREST	Firm SiREM	Firm SiREM	Firm SiREM	Firm	Firm
Date/Time 3/21/19 1215	Date/Time 3-25-19 1400	Date/Time 3-25-19 1500	Date/Time 3/27/19 1400	Date/Time	Date/Time

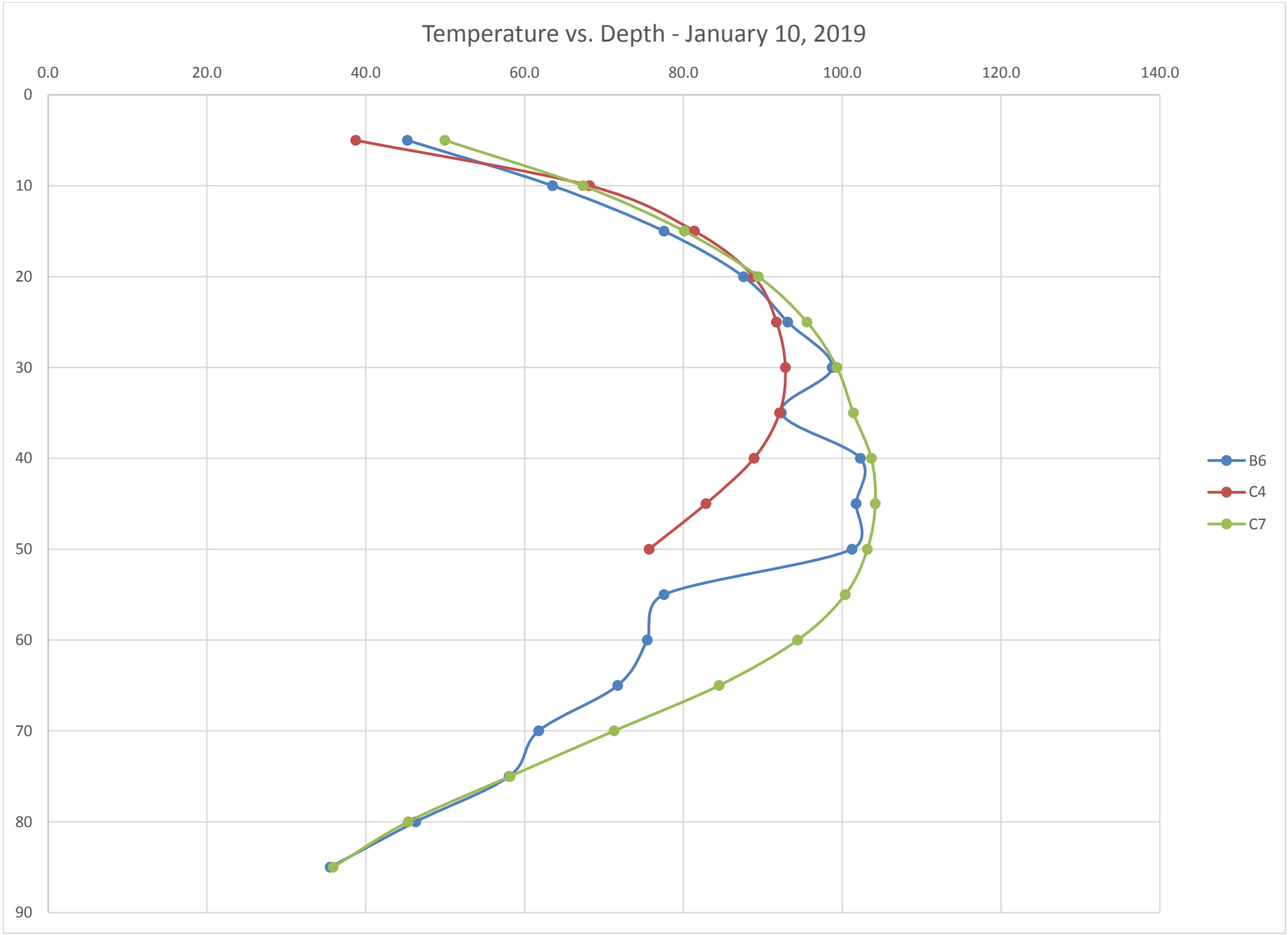
Distribution: White - Return to Originator; Yellow - Lab Copy; Pink - Retained by Client

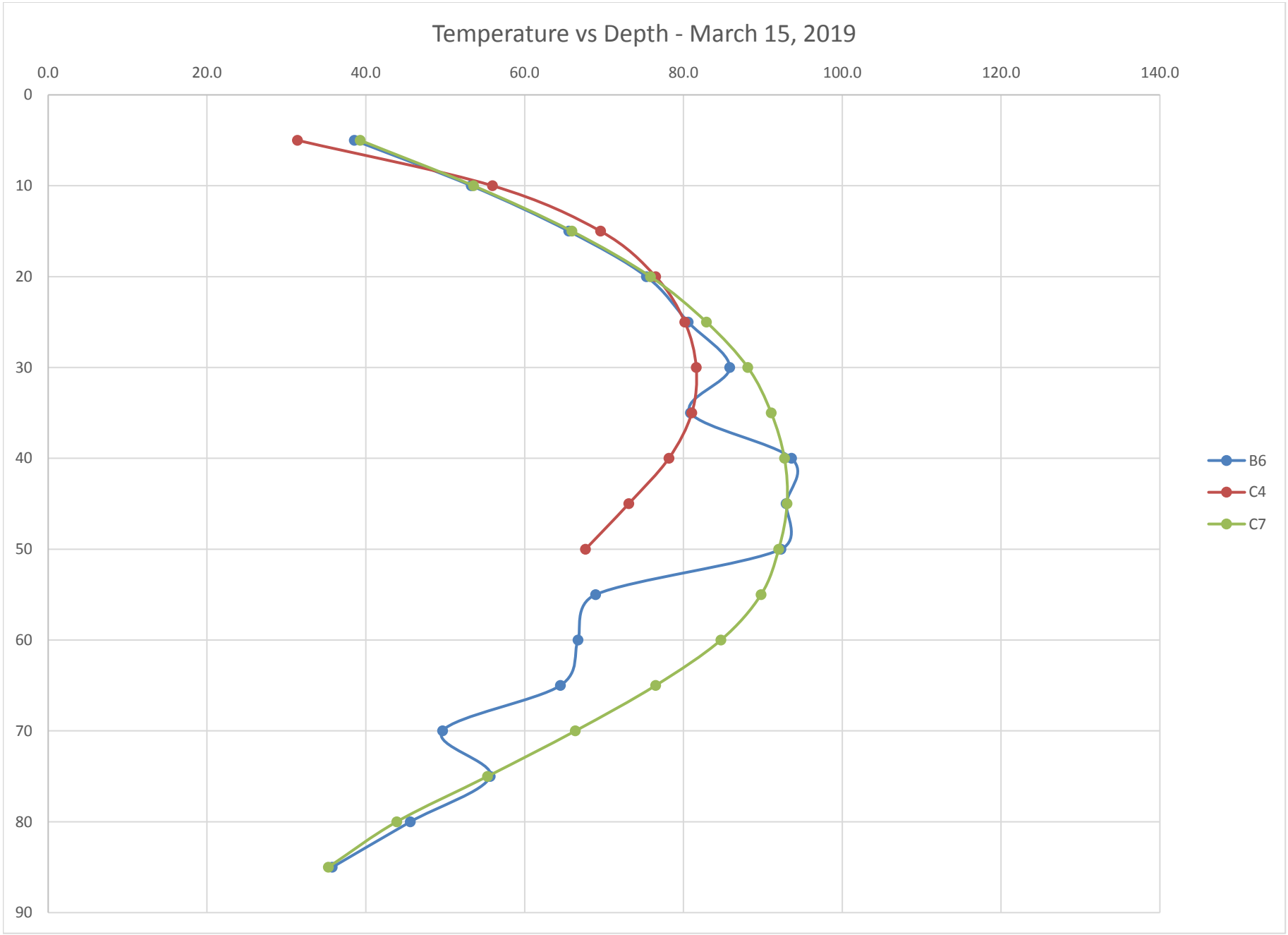
APPENDIX C
SUBSURFACE TEMPERATURE GRAPHS

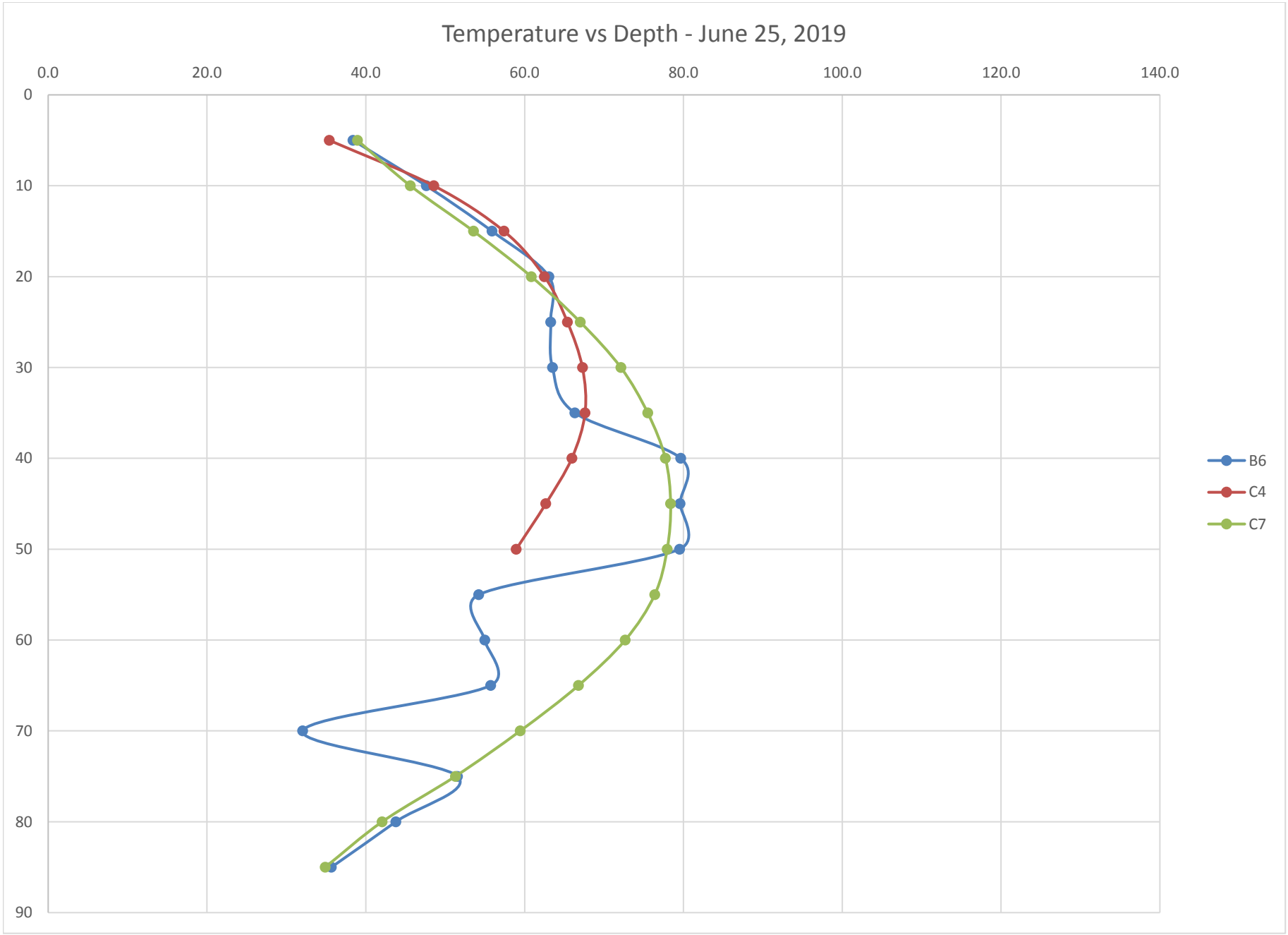
CLEANUP ACTION PROGRESS REPORT

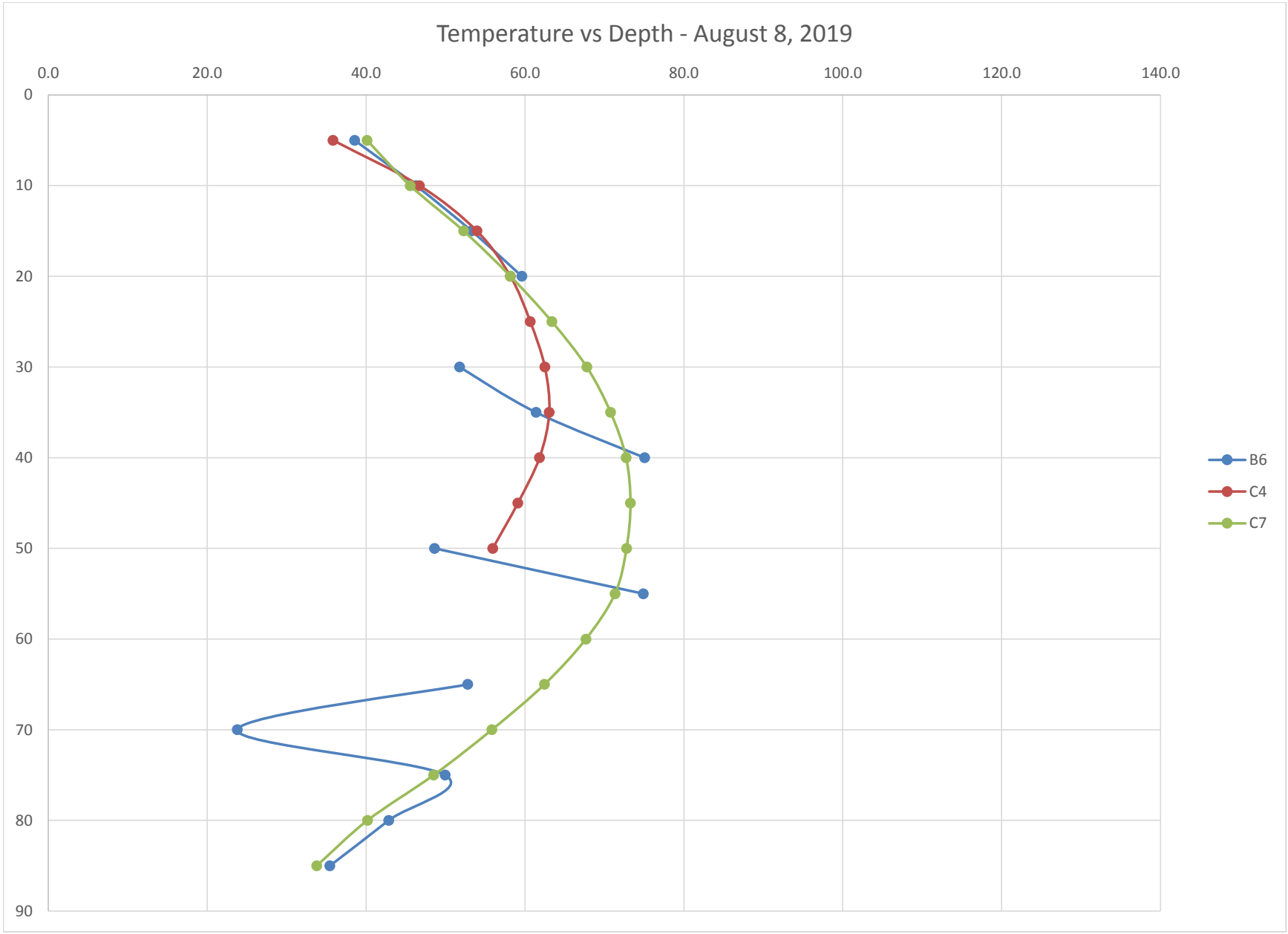
Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

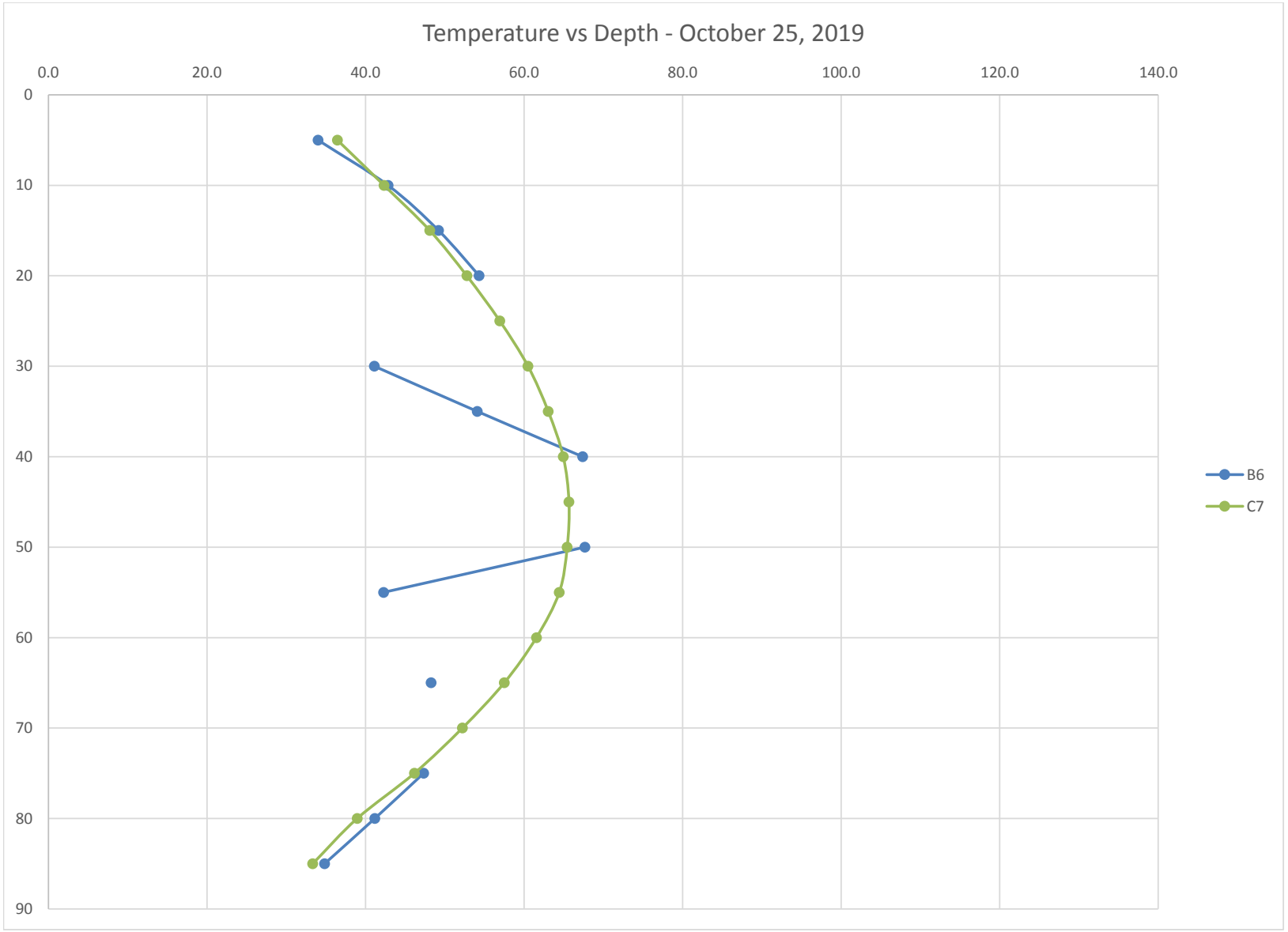
PACIFIC CREST NO: 105-003

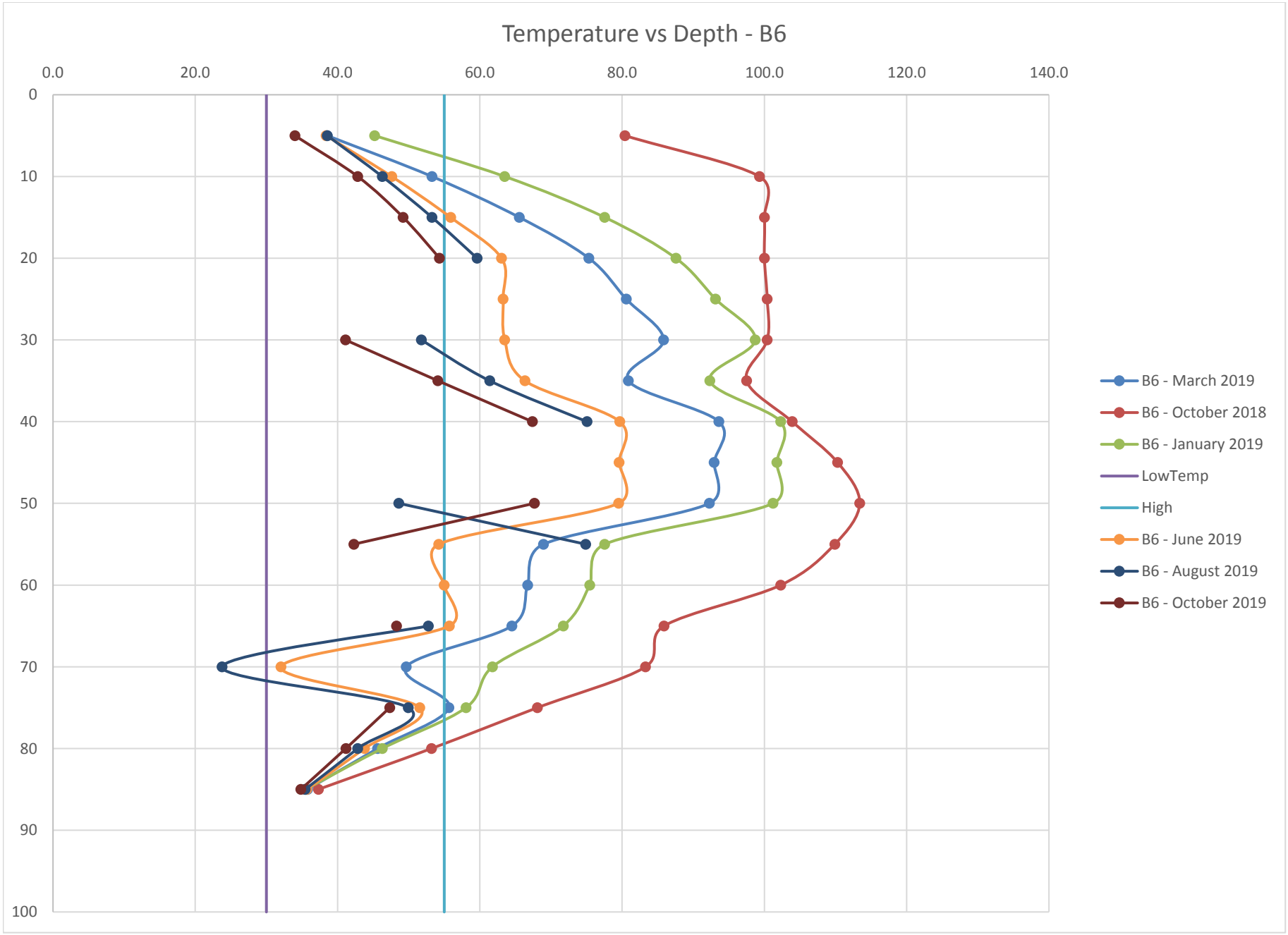

Temperature vs. Depth - January 10, 2019
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
0
10
20
30
40
50
60
70
80
90
B6
C4
C7

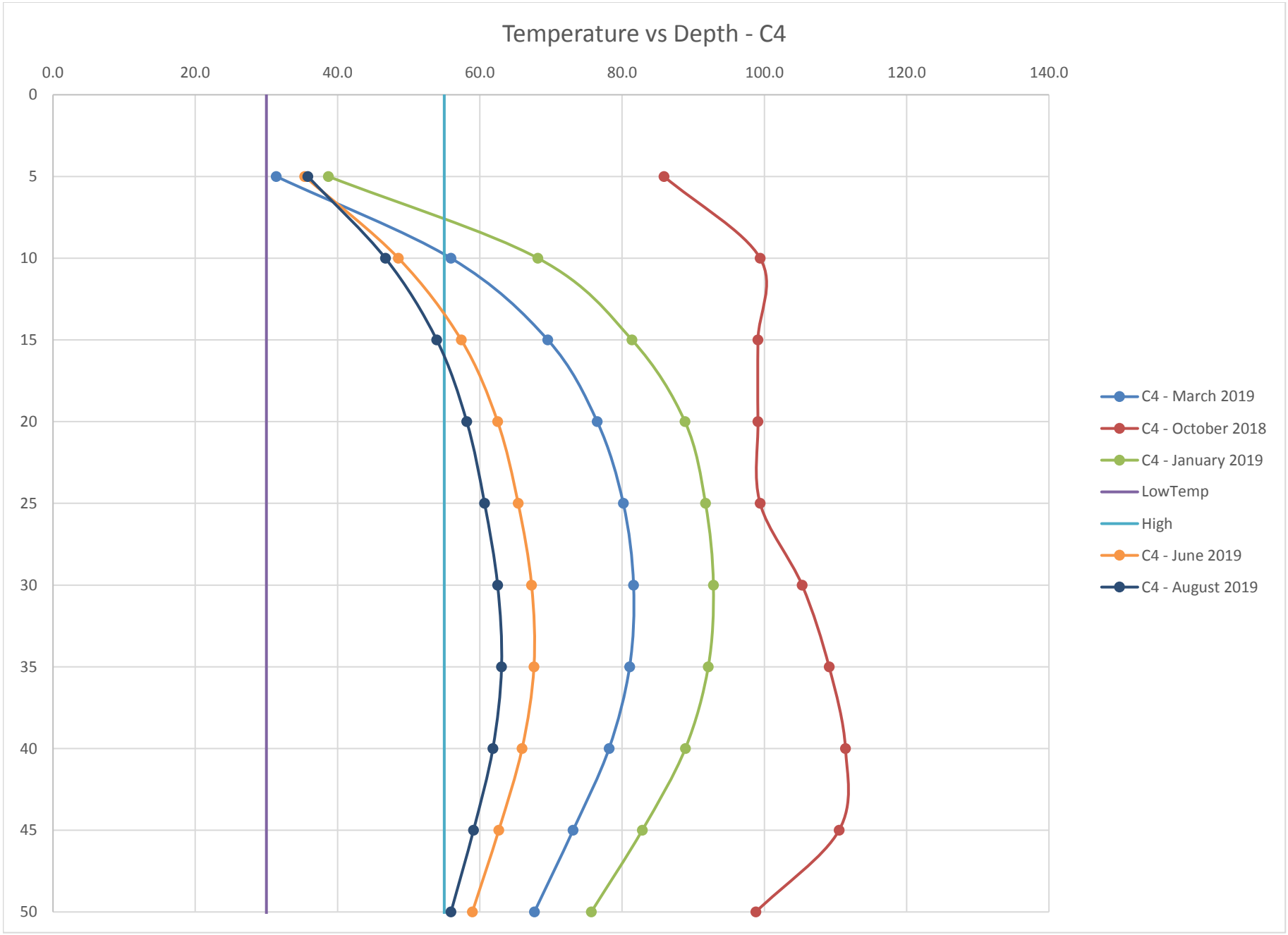

Temperature vs Depth - March 15, 2019
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
0
10
20
30
40
50
60
70
80
90
B6
C4
C7

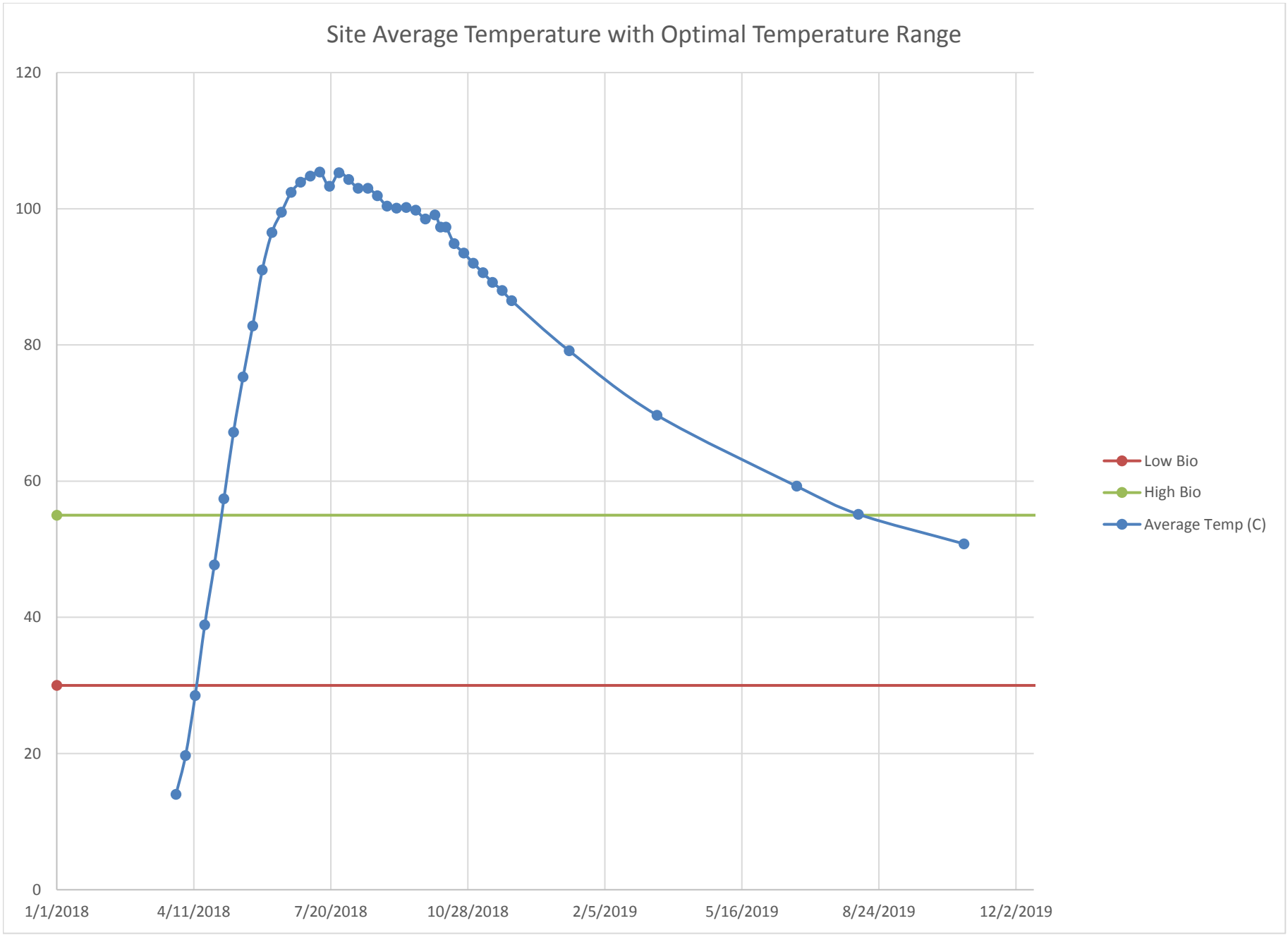

Temperature vs Depth - June 25, 2019
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
0
10
20
30
40
50
60
70
80
90
B6
C4
C7


Temperature vs Depth - August 8, 2019
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
0
10
20
30
40
50
60
70
80
90
B6
C4
C7


Temperature vs Depth - October 25, 2019
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
0
10
20
30
40
50
60
70
80
90
B6
C7


Temperature vs Depth - B6
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
0
10
20
30
40
50
60
70
80
90
100
B6 - March 2019
B6 - October 2018
B6 - January 2019
LowTemp
High
B6 - June 2019
B6 - August 2019
B6 - October 2019


Temperature vs Depth - C4
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
0
5
10
15
20
25
30
35
40
45
50
C4 - March 2019
C4 - October 2018
C4 - January 2019
LowTemp
High
C4 - June 2019
C4 - August 2019


Site Average Temperature with Optimal Temperature Range
120
100
80
60
40
20
0
1/1/2018
4/11/2018
7/20/2018
10/28/2018
2/5/2019
5/16/2019
8/24/2019
12/2/2019
Low Bio
High Bio
Average Temp (C)

APPENDIX D
PACIFIC ENGINEERING TECHNOLOGIES REPORTS

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

PACIFIC CREST NO: 105-003

November 14, 2019

Mr. Joel Harrington
PACIFIC CREST ENVIRONMENTAL, LLC
1531 Bendigo Boulevard North
P.O. Box 952
North Bend, Washington 98045

Subject: Site Observation and Review of the Floor Slope
and the Existing Cracks in the Exterior CMU Walls
SEATTLE COLLISION CENTER
1752 Rainier Avenue South
Seattle, Washington

Dear Mr. Harrington:

As you requested, we have made site observations at the above referenced building to determine if the construction work being performed in the lot adjacent to the south side of the building has caused distress to the existing concrete masonry unit (CMU) exterior walls and/or the existing concrete slab-on-grade floor.

An initial site visit was performed by Mr. Jeffrey M. Bozick, P.E. and Mr. Gursimranjot Singh, E.I.T. on May 19, 2017, before the construction reportedly began. During our initial site visit, we documented the existing conditions of the North, South and East CMU walls. The existing cracks in the CMU walls were documented and crack monitors were applied across several existing cracks to monitor changes in the width of these cracks. Photographs were also taken to document the existing condition of the walls. A level survey was performed using a ZIPLEVEL PRO-2000 by Technidea to document the relative elevation of the interior concrete slab-on-grade.

A follow-up site visit was performed by Mr. Jeffrey M. Bozick, P.E. and Mr. Gursimranjot Singh, E.I.T. on October 25, 2019, after the construction had reportedly been completed. During our follow-up site visit, we made observations of conditions of the North, South and East exterior CMU walls to determine if the existing cracks had been exacerbated or if new distress had occurred. Photographs were taken to compare the current condition of the walls to the conditions at our initial site visit. Readings from the crack monitors were recorded.

No new cracks were observed to the North, South and East exterior CMU walls and no noticeable changes to the existing cracks were observed. We have provided side-by-side photographs (No. 1 through No. 6 in the Appendix) of selected locations from our initial site visit and our follow up site visit. No changes to the width of the existing cracks were observed at the crack monitor locations (Photograph Nos. 7 through 10 in the Appendix).

2150 NORTH 107TH STREET, SUITE 320 | SEATTLE, WASHINGTON 98133
www.pacengtech.com | Ph: 206-281-7500

A level survey of the interior concrete slab-on-grade was performed at approximately the same locations as the initial survey. Readings taken during our follow-up site visit indicate that the concrete slab-on-grade is now 0.3" to 0.7" lower than the readings taken during our initial site visit along the west half of the south exterior wall in relation to the east side of the building.

Please let us know if you have any questions or require additional information.

Respectfully,

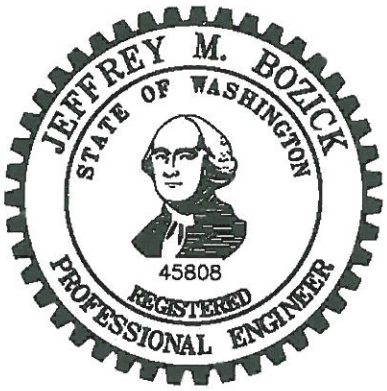
PACIFIC ENGINEERING TECHNOLOGIES, INC.

Written by: Gursimranjot Singh

Gursimranjot Singh, E.I.T.
Design Engineer

Reviewed by: Jeffrey M. Bozick

Jeffrey M. Bozick, P.E.
Principal



Disclaimer

The information contained in this report is for the exclusive use of **PACIFIC CREST ENVIRONMENTAL, LLC**. Pacific Engineering Technologies, Inc. assumes no responsibility or liability for any use of this report by other parties. The design of the specific construction details necessary to repair the structure exceeds the scope of this report and the services authorized.

Notice

APPENDIX
PHOTOGRAPHS

1. Interior cracks behind HVAC system. (Left photograph is before construction and right photograph is after construction.)

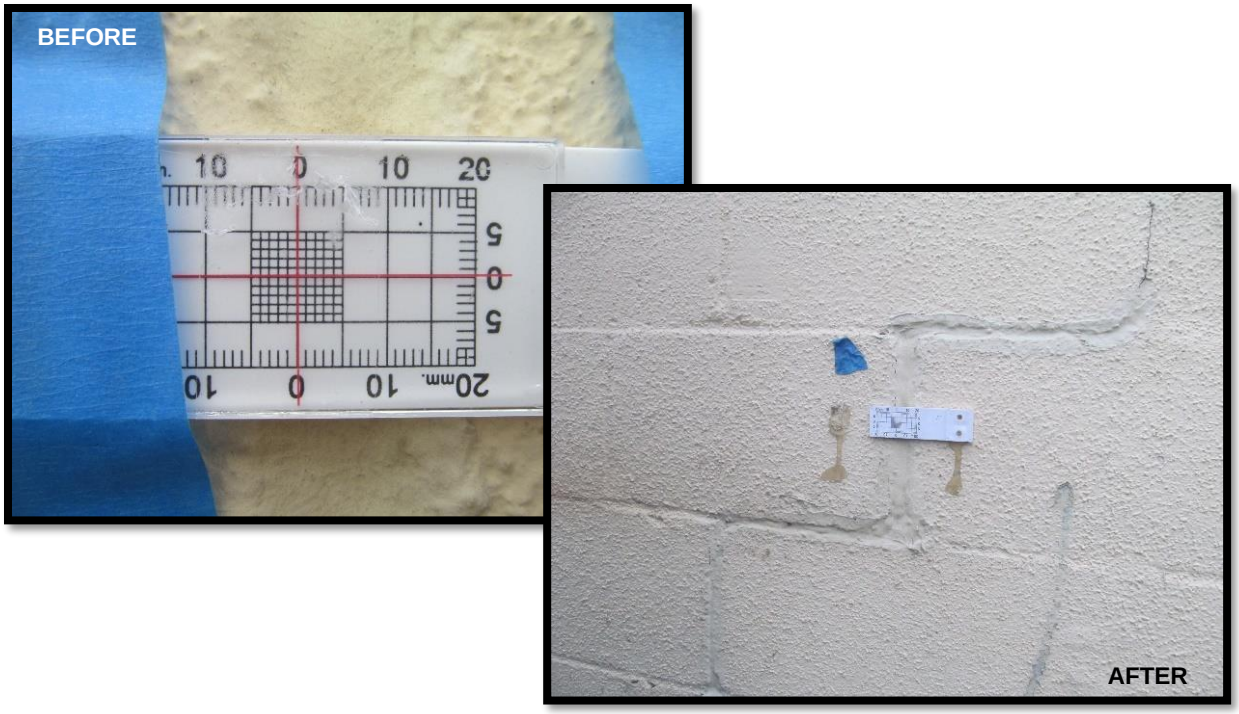
2. Existing crack in the foundation at the south wall towards the west end. (Left photograph is before construction and right photograph is after construction.)

3. East wall at the top left corner. (Left photograph is before construction and right photograph is after construction.)

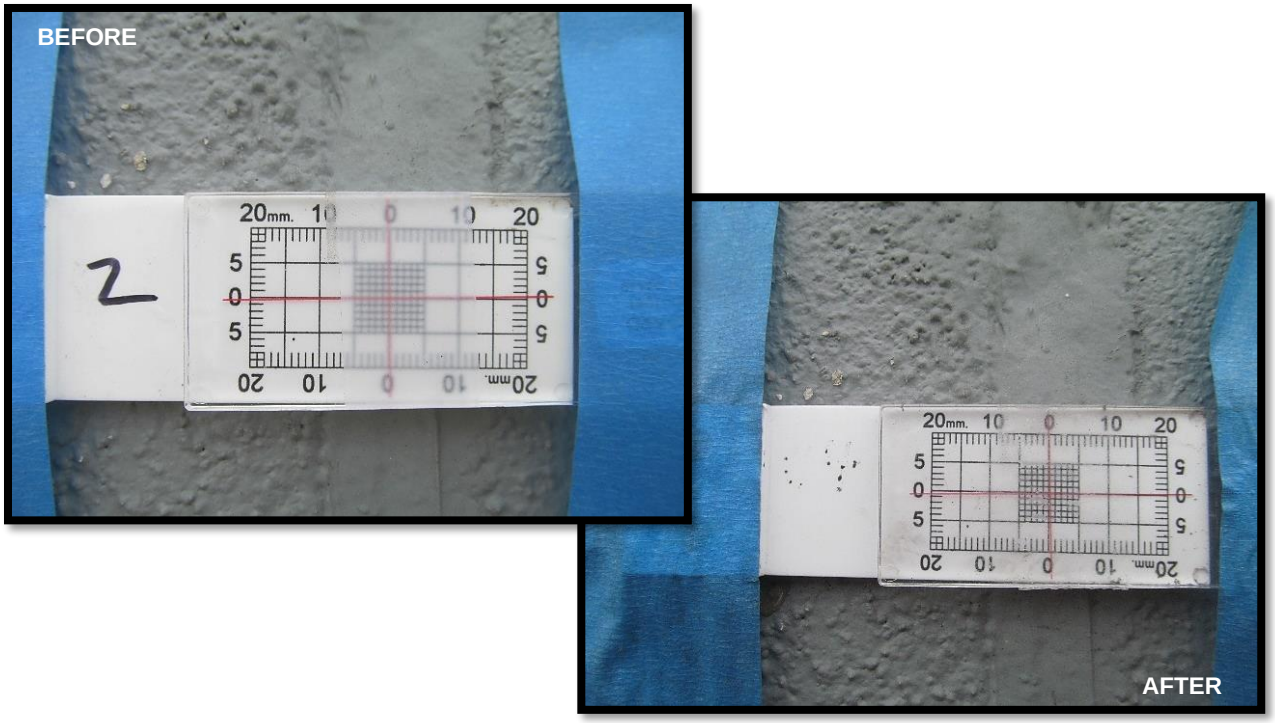
4. South wall on the right side. (Left photograph is before construction and right photograph is after construction.)

5. South wall in the middle. (Left photograph is before construction and right photograph is after construction.)

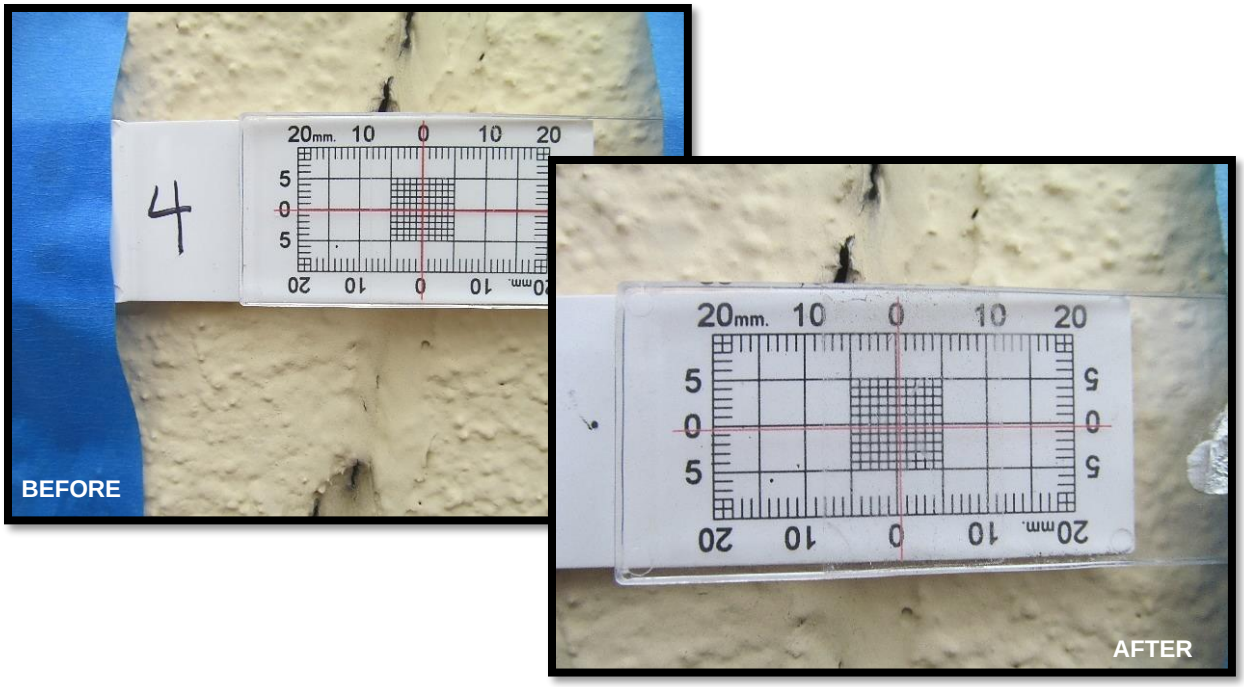
6. South wall on the left side. (Left photograph is before construction and right photograph is after construction.)



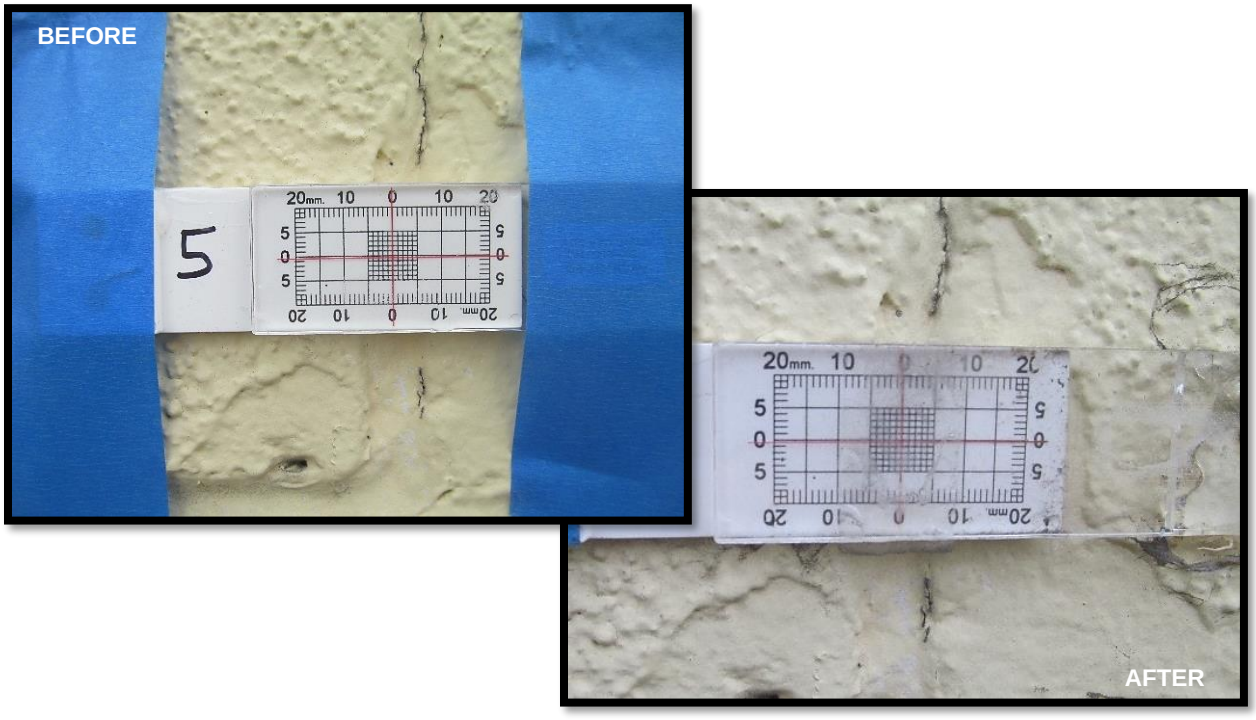
7. The crack monitor had been disturbed.



8. No change in the crack monitor.



9. No change in the crack monitor.



10. No change in the crack monitor.

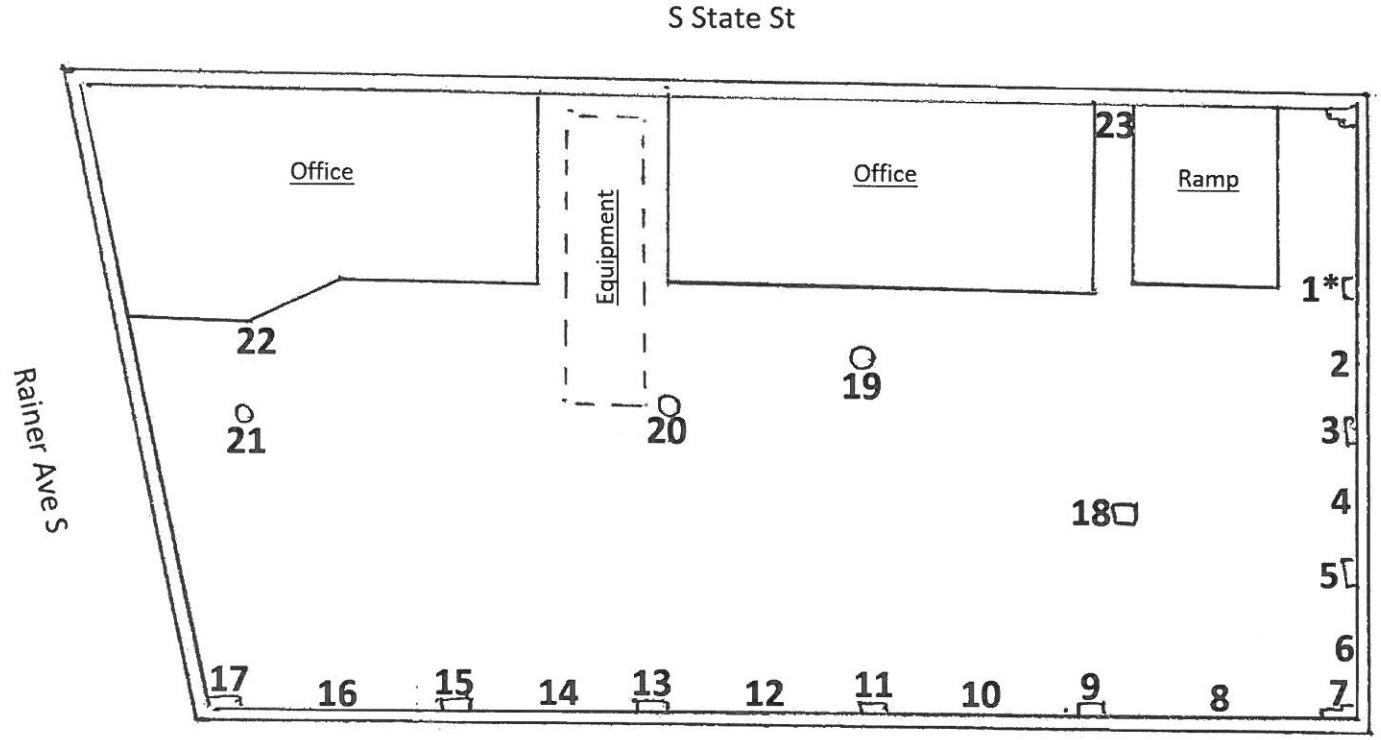
Project No: 17117 Date: 01/17/2020 Sheet: 1 Of: 2

Project Name: Seattle Collision Center

Comp. By: G.S. Chk.By:

Contents: Location of Survey Points

PACIFIC ENGINEERING TECHNOLOGIES, INC.
2150 N. 107th St., Suite 320 Seattle, WA 98133
P: 206.281.7500 www.PacEngTech.com



Floor Plan / Level Survey Points

Project No: 17117 Date: 01/17/2020 Sheet: 2 Of: 2

Project Name: Seattle Collision Center

Comp. By: G.S. Chk.By: _____

Contents: Level Survey Data

PACIFIC ENGINEERING TECHNOLOGIES, INC.
2150 N. 107th St., Suite 320 Seattle, WA 98133
P: 206.281.7500 www.PacEngTech.com

Level Survey Data			
	Readings (inch)		
Location	5/19/2017	10/25/2019	Comments
1	0	0	
2	0.2	0.2	
3	0.5	0.4	
4	0.4	0.4	
5	0.4	0.4	
6	-0.1	N/A	Not Accessible
7	0.1	0.2	
8	-0.2	-0.2	
9	-0.7	-0.8	
10	-2.3	-2.8	
11	-3	-3.4	
12	-3.3	-4	
13	-3	-3.4	
14	-2.7	-3.2	
15	-2.5	-2.8	
16	-2.4	-2.8	
17	-1.9	-2.4	
18	-0.2	N/A	Existing coulm had been removed
19	-0.6	-0.6	
20	-1.1	-1.4	
21	-2.1	-2.4	
22	-2.2	-2.8	
23	-2.1	N/A	Not Accessible
1	0	0	Closing loop

APPENDIX E
WASTE DISPOSAL DOCUMENTATION

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

PACIFIC CREST NO: 105-003

***24 HOUR EMERGENCY RESPONSE, CALL (877) 577-2669 ***

Stericycle®
Environmental Solutions

SHIPPING PAPER

Lading Manifest: 309583-19

DELIVERY DATE	JOB #
6-13-19	3606584

SHIPPER / CUSTOMER Penthouse Drapery Cleaners and	POINT OF CONTACT Michael Blanck
ADDRESS 1752 RAINIER AVE S	PHONE # (610)417-8585
CITY, STATE, ZIP SEATTLE WA 98144	
CARRIER / TRANSPORTER Stericycle Specialty Waste	PHONE # (612)285-9865
CONSIGNEE / FACILITY BURLINGTON ENVIRONMENTAL, LLC.	POINT OF CONTACT
ADDRESS 1701 East Alexander Avenue	PHONE # (253)627-7568
CITY, STATE, ZIP TACOMA , WA 98421	

HM	US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	Containers No.	Containers Type	Total Quantity	UOM
A	MATERIAL NOT REGULATED BY DOT (IDW SOIL)	5	DM	2000	P
B	MATERIAL NOT REGULATED BY DOT	2	DM	175	P
C					
D					

Special Handling Instruction and Additional Information:

a) 127604-00 - IDW SOIL - LF01 (2) b) 118067-00 - SVK FILTERS - LF01 (3)

Placards Provided YES_____ NO_____

SHIPPER'S CERTIFICATION: "I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations." I also certify that all times listed above are true and correct.

		MONTH	DAY	YEAR
(SHIPPER) PRINT OR TYPE NAME X COLIN TSUCHIKAWA	SIGNATURE X	6	13	19
(CARRIER/TRANSPORTER) PRINT OR TYPE NAME X Bill Bucholz	SIGNATURE X	6	13	19
(CONSIGNEE/FACILITY) PRINT OR TYPE NAME X	SIGNATURE X	MONTH	DAY	YEAR

SHIPPER

Please print or type. Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
WAH000038014	1		019286912 JJK

5. Generator's Name and Mailing Address
Penthouse Drapery Cleaners + Mfg. Inc.
1752 Ranier Ave South
Seattle, WA 98144 425-888-4990
Generator's Phone:

Generator's Site Address (if different than mailing address)
1762 Ranier Ave, South
Seattle, WA 98144
610-417-8585

6. Transporter 1 Company Name
HazMat Environmental Group, Inc.
U.S. EPA ID Number
NYD980769947

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Calgon Carbon Corp.
Rt. 23 South, Big Sandy Plant
Catlettsburg, KY 41129 606-615-5824
Facility's Phone:
U.S. EPA ID Number
KYD005009923

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. NA3077, Hazardous Waste, solid, n.o.s., (F002), 9, PG III	2	DM	600	P	F002
X	2. NA3077, Hazardous Waste, solid, n.o.s., (F002), 9, PG III	2	TP	7500	P	F002
	3.					
	4.					

14. Special Handling Instructions and Additional Information

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: COLIN TAMCHIKANT — Signature — Month — Day — Year

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: TOM HACHEY — Signature — Month: 05 — Day: 18 — Year: 9

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

18c. Signature of Alternate Facility (or Generator) — Month — Day — Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name — Signature — Month — Day — Year

GENERATOR'S INITIAL COPY

HazMat

ENVIRONMENTAL GROUP, INC
60 Commerce Drive, Buffalo, NY 14218
www.hazmatinc.com
FAX (716) 242-4558
(716) 827-7200

HAZMAT

NYDEC #9A-278
EPA ID# NYD980769947

DATE 887351 / /

PICK UP

SHIPPER

NAME RENSEA
RENSEA PAINT, CLEANERS & MFG
STREET
1752 RAINIER AVE S.
CITY STATE ZIP CODE
SEATTLE WA
CONTACT NAME PHONE
610 417 1585
SCHEDULED TIME
9/15 1400

DELIVERY

CONSIGNEE

NAME CALCAT
CALGON CARBON
STREET
R 23 BIG SANDY RI
CITY STATE ZIP CODE
CRANE HOUSE KY
CONTACT NAME PHONE

ADDITIONAL INFORMATION / EQUIPMENT DAMAGE
If damaged at pickup site, did you send in Equipment Damage Report (EDR) via Qualcomm? Y N Explain damage below.

Pursuant to 6NYCRR 372.2 (b) (2) (iii) HazMat certifies that it is Authorized to deliver this shipment of manifested waste to the TSDF listed on this Bill of Lading. Shipment valuation limits apply from HazMat Rules Publication 101, Item 848.

ADDITIONAL INFORMATION / EQUIPMENT DAMAGE
If damaged at delivery site, did you send in Equipment Damage Report (EDR) via Qualcomm? Y N Explain damage below.

PURCHASE ORDER NO.	WORK ORDER NUMBER	MANIFEST NUMBER	H.M. NUMBER
		019286912 JJK	4C1425

LOAD NUMBER	TRACTOR	TRAILER	ROLL OFF BOX	DRIVER NUMBER	DRIVER'S NAME
	645	B250		2600	JON HUCHUA

EQUIPMENT	MATERIAL DESCRIPTION/MANIFEST NUMBER	QUANTITY
EQUIPMENT TYPE ____ UNIT# DROPPED ____ UNIT# PICKED UP ____ CONDITION REPORT ____	4 PCS NA3077 9-III	5100 P

Product unloading station and/or tank approved by:

CONSIGNEE'S SIGNATURE

Compressor used YES ____ NO ____

In-Transit Heat used: YES ____ NO ____

Analysis/C of A: YES ____ NO ____

PICK UP

PICK UP DATE 9/15/19

ARRIVAL TIME 1300 AM PM RELEASE TIME 1630 AM PM

DAY #2 DATE ____

ARRIVAL TIME ____ AM PM RELEASE TIME ____ AM PM

TRAILER EMPTY UPON ARRIVAL ☐ YES
(if not, explain below—)

DIP MEASUREMENT (Tankers Only) ____ INCHES

COMMENTS: (EXPLAIN ALL DELAYS) ____

HAZMAT MATERIALS USED (ex. overpacks, etc.): ☐ YES ☐ NO

IF YES EXPLAIN:

I, THE UNDERSIGNED, CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE.

SHIPPER'S SIGNATURE Date

DELIVERY

9/23 0500

DRIVER ____ DAY #1 DATE ____

ARRIVAL TIME ____ AM PM RELEASE TIME ____ AM PM

DAY #2 DATE ____ ARRIVAL TIME ____ AM PM RELEASE TIME ____ AM PM

DAY #3 DATE ____ ARRIVAL TIME ____ AM PM RELEASE TIME ____ AM PM

TRAILER CLEAN AND EMPTY UPON DEPARTURE ☐ YES ☐ NO
(if not, explain below—)

COMMENTS: (Explain all delays or discrepancies)) ____

IF YES EXPLAIN:

I, THE UNDERSIGNED, CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND COMPLETE.

CONSIGNEE'S SIGNATURE Date

HAZMAT BILL OF LADING GENERATOR COPY

Driver's Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Reprint
Ticket# 32467

Ph: 206-694-0600

Customer Name PACIFIC CREST ENVIRONMENTAL P
Ticket Date 08/08/2019
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 105-003/114527WAD

Carrier SELF SELF
Vehicle# RE23S
Container
Driver ROBERT MCALEER
Check#
Billing# 0000292
Grid

Volume

	Time	Scale	Operator	Inbound		
In	08/08/2019 15:12:39	Scale 1	kfunk2		Gross	67460 lb
Out	08/08/2019 15:12:39		kfunk2		Tare	28580 lb
					Net	38880 lb
					Tons	19.44

Comments RIVERS EDGE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Spwaste Cover RGC-Tons-U	100	19.44	Tons				KING
2	GOND TON-GONDOLA PER TON	100	19.44	Tons				KING
3	FEA FEE TON-FUEL, ENVIRO	100	19.44	Tons				KING

203WM

Total Tax

Driver's Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Reprint
Ticket# 32464

Ph: 206-694-0600

Customer Name PACIFIC CREST ENVIRONMENTAL P
Ticket Date 08/08/2019
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 105-003/114527WAD

Carrier SELF SELF
Vehicle# RE23S
Container
Driver ROBERT MCALEER
Check#
Billing# 0000292
Grid

Volume

	Time	Scale	Operator	Inbound	Gross	69220 lb
In	08/08/2019 13:46:32	Scale 1	kfunk2		Tare	28580 lb
Out	08/08/2019 13:46:32		kfunk2		Net	40640 lb
					Tons	20.32

Comments RIVER'S EDGE - HM

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Spwaste Cover RGC-Tons-U	100	20.32	Tons				KING
2	GOND TON-GONDOLA PER TON	100	20.32	Tons				
3	FEA FEE TON-FUEL, ENVIRO	100	20.32	Tons				

203WM

Total Tax
Total Ticket

Driver's Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Reprint
Ticket# 32459

Ph: 206-694-0600

Customer Name PACIFIC CREST ENVIRONMENTAL P
Ticket Date 08/08/2019
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 105-003/114527WAD

Carrier SELF SELF
Vehicle# RE23S
Container
Driver ROBERT MCALEER
Check#
Billing# 0000292
Grid

Volume

	Time	Scale	Operator	Inbound		
In	08/08/2019 12:45:40	Scale 1	kfunk2		Gross	69460 lb
Out	08/08/2019 12:45:40		kfunk2		Tare	28580 lb
					Net	40880 lb
					Tons	20.44

Comments RIVER'S EDGE - HM

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Spwaste Cover RGC-Tons-U	100	20.44	Tons				KING
2	GOND TON-GONDOLA PER TON	100	20.44	Tons				
3	FEA FEE TON-FUEL, ENVIRO	100	20.44	Tons				

203WM

Total Tax

Driver's Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Reprint
Ticket# 32452

Ph: 206-694-0600

Customer Name PACIFIC CREST ENVIRONMENTAL P
Ticket Date 08/08/2019
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 105-003/114527WAD

Carrier SELF SELF
Vehicle# RE23S
Container
Driver ROBERT MCALEER
Check#
Billing# 0000292
Grid

Volume

	Time	Scale	Operator	Inbound		
In	08/08/2019 11:50:21	Scale 1	kfunk2		Gross	67740 lb
Out	08/08/2019 11:50:21		kfunk2		Tare	28580 lb
					Net	39160 lb
					Tons	19.58

Comments RE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Spwaste Cover RGC-Tons-U	100	19.58	Tons				KING
2	GOND TON-GONDOLA PER TON	100	19.58	Tons				KING
3	FEA FEE TON-FUEL, ENVIRO	100	19.58	Tons				KING

203WM

Total Tax

Driver's Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Reprint
Ticket# 32439

Ph: 206-694-0600

Customer Name PACIFIC CREST ENVIRONMENTAL P
Ticket Date 08/08/2019
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 105-003/114527WAD

Carrier SELF SELF
Vehicle# RE23S
Container
Driver ROBERT MCALEER
Check#
Billing# 0000292
Grid

Volume

	Time	Scale	Operator	Inbound		
In	08/08/2019 10:04:04	Scale 1	kfunk2		Gross	59880 lb
Out	08/08/2019 10:04:04		kfunk2		Tare	28580 lb
					Net	31300 lb
					Tons	15.65

Comments RIVERS EDGE - HM

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Spwaste Cover RGC-Tons-U	100	15.65	Tons				KING
2	GOND TON-GONDOLA PER TON	100	15.65	Tons				
3	FEA FEE TON-FUEL, ENVIRO	100	15.65	Tons				

203WM

Total Tax

Driver's Signature

WASTE MANAGEMENT

8th Ave Reload
7400 8th Ave S
Seattle, WA, 98108

Reprint
Ticket# 32446

Ph: 206-694-0600

Customer Name PACIFIC CREST ENVIRONMENTAL P
Ticket Date 08/08/2019
Payment Type Credit Account
Manual Ticket#
Route
Hauling Ticket#
Destination
PO# 105-003/114527WAD

Carrier SELF SELF
Vehicle# RE23S
Container
Driver ROBERT MCALEER
Check#
Billing# 0000292
Grid

Volume

	Time	Scale	Operator	Inbound		
In	08/08/2019 10:57:08	Scale 1	kfunk2		Gross	68920 lb
Out	08/08/2019 10:57:08		kfunk2		Tare	28580 lb
					Net	40340 lb
					Tons	20.17

Comments RIVERS EDGE-KF

	Product	LD%	Qty	UOM	Rate	Tax	Amount	Origin
1	Spwaste Cover RGC-Tons-U	100	20.17	Tons				KING
2	GOND TON-GONDOLA PER TON	100	20.17	Tons				
3	FEA FEE TON-FUEL, ENVIRO	100	20.17	Tons				

203WM

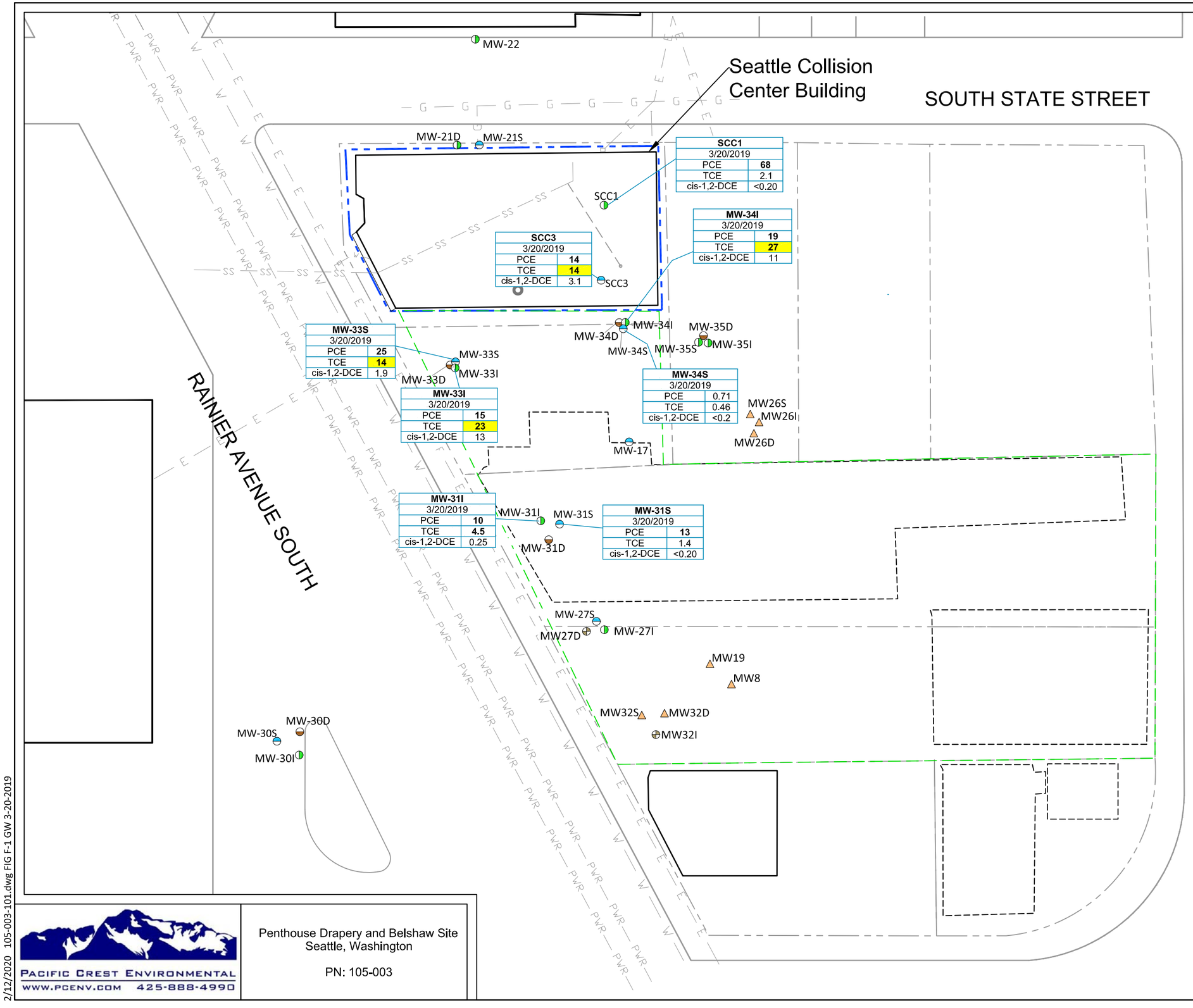
Total Tax

APPENDIX F
FIGURES FOR ALL REPORTING PERIOD GROUNDWATER ANALYTICAL RESULTS

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

PACIFIC CREST NO: 105-003



Legend

		Screened Interval
MW-21S	Shallow Well	14.5-29.5 ft bgs
MW-27I	Intermediate Well	25-50 ft bgs
MW-30D	Deep Well	65-100 ft bgs
	Damaged monuments	
	Destroyed wells	

WELL ID	
DATE	
Analyte	(µg/L)

	Site-Specific CULs (µg/L)	Site-Specific Remediation Levels (µg/L)
PCE	5	128.6
TCE	4	13.8
cis-1,2-DCE	16	1,538

PCE	tetrachloroethene
TCE	trichloroethene
cis-1,2-DCE	cis -1,2-Dichloroethene
µg/L	micrograms per liter
BOLD	concentration exceeds Site-specific CUL
BOLD	concentration exceeds Site-specific remediation level
CUL	cleanup level
ft bgs	feet below ground surface

- Belshaw Property
- Penthouse/SCC Property
- Parcel Boundary
- Building
- Former Building Area

- Sanitary Sewer
- Power
- Water
- Gas
- Overhead Bus Power Line
- Abandoned Gas
- Abandoned Drain Line

0 30
Approximate Scale in Feet

N

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

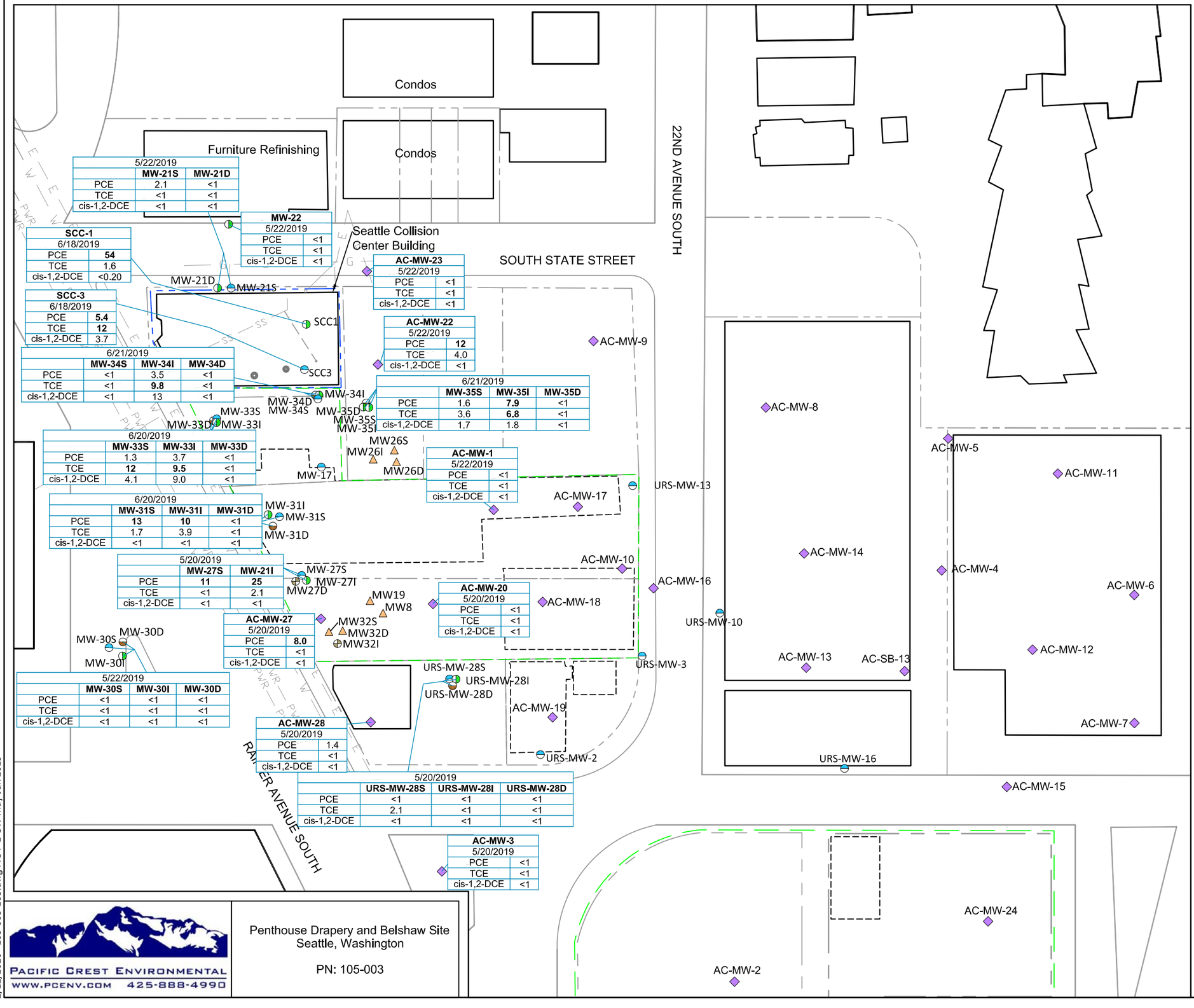
Penthouse Drapery and Belshaw Site
Seattle, Washington

PN: 105-003

Figure F-1

Groundwater Analytical Results
(March 20, 2019)

2/12/2020 105-003-101.dwg FIG F-1 GW 3-20-2019



Legend

		Screened Interval
MW-21S	Shallow Well	14.5-29.5 ft bgs
MW-27I	Intermediate Well	25-50 ft bgs
MW-30D	Deep Well	65-100 ft bgs

- Damaged Monuments
- Destroyed Wells
- Aspect Monitoring Wells

WELL ID	
DATE	
Analyte	(µg/L)

	Site-Specific CULs (µg/L)	Site-Specific Remediation Levels (µg/L)
PCE	5	128.6
TCE	4	13.8
cis-1,2-DCE	16	1,538

PCE	tetrachloroethene
TCE	trichloroethene
cis-1,2-DCE	cis -1,2-Dichloroethene
µg/L	micrograms per liter
BOLD	concentration exceeds Site-specific CUL
BOLD	concentration exceeds Site-specific remediation level
CUL	cleanup level
ft bgs	feet below ground surface

- Belshaw Property
- Penthouse/SCC Property
- Parcel Boundary
- Building
- Former Building Area

- SS Sanitary Sewer
- E Power
- W Water
- G Gas
- PWR Overhead Bus Power Line
- G Abandoned Gas
- Abandoned Drain Line

Note: Wells SCC-1 and SCC-2 sampled by Pacific Crest. All other data was sampled by Aspect Consulting.

0 50
Approximate Scale in Feet

N

PACIFIC CREST ENVIRONMENTAL
WWW.PCENV.COM 425-888-4990

Penthouse Drapery and Belshaw Site
Seattle, Washington

PN: 105-003

Figure F-2

Groundwater Analytical Results
(May and June, 2019)

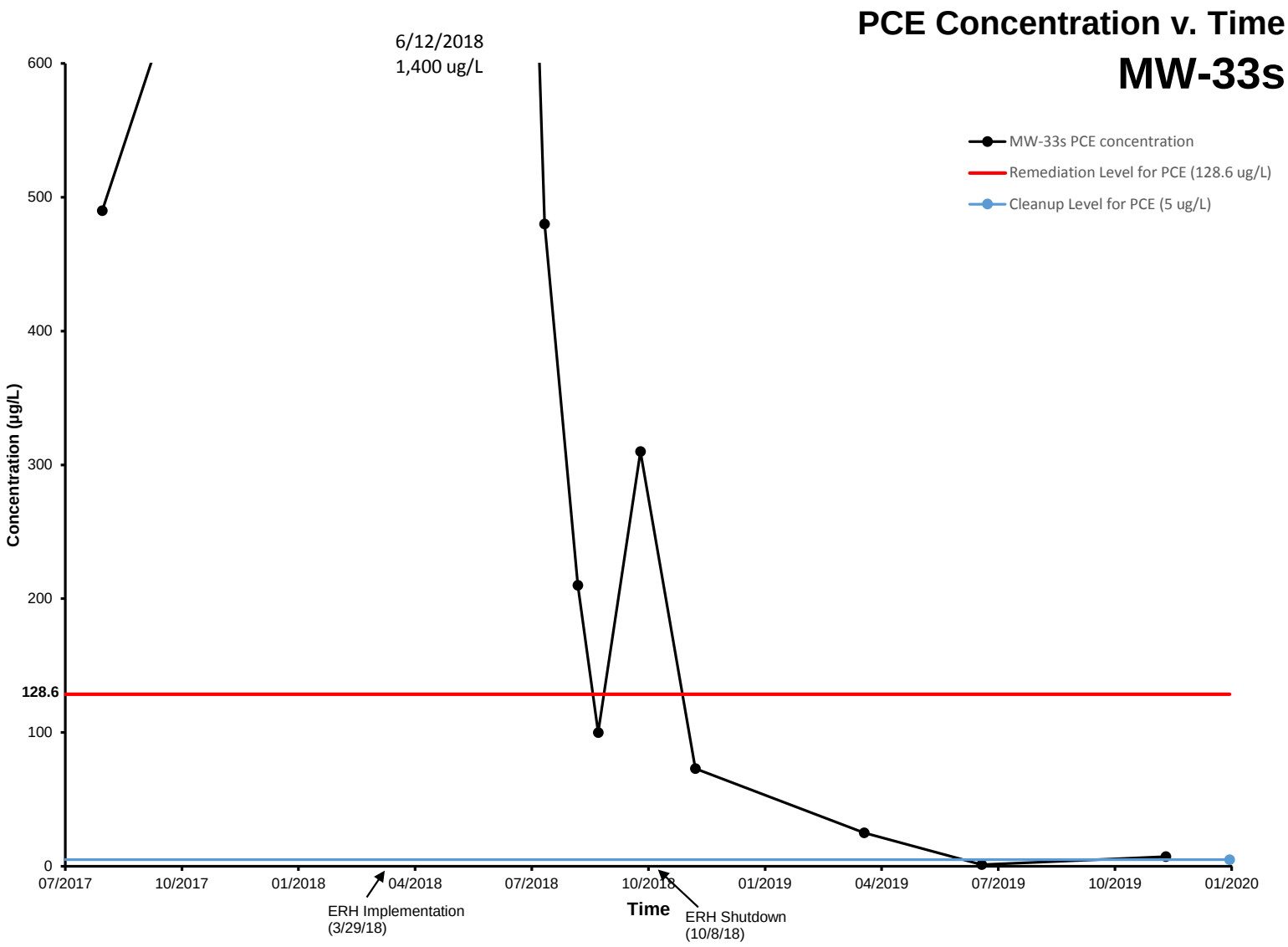
2/12/2020 105-003-103.dwg FIG F-2 GW May-Jun 2019

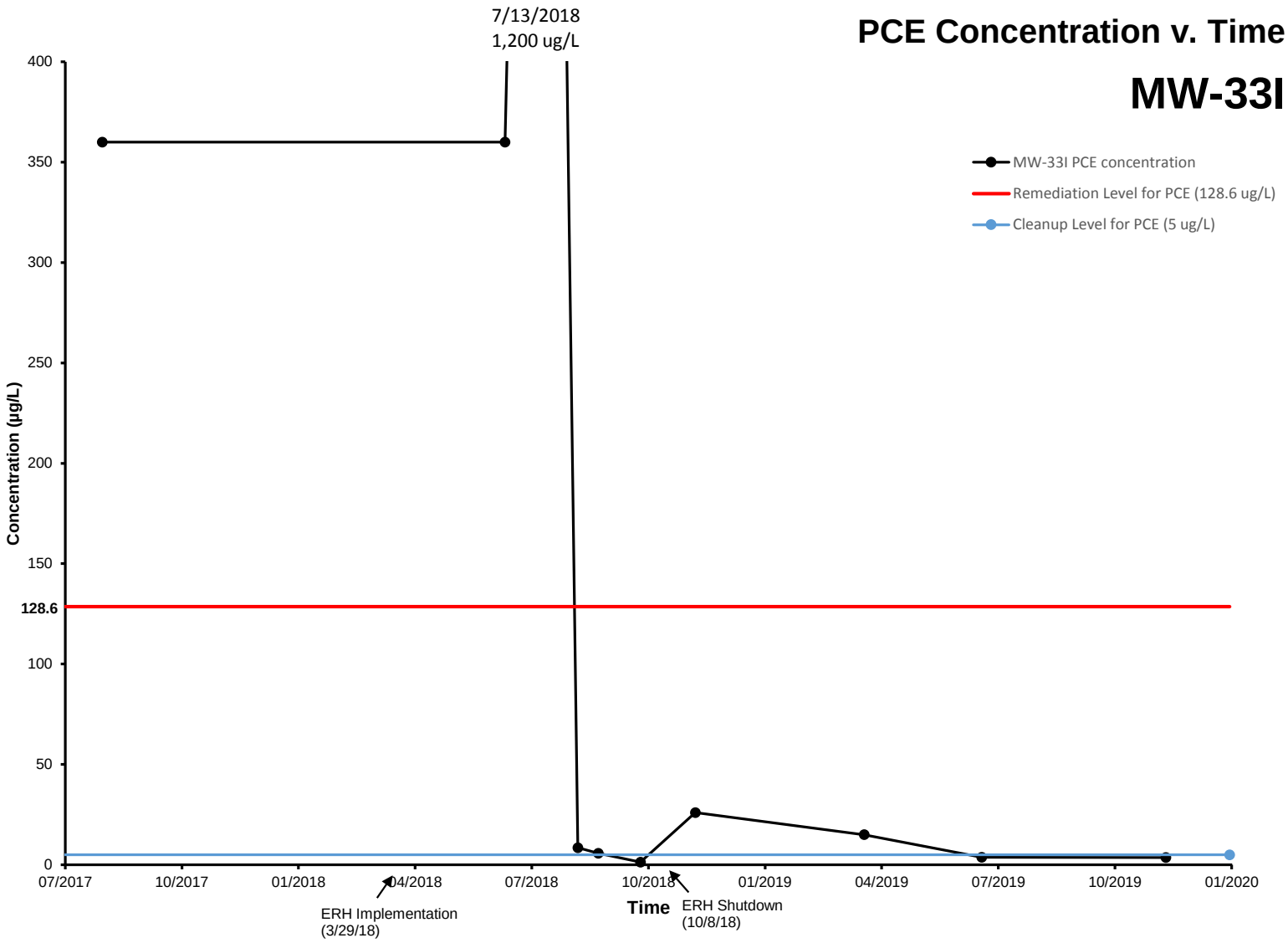
APPENDIX G
PCE VS TIME GRAPHS

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

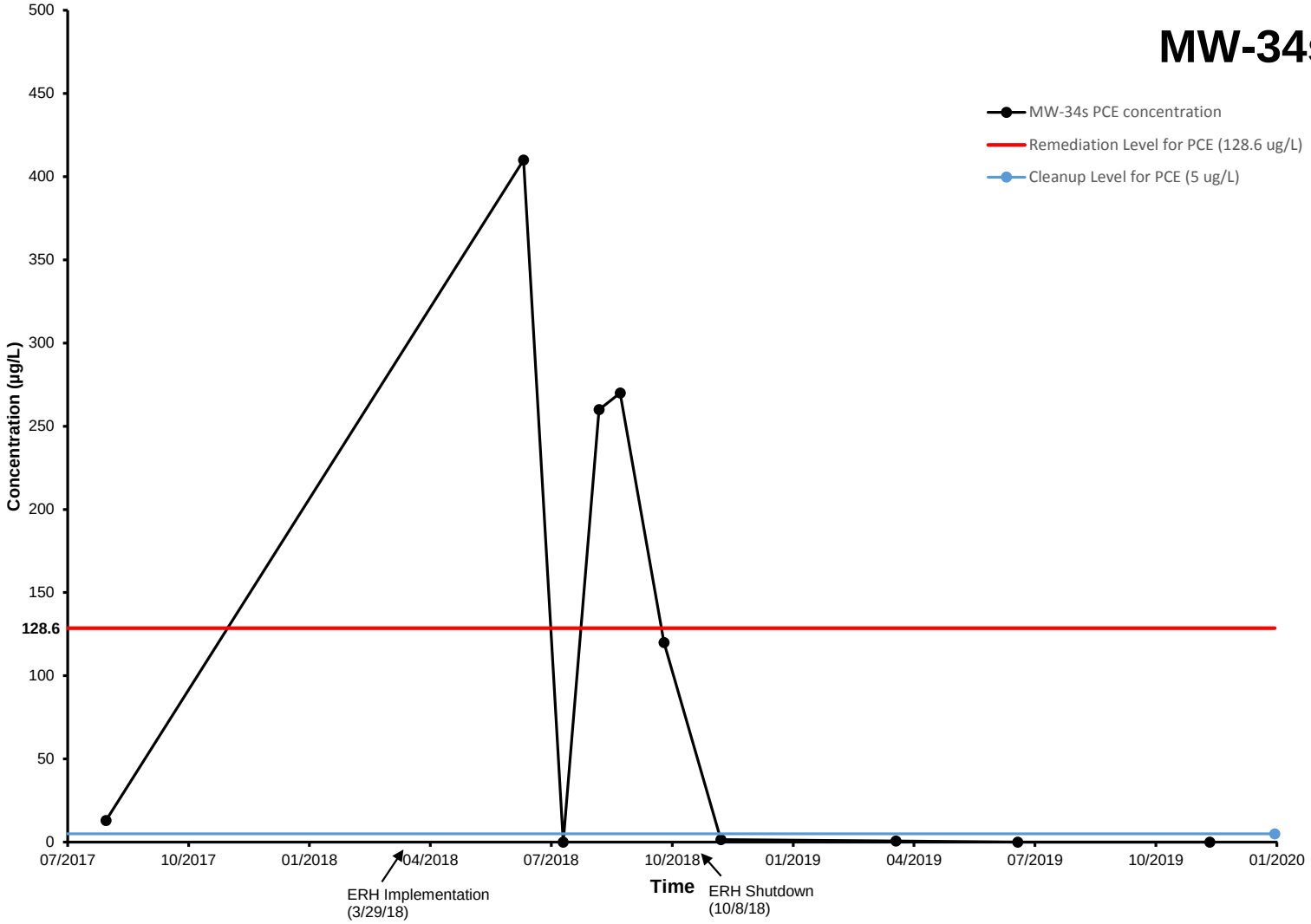
PACIFIC CREST NO: 105-003


PCE Concentration v. Time
MW-33s
6/12/2018
1,400 ug/L
MW-33s PCE concentration
Remediation Level for PCE (128.6 ug/L)
Cleanup Level for PCE (5 ug/L)
Concentration (µg/L)
600
500
400
300
200
128.6
100
0
07/2017
10/2017
01/2018
04/2018
07/2018
10/2018
01/2019
04/2019
07/2019
10/2019
01/2020
Time
ERH Implementation
(3/29/18)
ERH Shutdown
(10/8/18)


PCE Concentration v. Time
MW-33I
7/13/2018
1,200 ug/L
MW-33I PCE concentration
Remediation Level for PCE (128.6 ug/L)
Cleanup Level for PCE (5 ug/L)
Concentration (µg/L)
400
350
300
250
200
150
128.6
100
50
0
07/2017
10/2017
01/2018
04/2018
07/2018
10/2018
01/2019
04/2019
07/2019
10/2019
01/2020
Time
ERH Implementation
(3/29/18)
ERH Shutdown
(10/8/18)

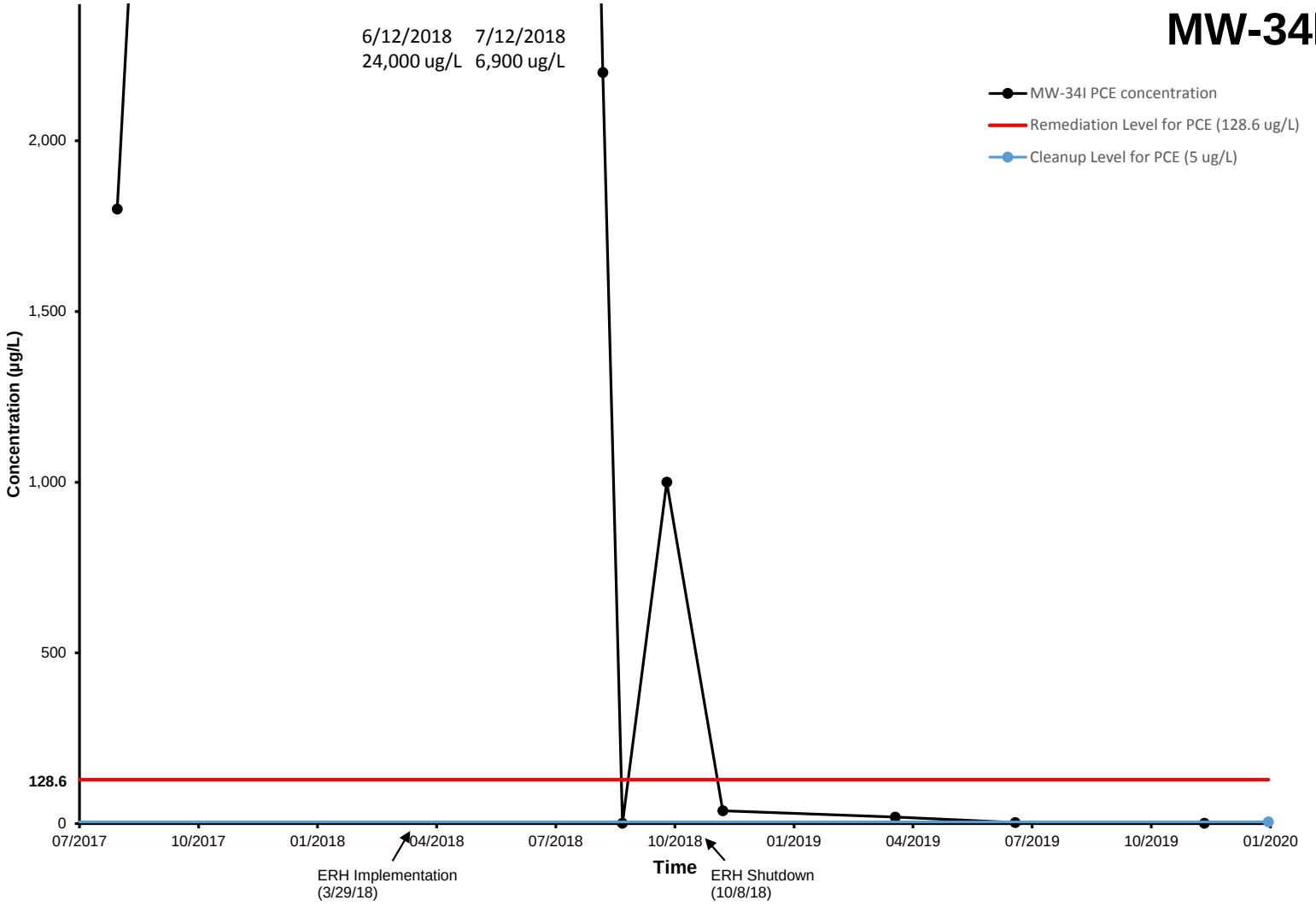
PCE Concentration v. Time

MW-34s



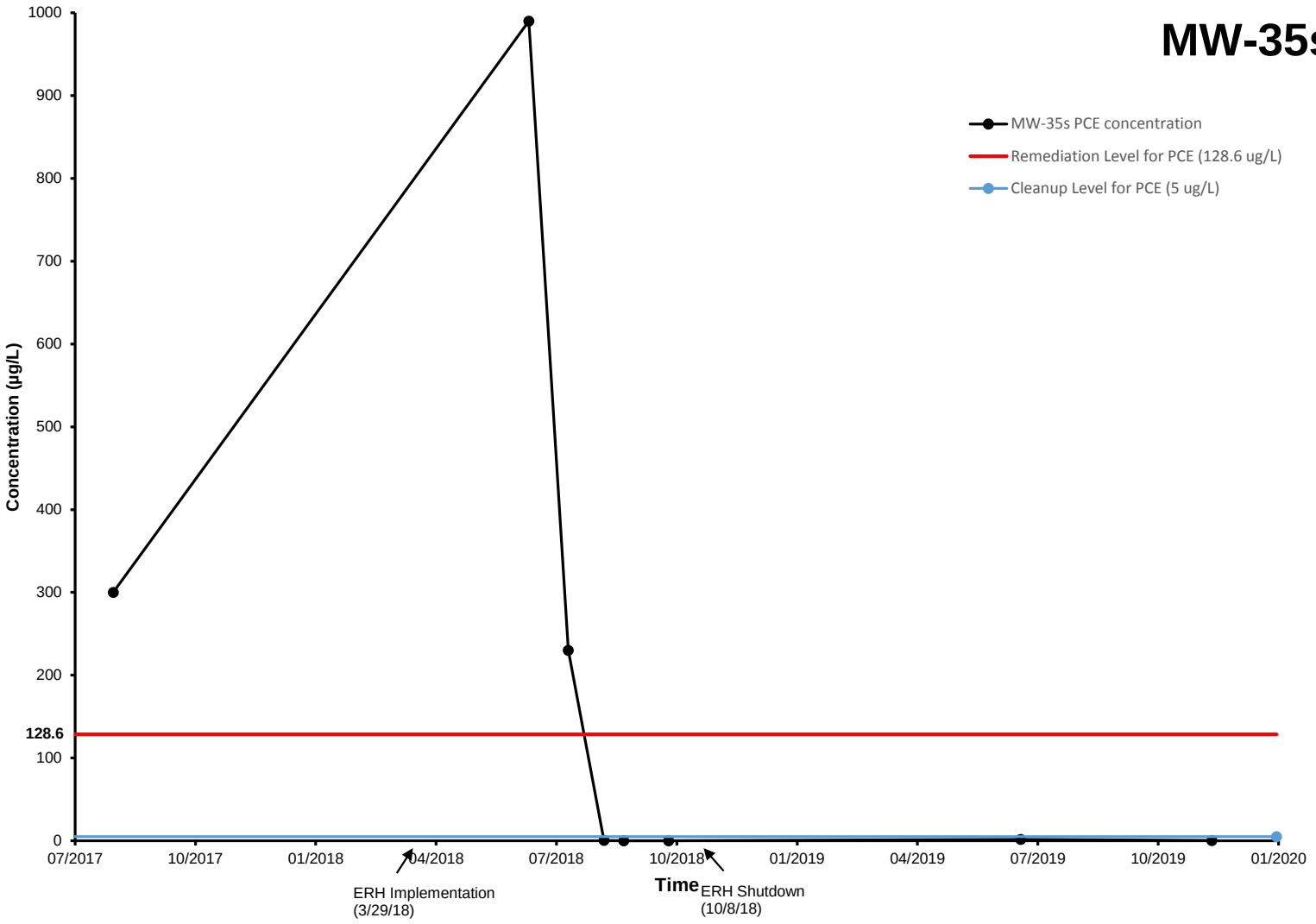
PCE Concentration v. Time

MW-34I



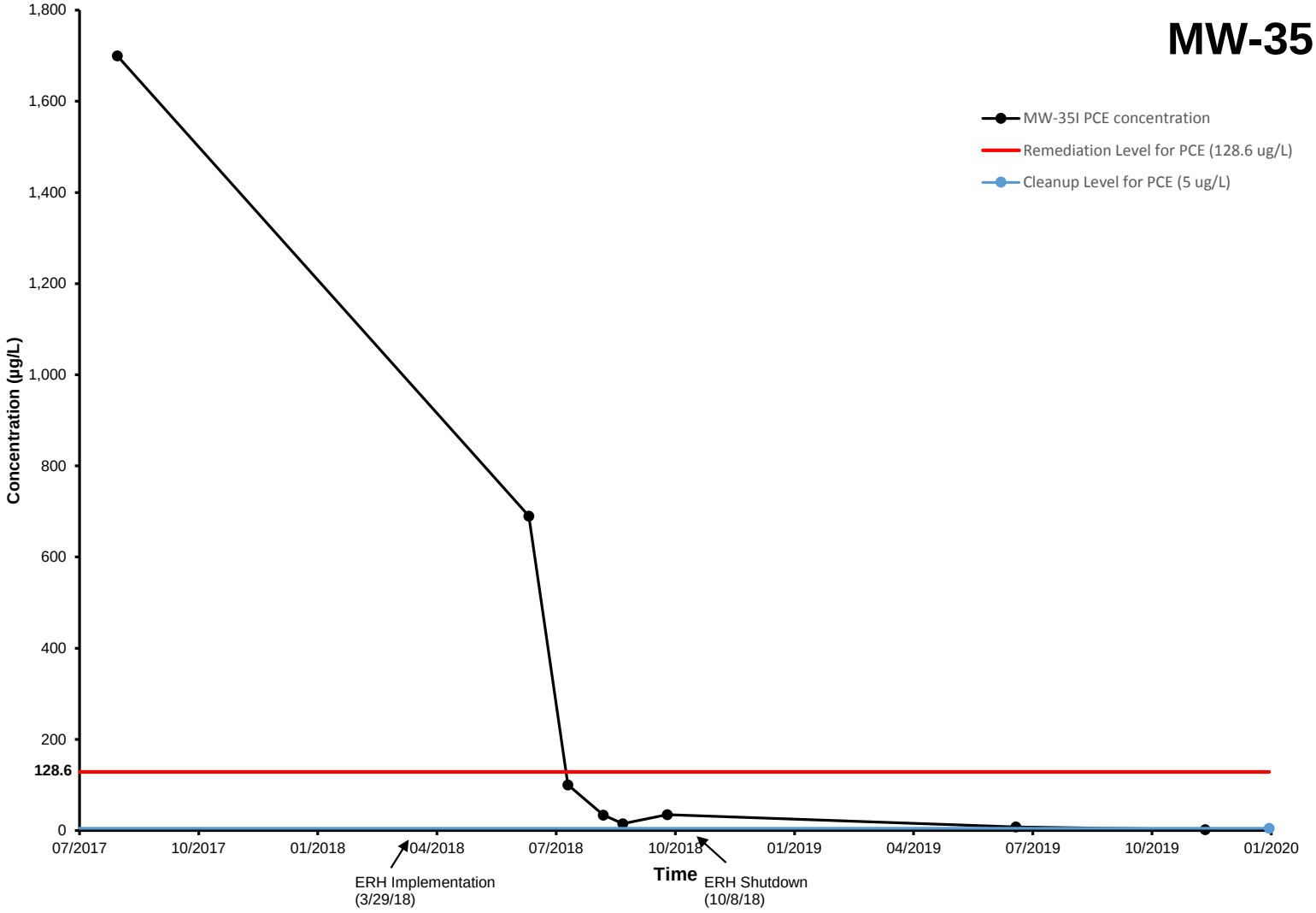
PCE Concentration v. Time

MW-35s



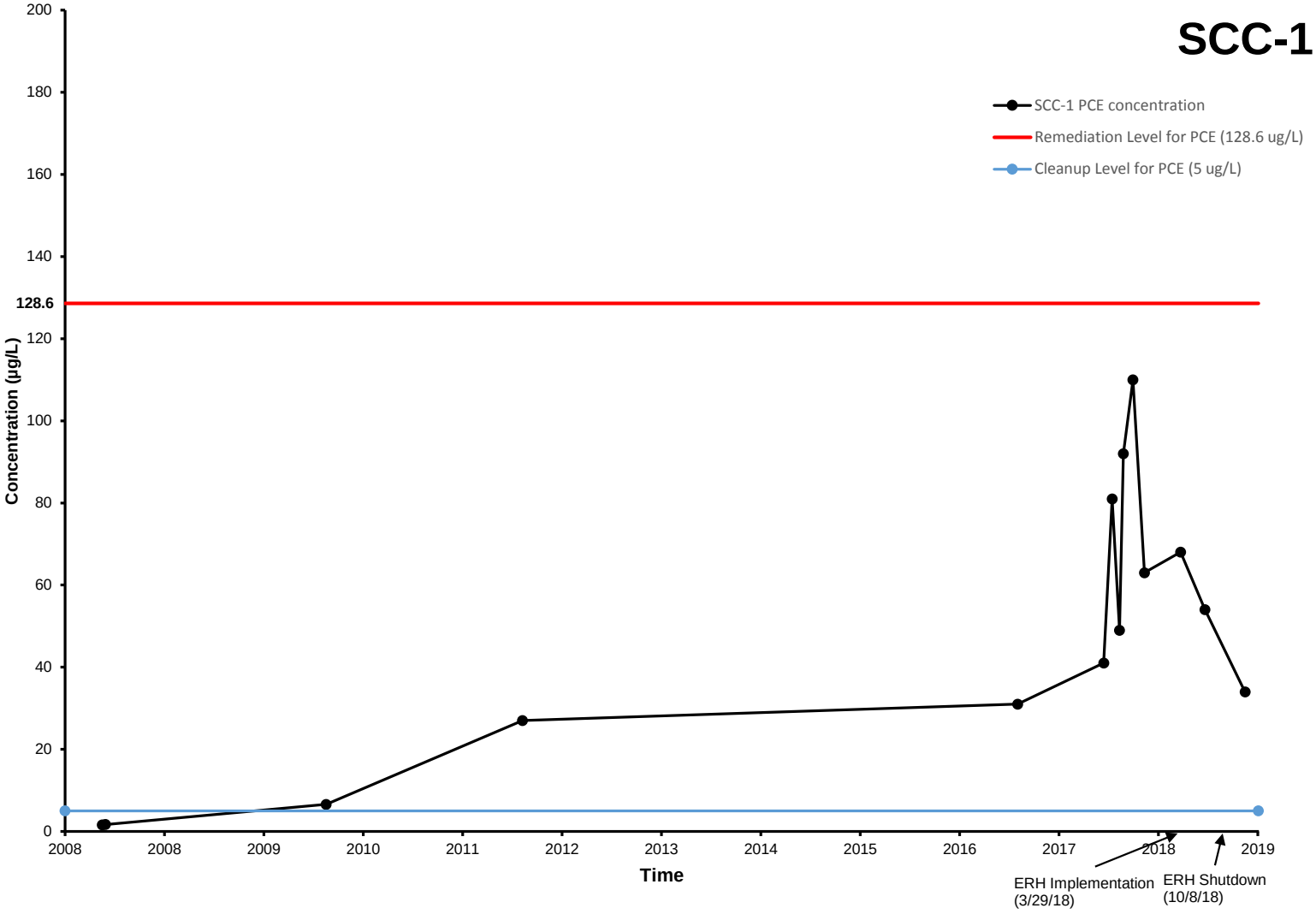
PCE Concentration v. Time

MW-35I



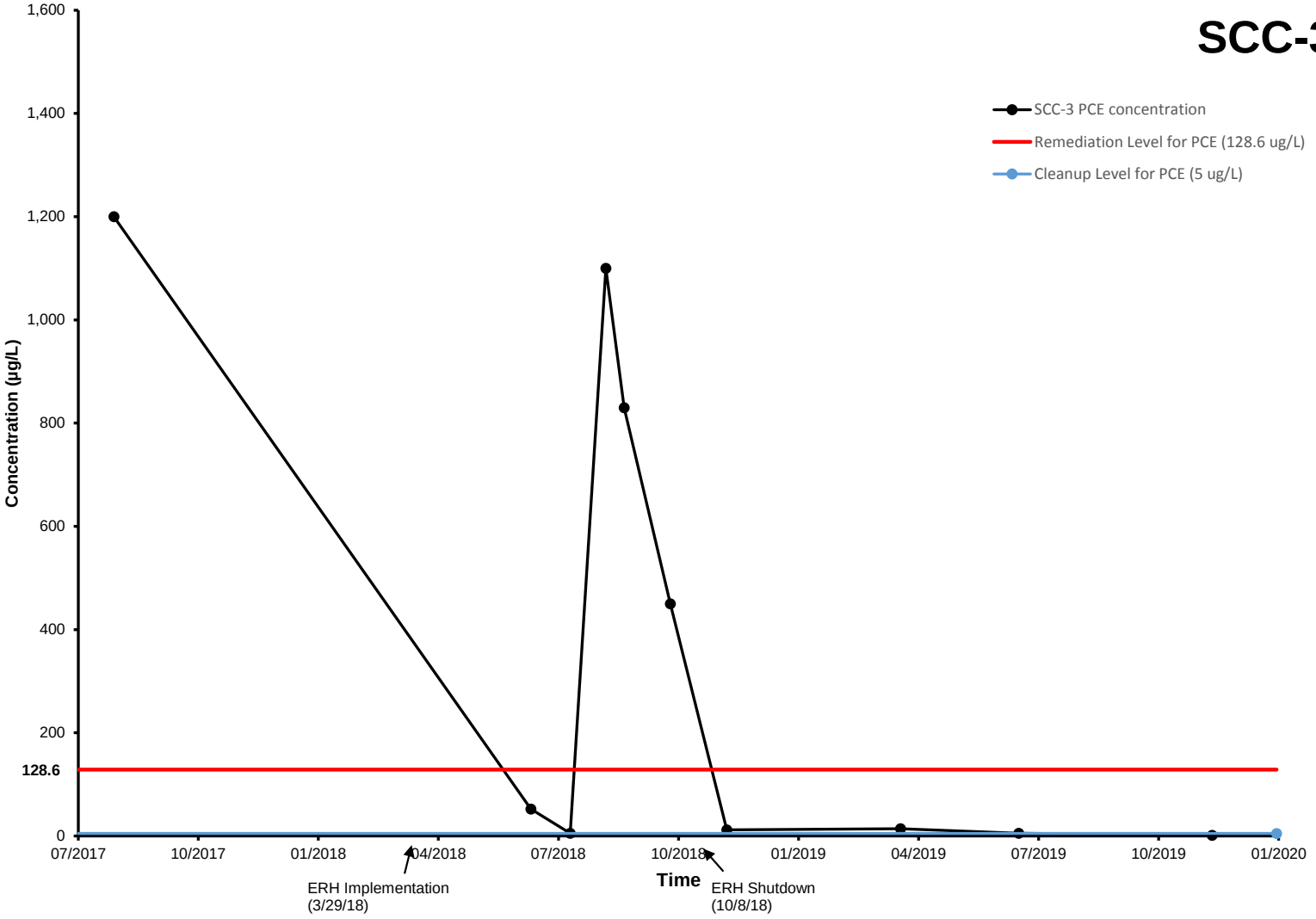
PCE Concentration v. Time

SCC-1



PCE Concentration v. Time

SCC-3



APPENDIX H
GRAND STREET COMMONS REPORT

CLEANUP ACTION PROGRESS REPORT

Former Penthouse Drapery and Belshaw Site
1752 Rainier Avenue South
Seattle, Washington

PACIFIC CREST NO: 105-003

GRAND STREET COMMONS

EARLY DESIGN GUIDANCE #3035316-EG
FEBRUARY 20, 2020

DRAFT 2019.12.20

WEST BLOCK

1765 22nd Ave S

Mt. Baker Housing | LAKE UNION PARTNERS | HAL Real Estate | RUNBERG ARCHITECTURE GROUP | HEWITT

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TABLE OF CONTENTS

DEVELOPMENT OBJECTIVES
STREET CLASSIFICATIONS, PARCEL MAP, WEST BLOCK SUMMARY

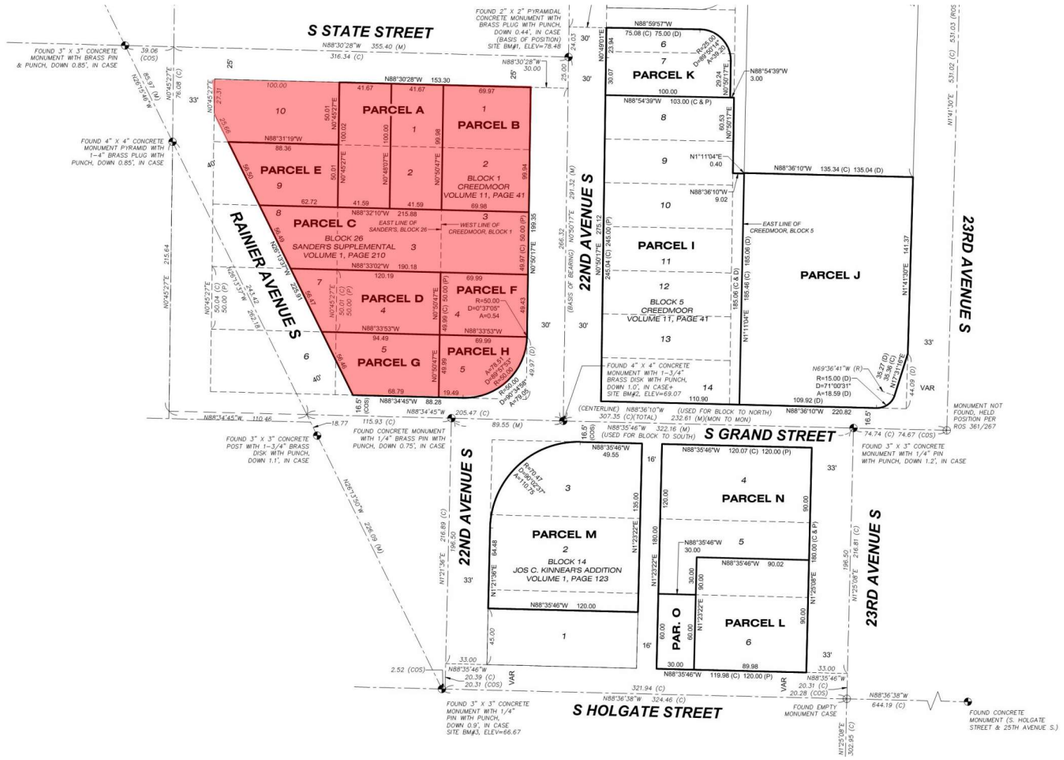
PROJECT SITE

PRINCIPAL ARTERIAL MINOR ARTERIAL COLLECTOR ARTERIAL NEIGHBORHOOD GREENWAY

PROJECT LOCATION - WEST BLOCK

Address 1765 22ND AVE S, SEATTLE WA 98144

Parcels A, B, C , D ,E F, G, H, and 10 on the map below:



STREET CLASSIFICATIONS

- S GRAND STREET- URBAN VILLAGE NEIGHBORHOOD ACCESS STREET
- S HOLGATE STREET- URBAN VILLAGE NEIGHBORHOOD ACCESS STREET
- 23RD AVENUE S- PRINCIPAL ARTERIAL (23rd Ave Corridor Improvement)
- 22ND AVENUE SOUTH -URBAN VILLAGE NEIGHBORHOOD ACCESS STREET
- RAINIER AVENUE S- PRINCIPAL ARTERIAL

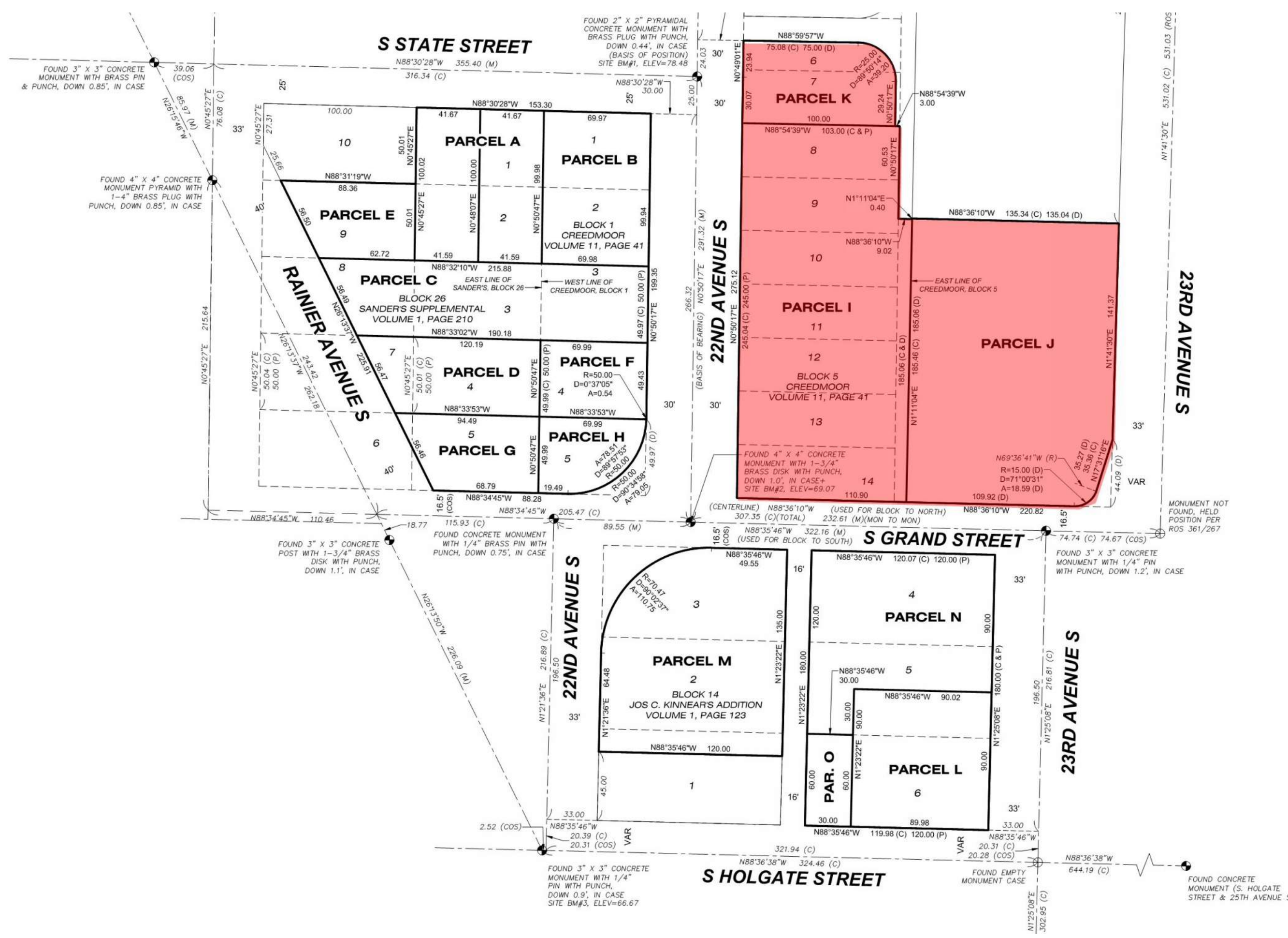
GSC WEST BLOCK PROJECT SUMMARY

Number of Residential Units:	280
Number of Structured Parking Stalls:	262
Area of Residential Use:	161,973 SF
Area in Commercial Use:	26,638 SF
Total Area:	337,850 SF

PROJECT LOCATION - EAST BLOCK

Address 1750 22ND AVE S, SEATTLE WA 98144

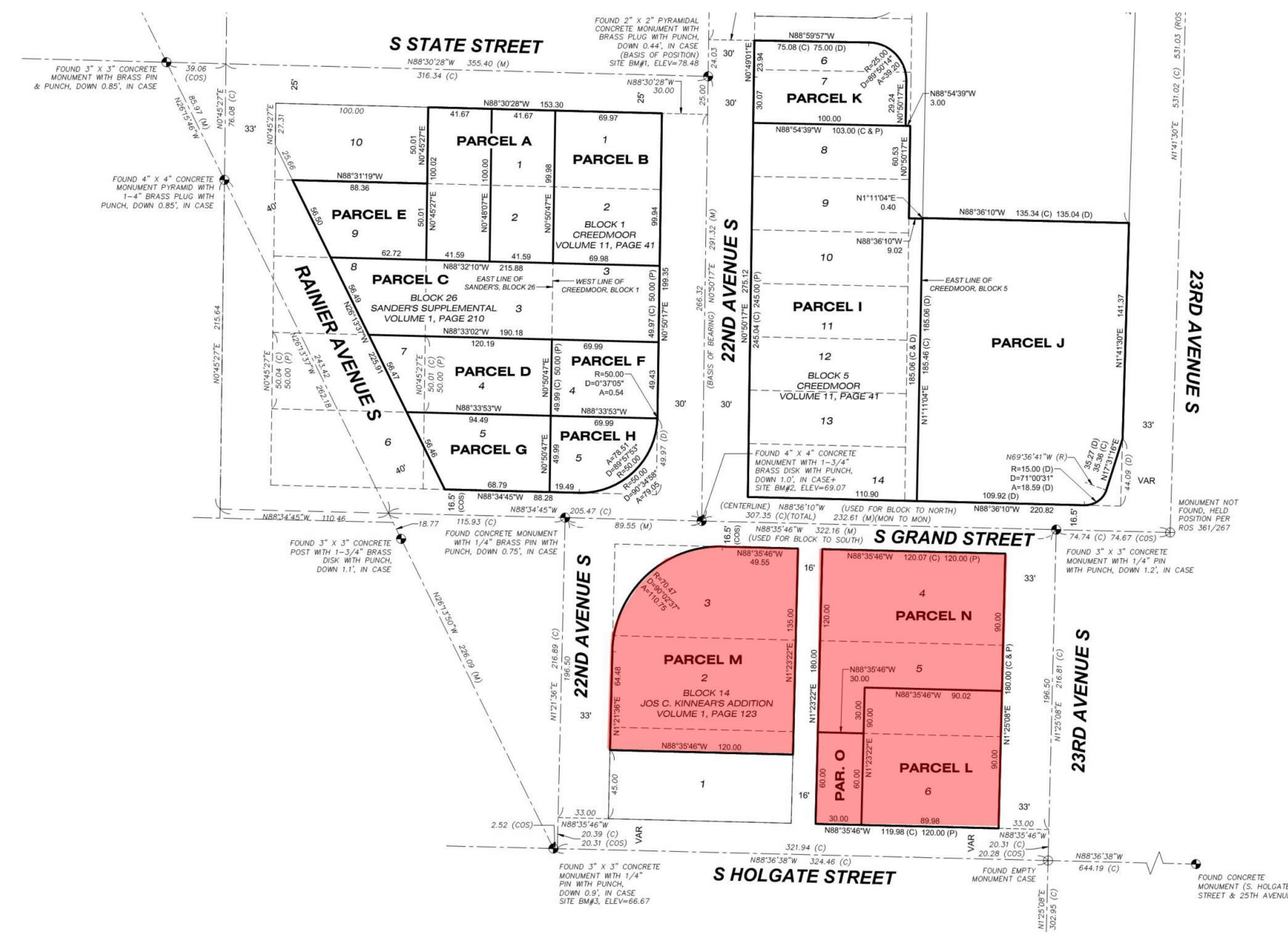
Parcels I, J and K on the map below:



PROJECT LOCATION - SOUTH BLOCK

Address 2201 S GRAND ST, SEATTLE WA 98144

Parcels L, M and N on the map below:



GSC EAST BLOCK PROJECT SUMMARY

Number of Residential Units:	293
Number of Structured Parking Stalls:	155
Area of Residential Use:	167,816 SF
Area in Commercial Use:	17,683 SF
Total Area:	288,363 SF

GSC SOUTH BLOCK PROJECT SUMMARY

Number of Residential Units:	202
Number of Structured Parking Stalls:	40
Area of Residential Use:	123,139 SF
Area in Commercial Use:	4,588 SF
Total Area:	196,854 SF

DEVELOPMENT OBJECTIVES
GRAND STREET COMMONS

DEVELOPMENT PROGRAM

West and East Blocks: Lake Union Partners

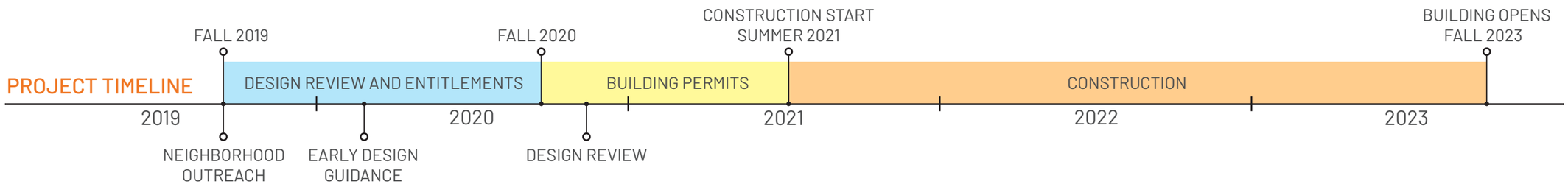
The East and West buildings will collectively provide over 550 new rental apartments, 40,000 SF commercial, and 400 parking spaces. The apartments will be primarily market rate rental housing; affordable housing will be provided via the MHA (Mandatory Housing Affordability) on-site performance option and the MFTE (Multi-Family Tax Exception) program. A variety of commercial spaces will be provided, including both small and large format retail to support the nieghborhood town center concept and provide activity in the neighborhood during both daytime and evening hours.

South Block: Mt. Baker Housing

Pending approval of the alley vacation, this building will provide 200+ units of affordable housing for families at 60% AMI (Area Median Income). Several small-scale commercial spaces are planned for the west and north facades at ground floor to contribute to the dynamic retail environment envisioned along the Grand Street right-of-way.

DESIGN TEAM

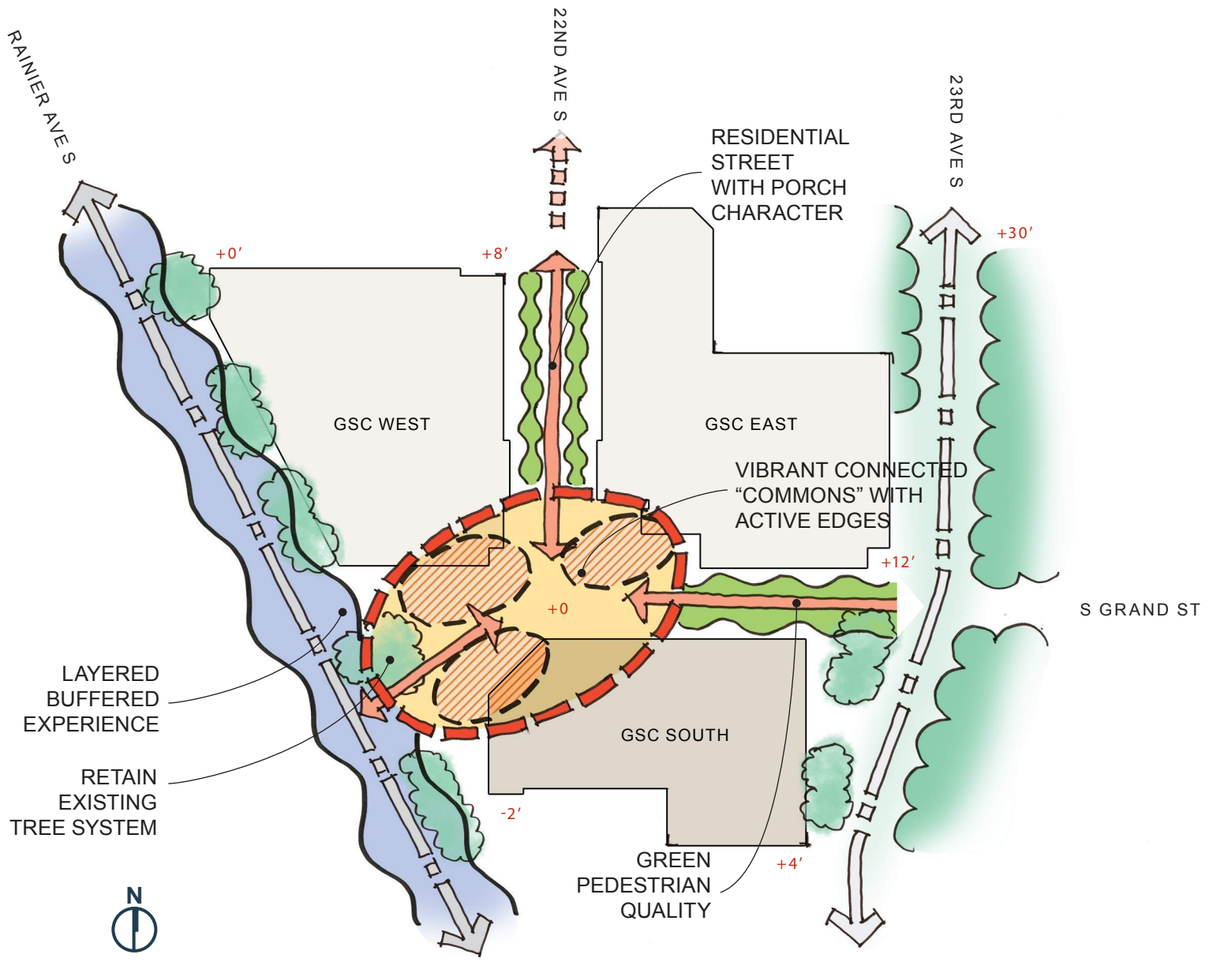
Architecture:	Runberg Architecture Group
Landscape Architecture:	Hewitt
Civil:	KPFF Consulting Engineers



GRAND STREET COMMONS

Grand Street Commons is a transit-oriented 3-block development in the Judkin's Park neighorhood. The development team is working with the Washington Department of Ecology to clean up the brownfield sites which are contaminated from their recent industrial past. Creative housing solutions and a variety of commercial programming will be incorporated into the new mixed-use, mixed-income community.

Concurrent redevelopment of the three blocks allows for a customized urban design response that will strengthen neighborhood connections, improve safety, and provide needed right-of-way improvements between Rainier Ave S and the open spaces north and east of the project site. Grand Street Commons provides the opportunity for a new town center that will create an enhanced link between the neighborhood and new transit options while also providing a destination for missing neighborhood services and space for community gathering.



GRAND STREET COMMONS WEST

SUMMARY OF PUBLIC OUTREACH

City of Seattle Department of Neighborhoods

As part of Grand Street Common's development methodology, the Mt. Baker Housing began outreach to stakeholder organizations in the Mt. Baker Neighborhood in Spring of 2018. Initial outreach consisted of gathering input from these organizations on the type of project that they felt would enhance the neighborhood and provide public benefit.

In 2018, Mt. Baker Housing established a Project Information Hotline with staff contact information for those with questions.

The Development Team mailed project notification letters to all residents within 500 feet of the project site in 2019. Notification letters were translated in Mandarin, Japanese, Vietnamese, and Spanish.

On October 24, 2019, Mt. Baker Housing and Lake Union Partners hosted a Community Meeting for neighbors of the project. Fliers for the meeting were posted in businesses near the project site for the 2-3 weeks leading up to the event. The Project Team also updated the Project Information Hotline with translated messaging.

The project architects and design team presented key aspects of the project to the community with the aid of interpreters. A project information sheet was provided to the meeting attendees.
All communications were provided in English and translated in Mandarin, Japanese, Vietnamese, and Spanish.

The Department of Neighborhoods gave official approval of the development's community outreach plan on September 6, 2019.

Grand Street Commons – Community Outreach Plan	
Printed Outreach	*High Impact* • Direct mailings to the residencies and business within 500ft radius of proposed site. • MBH will post translated flyers of community event & meeting of local community centers. We will be doing the 500ft letters in the languages of - Mandarin, Japanese, Vietnamese, Spanish, English • We will post translated fliers at apartment sites to notify them of the community meeting and the coming project
Electronic/Digital Outreach	*High Impact* • Project hotline (information & voicemail) Project info added to DON's "Early Outreach for Design Review Blog. Project added to DON's "Outreach for design review calendar" • Recorded information will include all meeting dates, time, locations & understandable project information in the four languages listed. • We will email all community stakeholders located on the neighborhood snapshot provided by the city of Seattle and not that outreach can be used for Washington Public Records act
In-Person Outreach	*High Impact* • Hosting or Co-hosting a community meeting of at least one hour of presentation/discussion of project

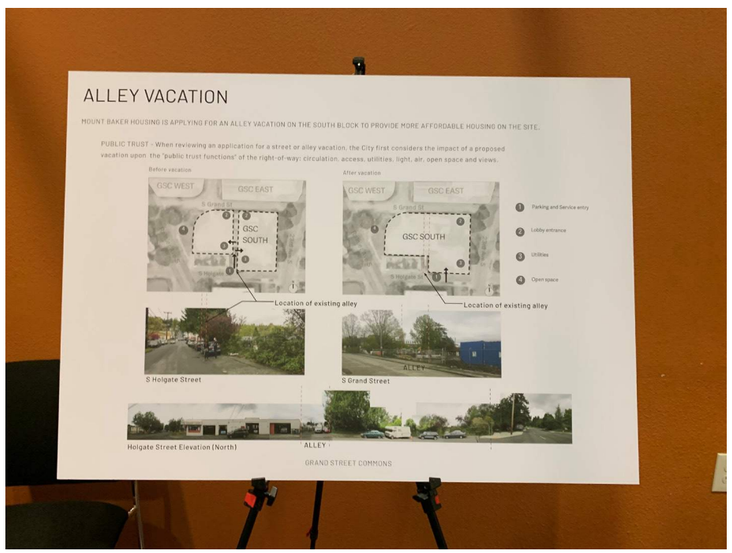
City of Seattle Office of Housing

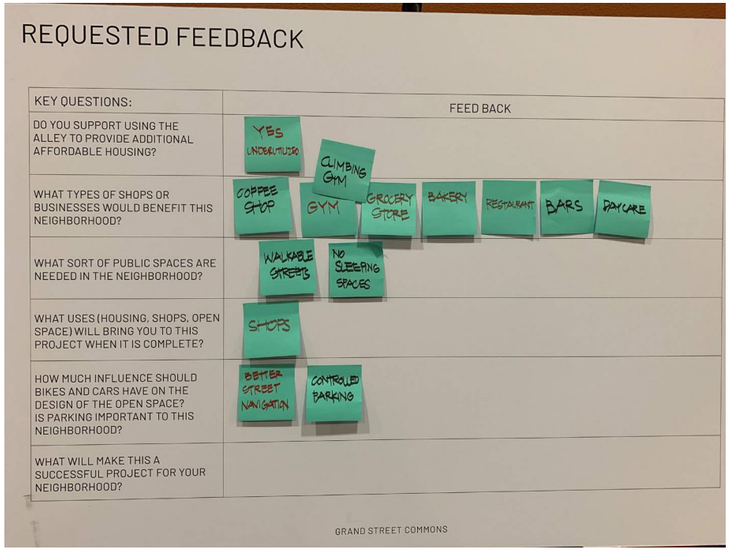
Mt. Baker Housing consulted with the City of Seattle Office of Housing to determine the concentration of subsidized units within the site census block group of the proposed development site in the Fall of 2017.

Mt. Baker Housing received a Consistency Letter from the City of Seattle Office of Housing confirming the project meets the dispersion policies of the City of Seattle (September 11, 2019).

Additional Outreach

Since the project's inception, direction and feedback have been provided by its Board of Directors who include senior management from project stakeholder organizations: Asian Counseling & Referral Service, Wellspring Family Services, and Mt. Baker Community Club.





NEIGHBORHOOD OUTREACH MEETING - OCTOBER 24, 2019

COMMUNITY MEETING - OCTOBER 24, 2019

The first open house took place on October 24, 2019 in the Mount Baker Village Apartments Community Room at 2580 29th Ave S. The following is a sampling of comments collected from community members in attendance at that meeting:

- Pedestrian connections are important in and around the blocks.
- Repeated concern about homeless encampments in the neighborhood. Neighbors like the idea of gathering space but are concerned about how it will be used. Several requested it be designed in a way to discourage camping.
- Neighbors would appreciate more retail to walk to in their neighborhood. Requests included new bars and restaurants, retail, dry cleaning, and professional services.
- Liked the idea of town house units along 22nd Ave S.

DESIGN RESPONSE

The preferred massing scheme accounts for multiple pedestrian points of connection, small and large scale commercial spaces for a variety of programming options, and townhouse apartments along 22nd Ave S. The landscape approach calls for well lit, well programmed open spaces around the proposed buildings to foster a safe and comfortable pedestrian environment.

Map of Rainier Valley, pre-I-90

Electric Rail Cars on Rainier Ave., 1891

The Rainier Avenue Electric Railway was constructed in 1891 by J.K. Edmiston to connect Seattle with adjacent cities. The railway provided interurban access for rural farmers and Seattle commerce and is credited with fueling the initial growth of Rainier Valley.

Regrade at Dearborn St. and Rainier Ave., 1909

To further connections between downtown and rural Rainier Valley, the Dearborn regrade moved more than a million cubic yards of dirt. Farmers were able to more easily transport goods to sell at Pike Place Market.

INTRODUCTION - PHYSICAL HISTORY OF THE RAINIER VALLEY

Rainier Valley was originally home to native "Lake People" who lived primarily along the banks of Lake Washington and used the valley as a footpath connection to the communities along the Puget Sound. Settlers arrived at the end of the 19th Century, dividing up the land and developing the valley. In the early 1900s, the population was largely of Chinese, Italian, Irish and Filipino decent. The valley was settled with farmland and continued to be used as a thoroughfare to connect the city along the Sound to Lake Washington and developments further south.

GARLIC GULCH - Starting around 1900

Starting around 1900, Italian immigrants came to Seattle to work as coal miners, construction laborers, and farmers. They settled in the North Rainier Valley and Beacon Hill areas because of the inexpensive housing, convenient location near downtown, and potential for developing small farm plots. They found a market for their produce in Seattle and the Rainier Valley became known as "garlic gulch" or "Little Italy."

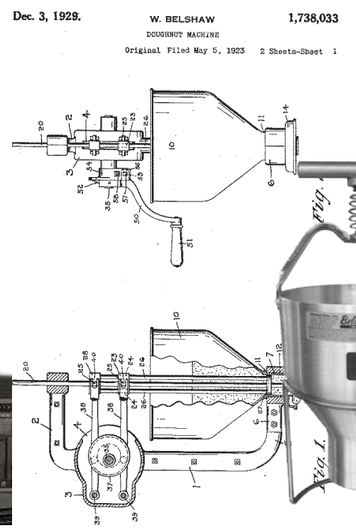
In 1915, about 200 families lived in a 90-square-block area along Rainier Avenue. Many Italian-owned businesses were located in the area, including food imports, Borracchini's Bakery, Oberto Sausage Company, produce stands, grocery stores, a nursery (Malmo's), drug stores, and other shops.

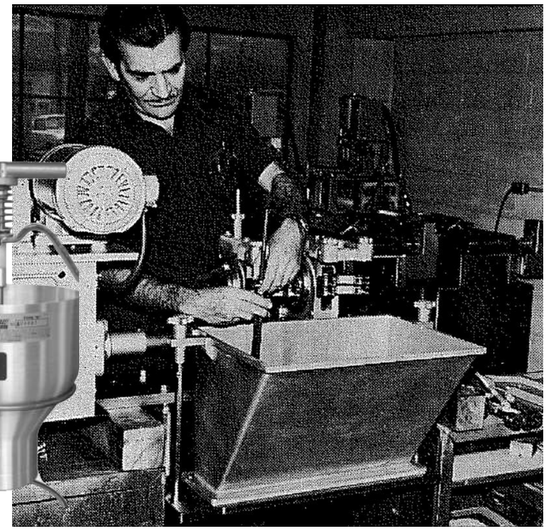
Stewart Lumber Building, 1920's

The Stewart Lumber & Hardware building was constructed in the early 1920's. In its early years, a streetcar spurline ran through the building to deliver lumber.

POST-REGRADE DEVELOPMENT OF RAINIER VALLEY

As the 20th Century got underway, the valley continued to be a means of connecting Seattle to the south. The rail line moved people and goods through the valley, encouraging the development of businesses like Stewart Lumber, which welcomed spur lines through their shops to maximize transport. Other industrial uses abound as well, including the Belshaw Bakery, which resided on the East Block of Grand Street Commons.





Belshaw Bakery

In 1924, Thomas and Walter Belshaw, two Rainier Valley locals, started the Belshaw Brothers Inc. bakery equipment manufacturing business at the current Grand Street Commons site. There, they invented the first automatic doughnut making machines.

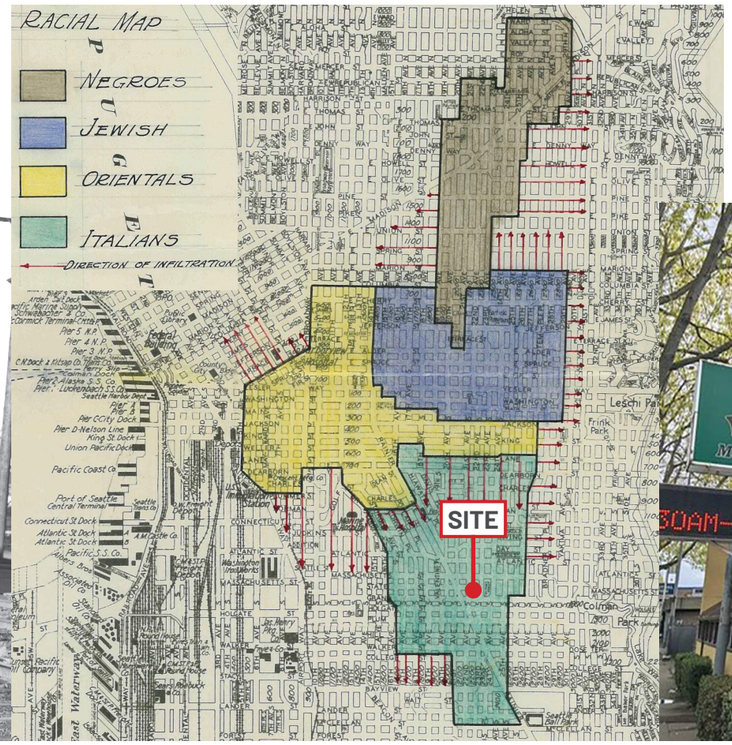
URBAN DESIGN ANALYSIS
HISTORIC CONTEXT

20TH CENTURY POPULATION

As shown in the 1936 Redlining Map, north Rainier Valley was predominantly Italian during the first half of the century. That changed mid-century when I-90 was built through the heart of the community, dispersing the previous population. By the 1960s, discrimation against African Americans limited their options for residence close to the heart of their community in the Central District to Rainier Valley and Beacon Hill. Many African Americans moved to these neighborhoods in the 1960s and 1970s. By 1990, there was a larger African American population in Rainier Valley than there was in the Central District.

Rainier Ave Streetcar at Black Mfg Co., 1936

Throughout its lifetime, the Rainier Avenue Electric Railway (later renamed Seattle Renton & Southern Railway) had a tumultuous relationship with Rainier Valley residents and the City of Seattle. After multiple derailments and failed purchase negotiations, the railway became defunct in 1937.

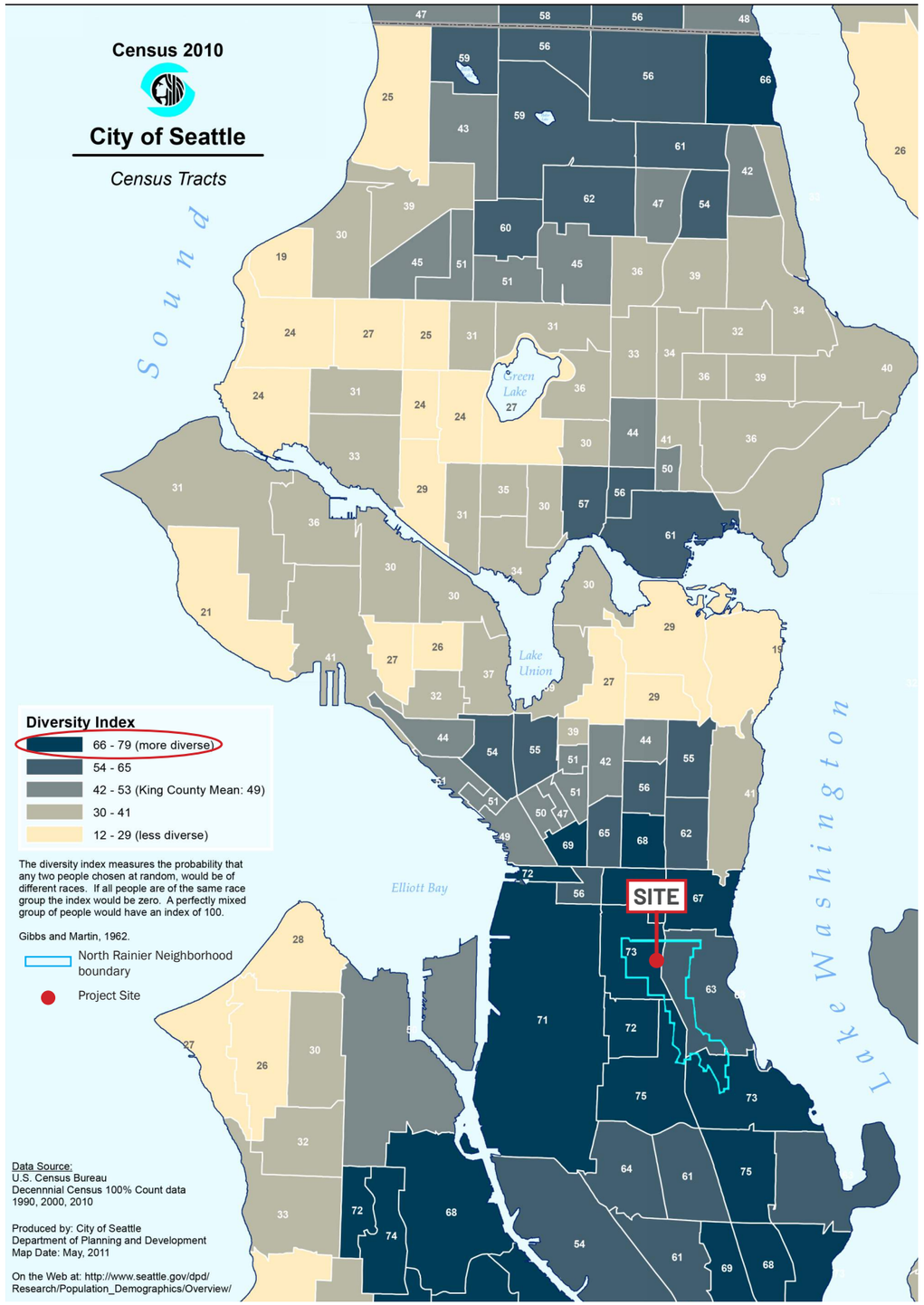


1936 Racial Map

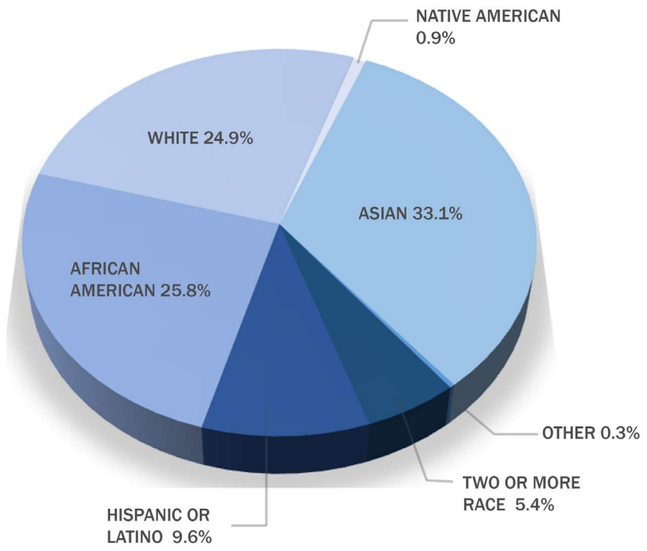
Historically, Seattle's discriminatory real estate covenants in other neighborhoods pushed minority and immigrant groups into the Central District and North Rainier Valley.

Late 20th Century

The end of the Vietnam War in 1975 saw the arrival of refugees from Indochina. Hispanics from Latin America took advantage of good property values and Rainier Avenue became multicultural and multilingual. Along with the vestiges of the neighborhood's Italian heritage such as Oberto Meats and Borrachini's Bakery are Mexican bodegas and Vietnamese restaurants offering phò.

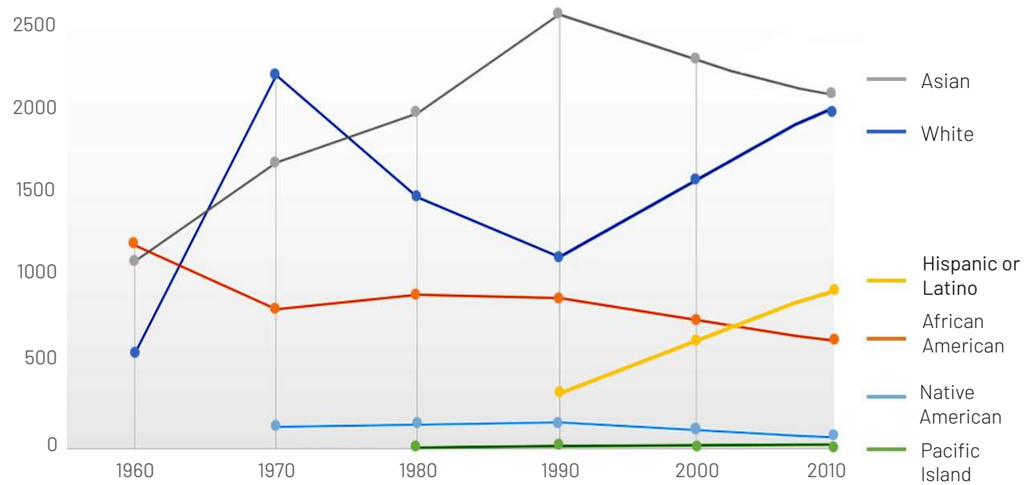


CURRENT DEMOGRAPHICS



Rainier Valley has long been home to many immigrants, with Italian Americans and Japanese Americans predominating prior to World War II. Boom times during and after the war brought many more residents. African Americans relocated from other states and from Seattle's Central Area. More recently, new waves of immigrants from Latin America and southeast Asia have made Rainier Valley home.

DEMOGRAPHIC SHIFT- 1960 to 2010



URBAN DESIGN ANALYSIS
NEIGHBORHOOD INDUSTRIAL CONTEXT

Thanks to the street car line facilitating commercial and industrial use through the valley in the early 20th century, many of the early to midcentury structures in the neighborhood were large footprint industrial / warehouse style buildings. These structures were generally 1 - 2 stories tall and had broad floor plans that absorbed most of their sites, leaving little area for surrounding open space and limiting the number of pedestrian connections in the neighborhoood.

The adjacent diagrams highlights these industrial buildings and identifies the industry associated with each one. Note there were several food supply uses in the neighborhood, many with cultural ties to the southeast Asian and Italian communities that once predominated in the neighborhood.

The concentration of Auto Services speak to the importance of Rainier Ave S as a major thoroughfare for automobiles from the early 20th century through to present day.

- Auto Services
- Food Warehouse/ Supply
- Other industrial Supply/ Services
- Storage
- Future Development

TRANSITION FROM INDUSTRIAL TO MIXED-USE

By the mid 20th century, this portion of Rainier Valley was well populated by low rise, large footprint buildings serving industrial and warehouse functions. The figure ground analysis illustrates how building scale transitions abruptly at the west edge of the valley as grade rises up Beacon Hill and single family residential becomes predominant. The transition to residential building fabric is more gradual to the east, where topography raises to the Mt. Baker neighborhood and the Central district plateau over the I-90 lid.

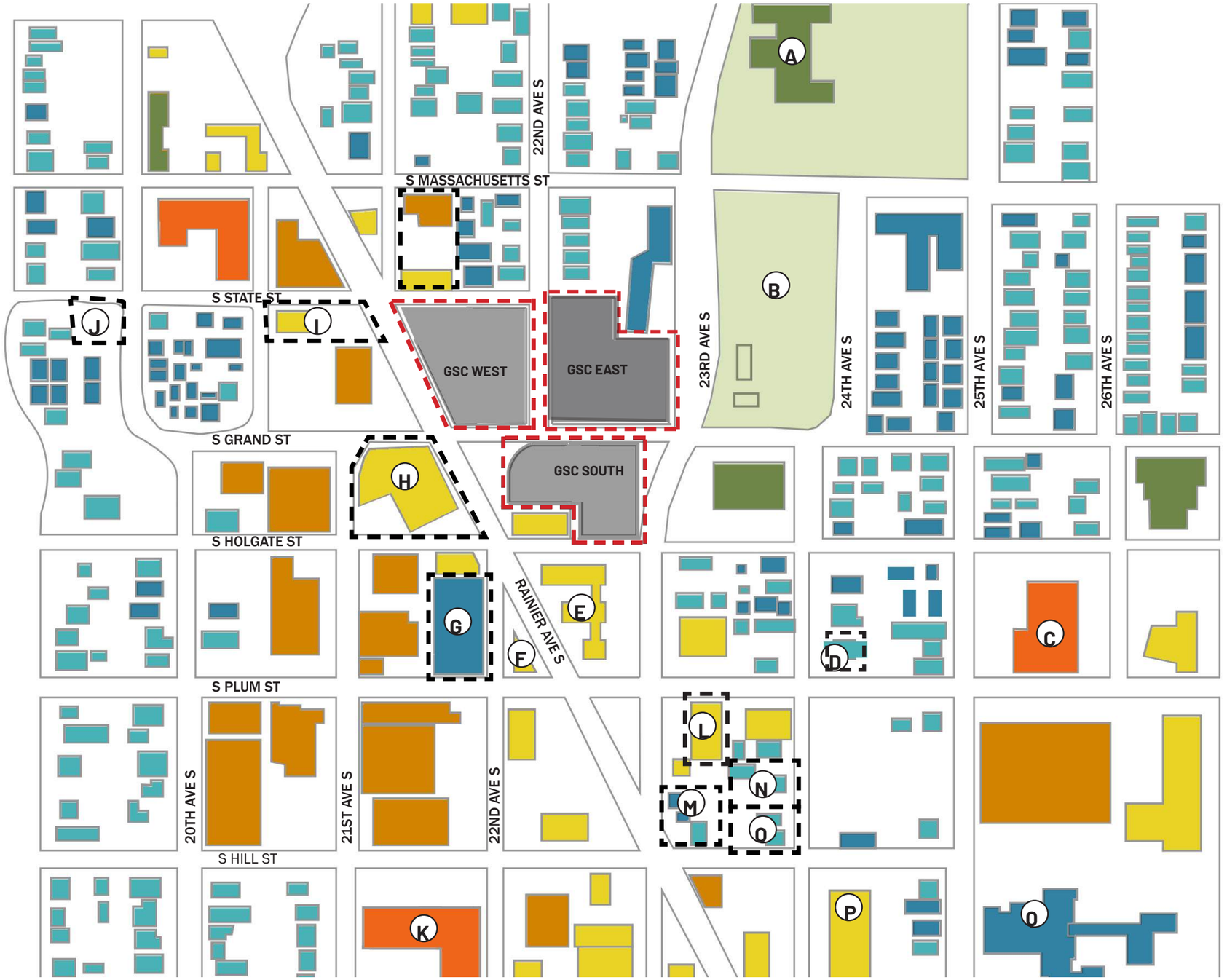
Today, the neighborhood is in a state of transition in anticipationg of the new Judkins Park Light Rail Station as many of the 1- and 2- story buildings are being replaced with 6+ story mixed-use structures along the Rainier corridor. New projects range from groupings of town houses in the transition zone between industrial and residential on either side of Rainier Ave S, to larger footprint mixed use buildings along the arterial route itself.

Grand Street Commons provides opportunity to carry the neighborhood's open space north and east of the project site down into the valley to create a pedestrian friendly node along Rainier as the valley welcomes new mass transit and pedetrian and bicycle activity grows.

- 6+ Story buildings
- 4-5 Story buildings
- 1-3 Story buildings

URBAN DESIGN ANALYSIS

NEIGHBORHOOD DEVELOPMENT & USES



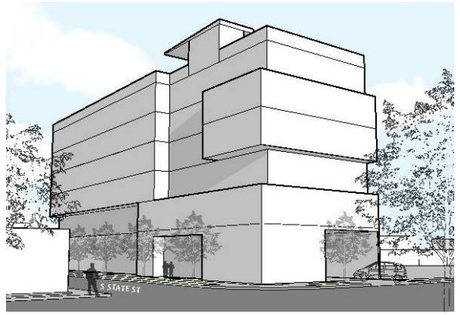
- Recreation / Open Space
- Multifamily / Mixed-Use Residential
- Commercial / Retail / Office
- Civic / Religious
- Industrial / Warehouse / Storage
- Institution / Education
- Single Family Residential
- Future Development

Ⓐ Northwest African American Museum

Ⓑ Colman Park / Seattle Children's Playgarden

Ⓒ American Red Cross

Ⓕ Dixon's Used Furniture



Ⓘ Proposed 6 story apartment building

Ⓛ Proposed 5 Story Apartment

Ⓞ Proposed 4 story apartment building

Ⓓ Proposed Townhouses

Ⓖ Proposed 6 story Mix-use buidling

Ⓙ Proposed SEDU building

Ⓜ Proposed 6 story apartment building

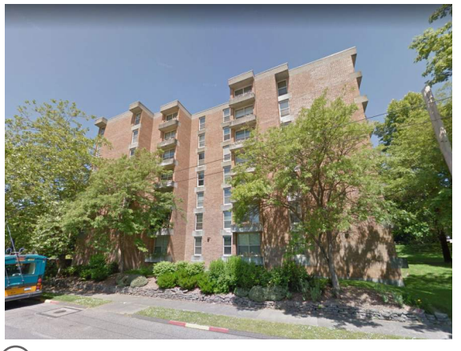
Ⓟ FareStart, Youth in Focus,Treehouse, + WA Womens Foundation

Ⓔ Wellspring Family Services

Ⓗ Proposed 7 story apartment building

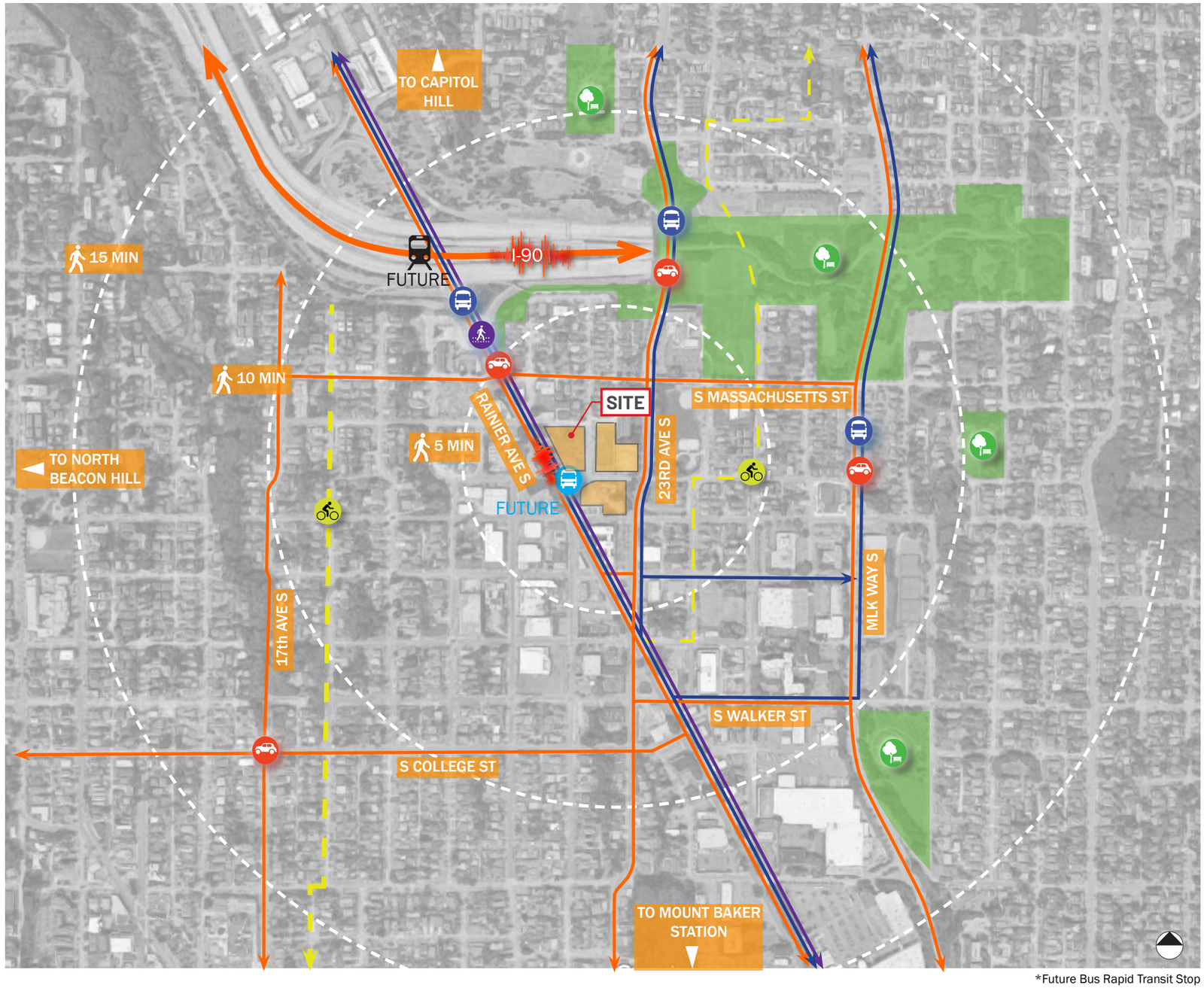
Ⓚ Proposed 3 story private school

Ⓝ Proposed 4 story apartment building



Ⓠ Center Park Apts (SHA), STAR Public Computer Center

URBAN DESIGN ANALYSIS
TRAFFIC AND WALKABILITY



*Future Bus Rapid Transit Stop as indicated by SDOT Pedestrian Master Plan (July 2016)

The project is located in an area of the city where North-South movement is accessible and convenient, offering pedestrian and bike paths, vehicle and public transportation routes to Capitol Hill, First Hill, North Beacon Hill, Mount Baker Town Center, and beyond.

CONSTRAINTS

- Noise from nearby light industrial uses
- Noise from Rainier Ave S & I-90
- South block alley limits opportunity for increase in affordable housing.

OPPORTUNITIES

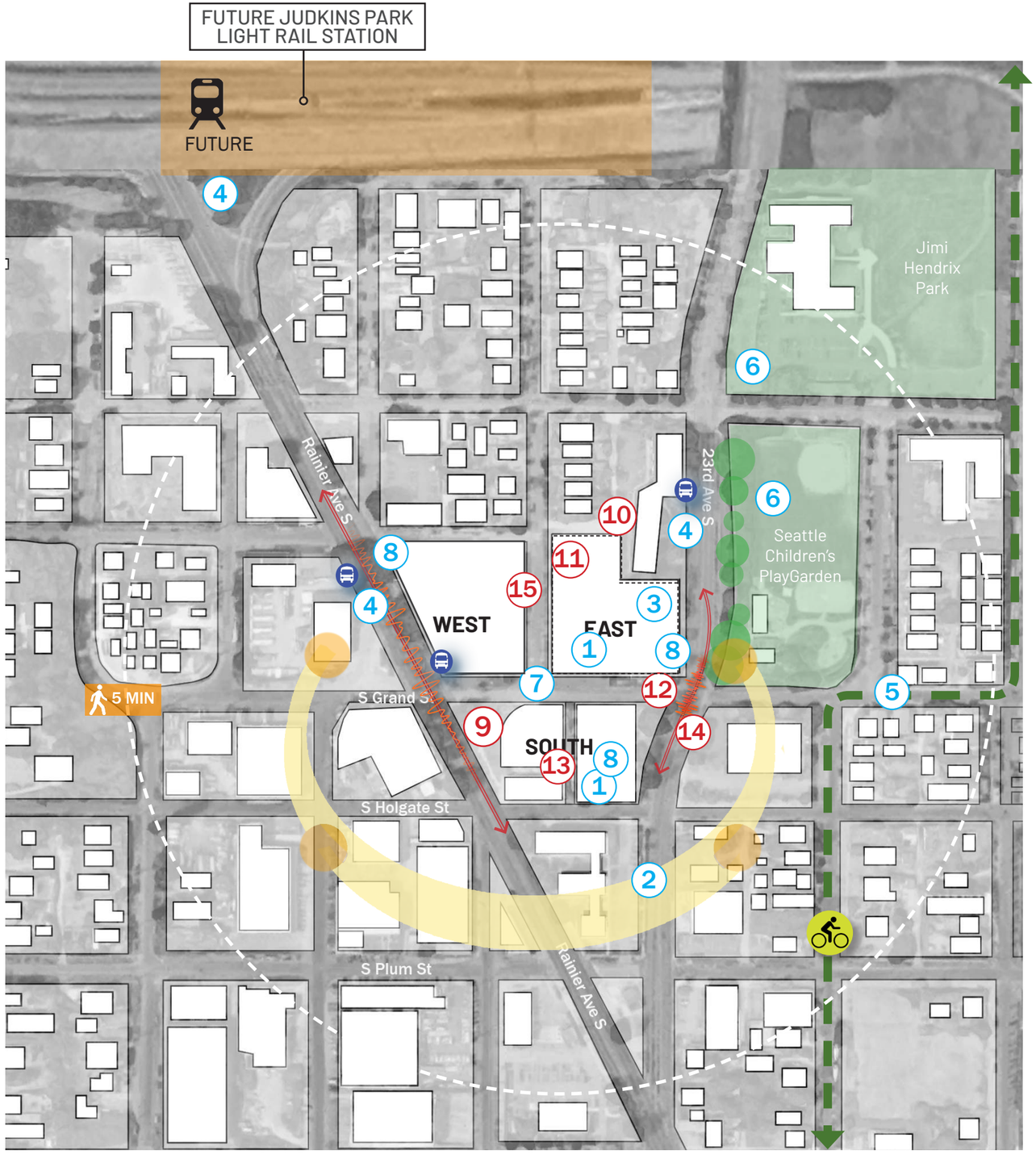
- Fast transit routes to Capitol Hill, First Hill, North Beacon Hill, & Mount Baker Station as well as future transit station to Eastside
- Opportunity to create a new town center with missing services and amenities.

- Main Vehicular Route
- Bus Route
- Bicycle Route
- Main Pedestrian Route
- Park
- Future BRT Stop*
- Environmental/Traffic Noise

Very Walkable
Walk Score 73
Most errands can be accomplished on foot.

Good Transit
Transit Score 67
Many nearby public transportation options.

Very Bikeable
Bike Score 79



OPPORTUNITIES

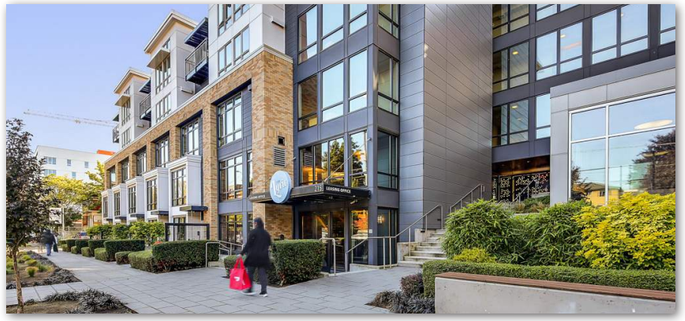
1. View to Mt Rainier
2. Solar Orientation
3. View to Green Space
4. Close proximity to mass transit
5. Close to Bike Routes
6. Proximity to park and green space
7. Heart location of Grand Street Commons - opportunity to create a new town center with missing services and neighborhood amenities.
8. Opportunity for highly visible corners to create gateways to the Commons

CONSTRAINTS

9. Heavy traffic on Rainier Ave S (South and West Blocks)
10. Short Alley frontage at North side (East Block)
11. Northernmost parcel is zoned MR, not NC3 (East Block)
12. Steep slope at S Grand St and 23rd Ave S (East and South Blocks)
13. Unused alley reduces opportunities for maximizing development potential (South Block)
14. Fast traffic on 23rd Ave S (East and South Blocks)
15. High voltage power lines along 22nd Ave S.

DESIGN GUIDELINES
APPLICANT'S HIGHEST PRIORITY

CS2 URBAN PATTERN & FORM



Strengthen the most desirable forms, characteristics, and patterns of the streets, block faces, and open spaces in the surrounding area.

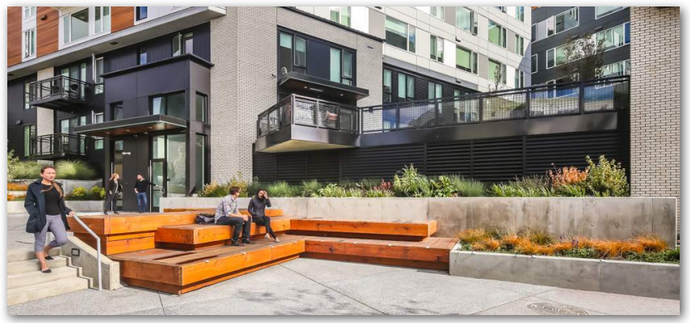
CENTRAL AREA NEIGHBORHOOD SUPPLEMENTAL GUIDANCE

CS2.I. Transition and Delineation of Zones

a. Where denser zones transition to lower density residential zones, provide privacy layering and scale for ground related entrances, porches, and stoops on facades facing the less dense residential zone.
b. In addition to building height, use building massing and articulation to transition to single family scaled fabric. Other acceptable methods include setback, building footprint size and placement on the site, building width, facade modulation, and roof line articulation.
c. The use of appropriately scaled residential elements, such as bay windows and balconies, on larger buildings next to single-family zones are encouraged to better relate to the human scale. This is especially important for buildings four stories or taller.

RESPONSE: At the ground plane, street-level residential entries are held back from the sidewalk and introduces stoop and porch conditions to allow for a public/private zone in which patrons can interact with the community behind. The rhythm of the existing residential fabric along 22nd Ave S is carried through to the architectural massing of the building at the upper levels. This facade modulation gives way to small terraces that act as an additional opportunity for more private engagement of the patron to the public realm.

PL1 CONNECTIVITY



Complement and contribute to the network of open spaces around the site and the connections among them.

CENTRAL AREA NEIGHBORHOOD SUPPLEMENTAL GUIDANCE

PL1.1 Accessible Open Space

b. Larger projects around important neighborhood nodes should create generous recessed entries, corner plazas, and more usuable open space adjoining the streets.

PL1.2 Connection Back to the Community

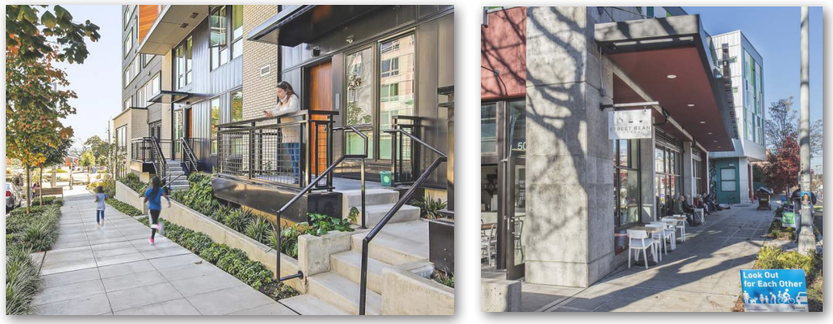
a. Provide cultural and place-specific open spaces that can be used for a variety of uses including social gathering, festivals, and other larger celebrations.
b. Include weather protection to ensure the space can remain active all year long.
c. Enhance gathering places with lighting, art and features, so that the scale of the art and special features are commensurate with the scale of the new development.
d. Ensure exclusive rooftop, private, or gated open spaces are not the only form of open space provided for the project. Prioritize common, accessible, ground level open space at the building street fronts and/or with courtyards that are not restricted or hidden from street views.

PL1.3 Livability for Families and Elderly

d. Provide multi-generational community gathering spaces for young and old to recreate and converse together.

RESPONSE: A variety of spaces with differing scales are provided to encourage a mix of gathering uses by a multi-generational community. A large plaza in the public right-of-way is proposed at the south end of the site.

PL3 STREET-LEVEL INTERACTION



Encourage human interaction and activity at the street level with clear connections to building entries and edges.

CENTRAL AREA NEIGHBORHOOD SUPPLEMENTAL GUIDANCE

PL2.1 Accessible Open Space

a. Encourage color, material, and signage variation in storefront design.
b. Design ground floor frontages in commercial and mixed-use areas that emulate or improve upon the surrounding pedestrian oriented context, while acknowledging the pedestrian patterns that exist.
g. At residential projects, provide coupled entries where possible to foster a sense of community and visual interest in building entryways. Provide generous porches at these entries to encourage sitting and watching the street.
h. Provide exterior access to ground floor residential units. This interior/exterior connection should occur frequently with entrances placed at a regular interval.

PL2.2 Streetscape Treatment

g. Provide voluntary space abutting the sidewalk right-of-way for businesses to utilize.
h. Encourage a safe, comfortable environment for pedestrians with components of complete streets (ex: wide planter zones, wide sidewalks, and/or building setbacks to allow for usable porches, stoops and outdoor seating).
i. Porches and stoops are the life of the street. Encourage human activity by providing opportunites for neighbors to connect, walk, and talk together on the sidewalk.
j. To facilitate usuable stoops and patios, and to encourage pedestian to resident interaction, buffer private outdoor spaces from the public sidewalk with low walls, planters and landscape layering that defines the private space yet allows for face to face conversations.
k. If floor levels and site grading allows, the private stoop at residential units should be raised above sidewalk grade, using 30" as an average height, with universal access to the unit included elsewhere.

RESPONSE: There are a variety of commercial units along the south facade that will directly relate to the adjacent sidewalk and plaza spaces along S Grand Street. Large voluntary setbacks are provided at both the southeast corner and along 22nd Ave S. Ground floor residential will have stoops.

DC2 ARCHITECTURAL CONCEPT

Develop a unified, functional architectural concept that fits well on the site and within its surroundings.

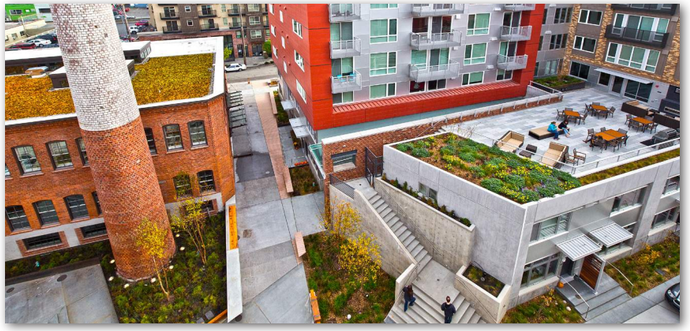
CENTRAL AREA NEIGHBORHOOD SUPPLEMENTAL GUIDANCE

DC2.1 Building Layout and Massing

a. Project concepts should be intelligible and clear. Clarity makes knowledge of the design accessible, thus a larger portion of the community will be able to participate in the planning and design process.
e. Consider all sides of the building and the impacts each facade has on its immediate neighboring context.
i. Encourage clusters of small and local businesses together.

RESPONSE: The massing concept directly addresses the different sides of the building by responding the proposed outdoor "rooms" at each side. The south end of the building fronts a large public open space along S Grand Street. Along 22nd Ave S, facade modulation and a strong street-level responses is important to blend in with the existing residential fabric along that street and wraps around the NE corner to State Street. The massing concept features a strong street wall along the west facade to respond to the busy traffic and noise along Rainier Ave S.

DC3 OPEN SPACE CONCEPT



Integrate building and open space design so that each complements the other.

CENTRAL AREA NEIGHBORHOOD SUPPLEMENTAL GUIDANCE

DC3.1 Common Open Spaces

a. Where possible, provide common courtyards and yards that are publically visible and accessible. These spaces should be activated and layered, so that there is a graduation from private outdoor space, to the fully shared realm.
c. Provide generous common, open space, including shared courtyards and plazas that serve as extensions of the adjacent public realm.

RESPONSE: The building fronts a large plaza space proposed for the right of way along the south facade at S Grand Street with additional setback of over 11'-0" along the south facade. The stoops and porches on 22nd Ave S engage the community in a public/private manner.

AG1 CHARACTER AREAS

Contribute to architectural and placemaking character with local history and cultural references.

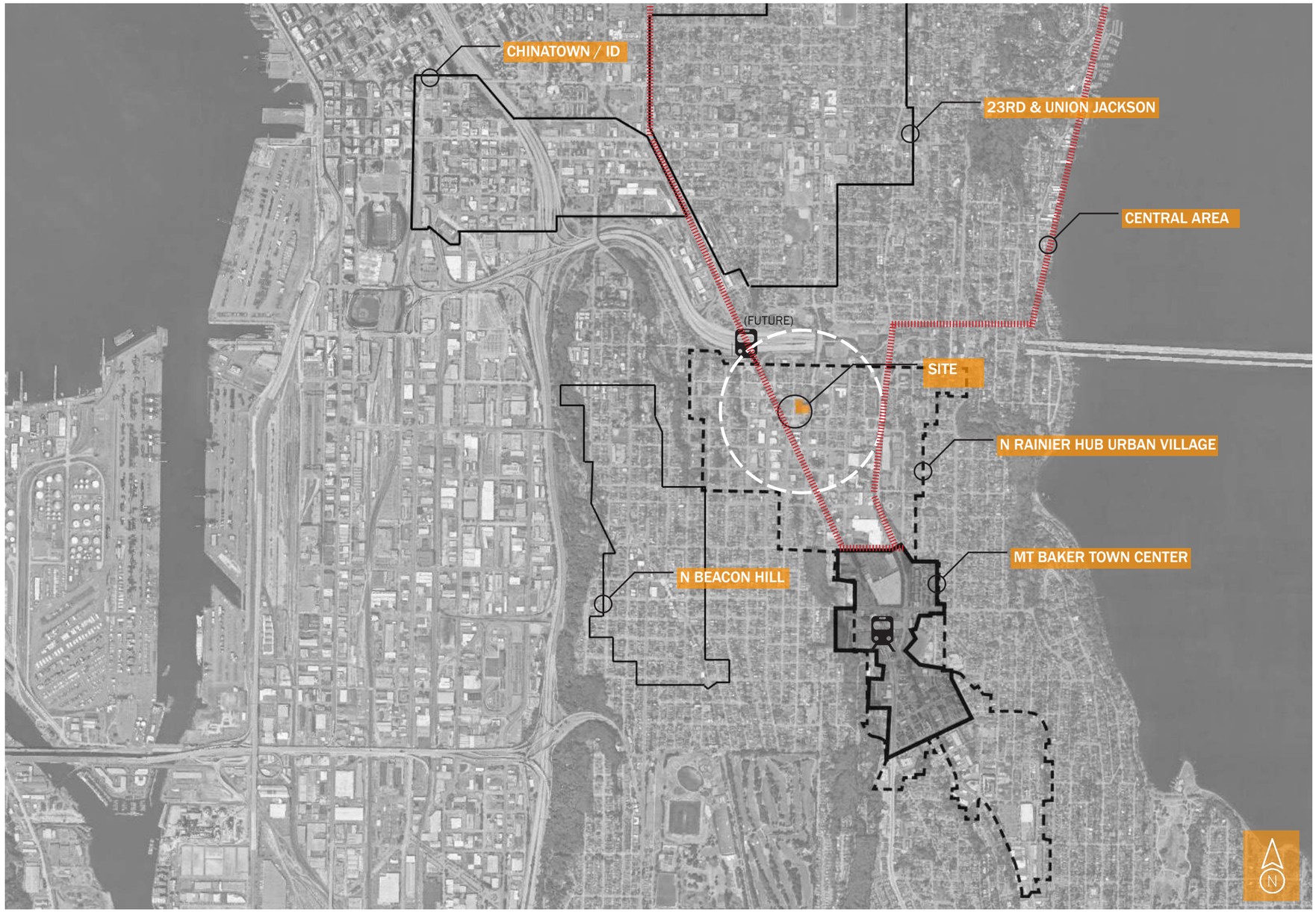
CENTRAL AREA NEIGHBORHOOD SUPPLEMENTAL GUIDANCE

A1.1 History and Heritage

a. ....Create 'pockets of culture' to represent both the Black American identity within the Central Area, as well as other heritages that have had a large impact on the Central Area's past.
d. Include interpretive opportunities (through visual art, signage, markers, etc) that tell the story of the neighborhood's history in engaging ways.
e. Encourage the building design to reflect the racial, economical, and multi-generational character of the community.
g. Provide amenities appropriate to the activities and interests of the local community, such as basketball hoops, chess boards, tot lots and other family oriented activities.
h. Bicycle use and parking should be encouraged to promote a healthy and active neighborhood and to support local businesses.

RESPONSE: By looking at the diverse demographic that has and currently reside in the neighbhorhood, the massing concept takes inspiration from the different cultural interpretations of the "Porch", from the African-American to the Japanese and Italian dwellers. In doing so, the Porch informs the way in which each side of the building addresses the outdoor room at which it faces. This allows for a variety of experiences from both the patron of the building as well as the public at large.

Information Sources: City of Seattle and Central Area Neighborhood Design Guidelines



PROJECT URBAN BOUNDARY

The project is located in the
North Rainier HUB Urban Village.

NEIGHBORING URBAN BOUNDARIES

DOWNTOWN URBAN CENTER

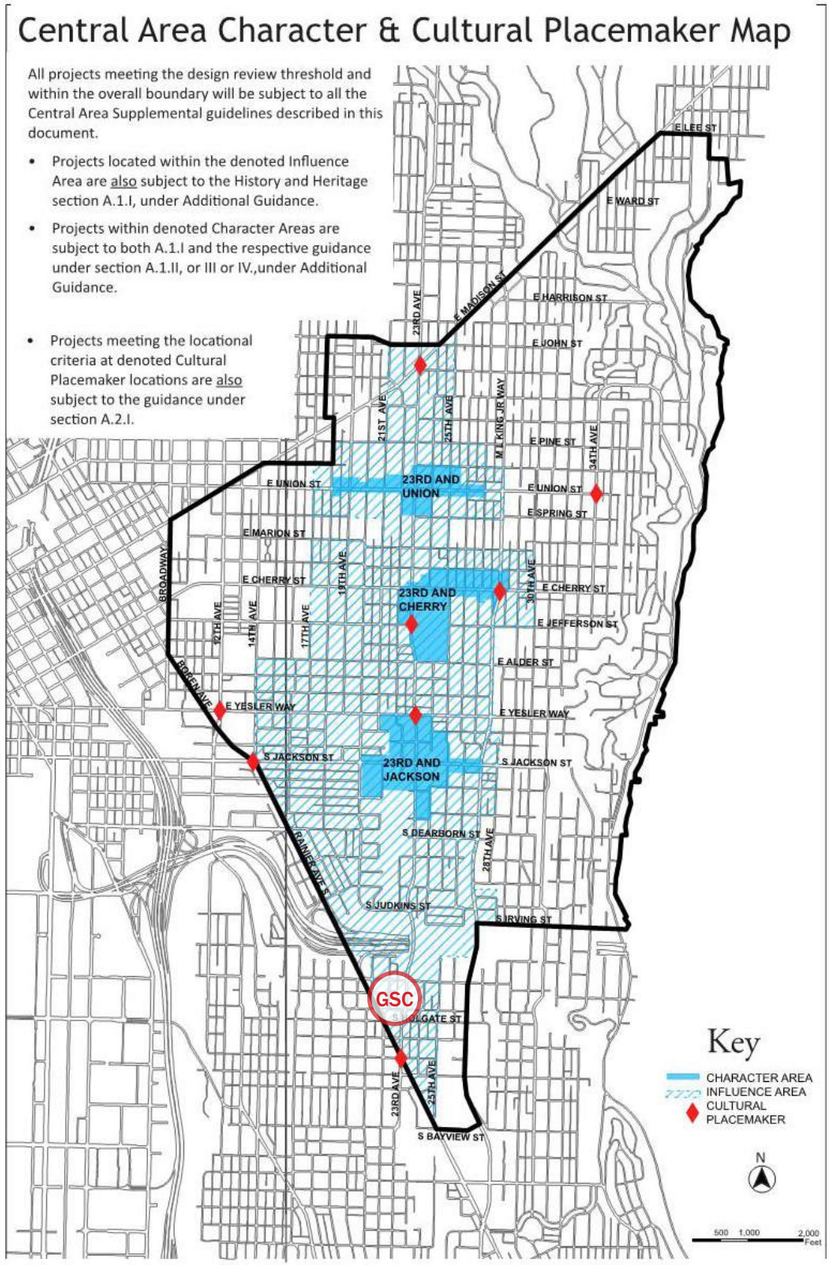
- Chinatown / ID Urban Center Village

TOWN CENTER

- Mount Baker Town Center

RESIDENTIAL URBAN VILLAGE

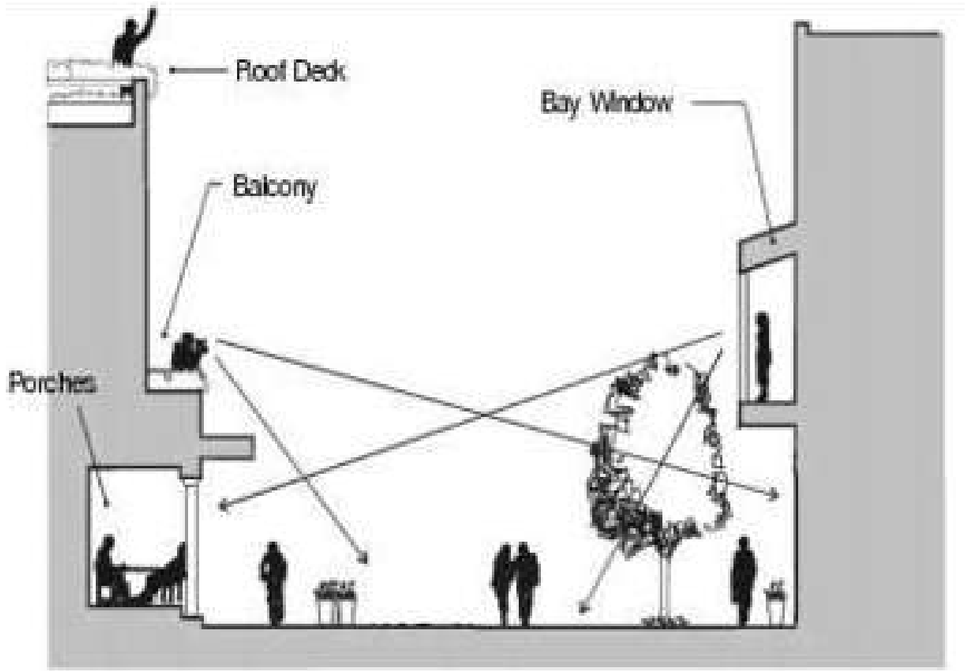
- 23rd and Jackson Residential Urban Village
- North Beacon Hill Residential Urban Village



CENTRAL AREA DESIGN GUIDELINES

Grand Street Commons is located in an Influence Area as shown in the adjacent Central Area Character & Cultural Placemaker Map. These areas are subject to the History and Heritgage section of A1.I, which is largely focused on featuring African and Black American culture. Because the project sites are located at the south end of the Central Area, in a portion of the neighborhood that historically featured a strong identity in other minority groups, Grand Street Commons proposes to highlight aspects of the built environment that reference not only African American culture, but Asian and Italian heritage as well. As noted in A.1.1.a, the project should, "...Create 'pockets of culture' to represent both the Black American identity within the Central Area, as well as other heritages that have had a large impact on the Central Area's past."

DESIGN GUIDELINES
ARCHITECTURAL RESPONSE



THE "PORCH" IN THE CENTRAL AREA DESIGN GUIDELINES

All sections of the Central Area Design Guidelines support the concept of the Porch as an architectural feature to include and celebrate in new buildings. Multi-story, mixed use buildings provide opportunity to include this concept in a variety of ways as demonstrated in the diagram to the left. The Porch may be a literal porch or stoops at grade-level residential units. The Porch can also serve commercial functions, similar to the Italian portico. Above grade, the Porch may be a balcony or bay window that provides eyes on the street and allows residents to interact with the streetscape below.

The East Building proposes to include a variety of Porches in the preferred massing scheme. Entry stoops along 22nd Ave S provide a public / private transition zone where residents can relax and interact with passerbys. The more private south-facing courtyard along S Grand St looks over the main corridor of the Grand Street Commons development and provides 'eyes-on-the-street' on that frontage. There are opportunities for balcony spaces at the upper residential levels for additional levels of outdoor space and views to/from the ground plane.

From East Building packet - will edit to apply to all three buildings.

CONTEXT AND SITE

CS1.2.e – create a "room" between the street and the building
CS2.1.a - privacy layering with porches/entries adjacent to less dense res zones

PUBLIC LIFE

PL1.1.a - provide safe and well-connected open spaces
PL1.2.b/PL3.2.c - weather protection
PL1.2c - enhancing gathering spaces with lighting art and features
PL1.2d - prioritize ground level open space not hidden from street views
PL1.3.a - provide safe areas for children to play where they can be seen, incorporate seating for community members to congregate.
PL1.3.d - provide multi-generational community gathering spaces
PL3.1.c – promote transparency and eyes on street
PL3.1.g - generous porches to watch street
PL3.1.h - provide ground floor access to residential units
PL3.2.b - recessed business entries for protection
PL3.2.h – allow for usable porches, stoops and outdoor seating
PL3.2.i - porches and stoops are the life of the street
PL3.2.j, K – facilitate usable stoops and patios and encourage interaction; residential stoops should be raised above sidewalk grade

DESIGN CONCEPT

DC2.1.b - relate to ground, provide transparency
DC2.1.c - break up building mass
DC2.1.h - ground level units with adjacent open space
DC2.1.i - encourage clusters of small and local businesses (promot gathering around these retail pockets)
DC3.1.a - provide common courtyards that are publicly visible and accessible
DC3.1.c - generous open space that serve as extension of public re
DC4.3.d - facades exhibiting a rhythm of fenestration and transparency to connect the inside program to the public realm

AFRICAN AMERICAN - THE STOOP

THE JAPANESE ENGAWA

THE ITALIAN PORTICO

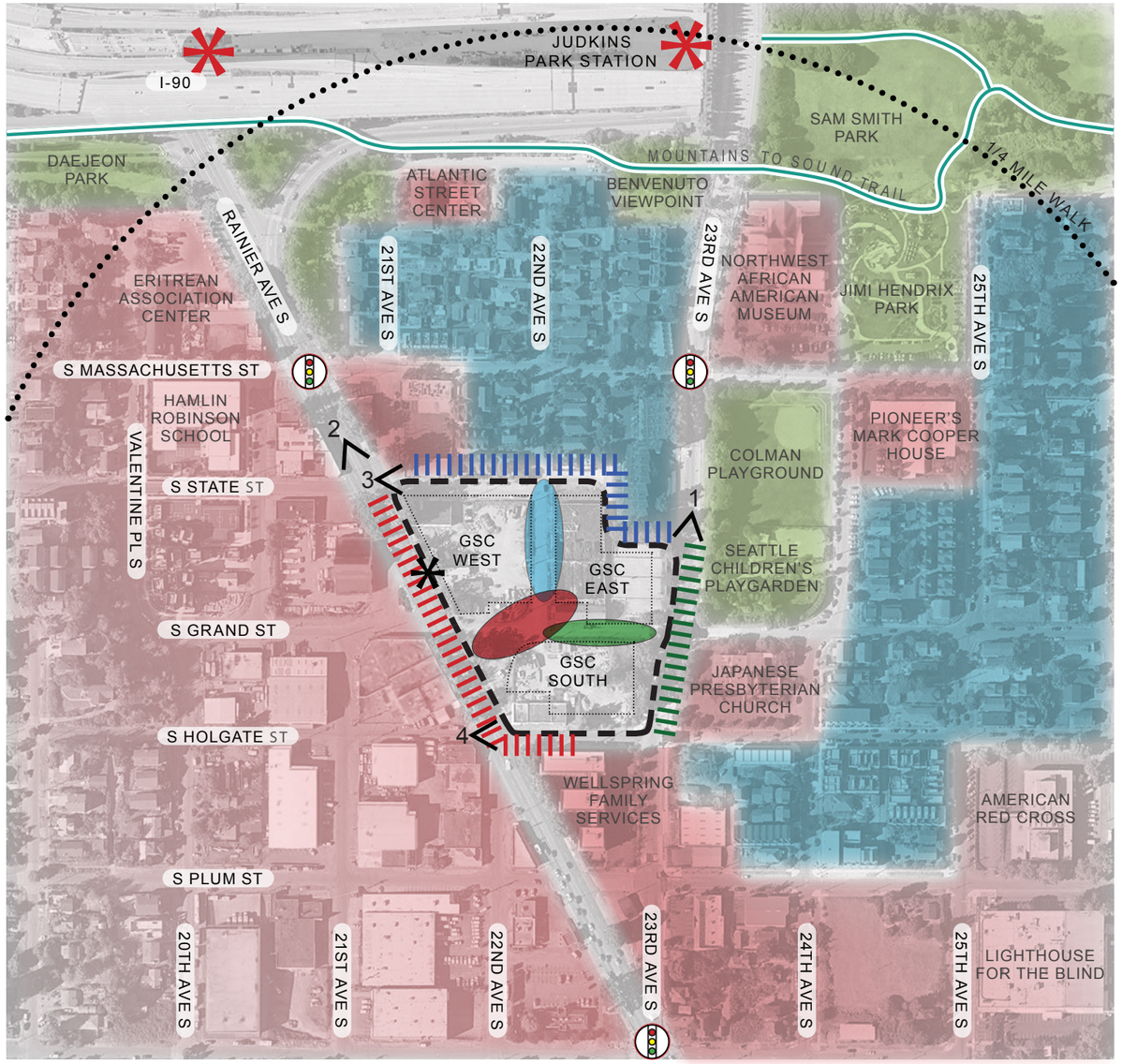
GRAND STREET COMMONS
LANDSCAPE ANALYSIS

1 23RD AVE S - LOOKING SOUTH

2 RAINIER AVE S - LOOKING SOUTH

3 S STATE STREET - LOOKING EAST

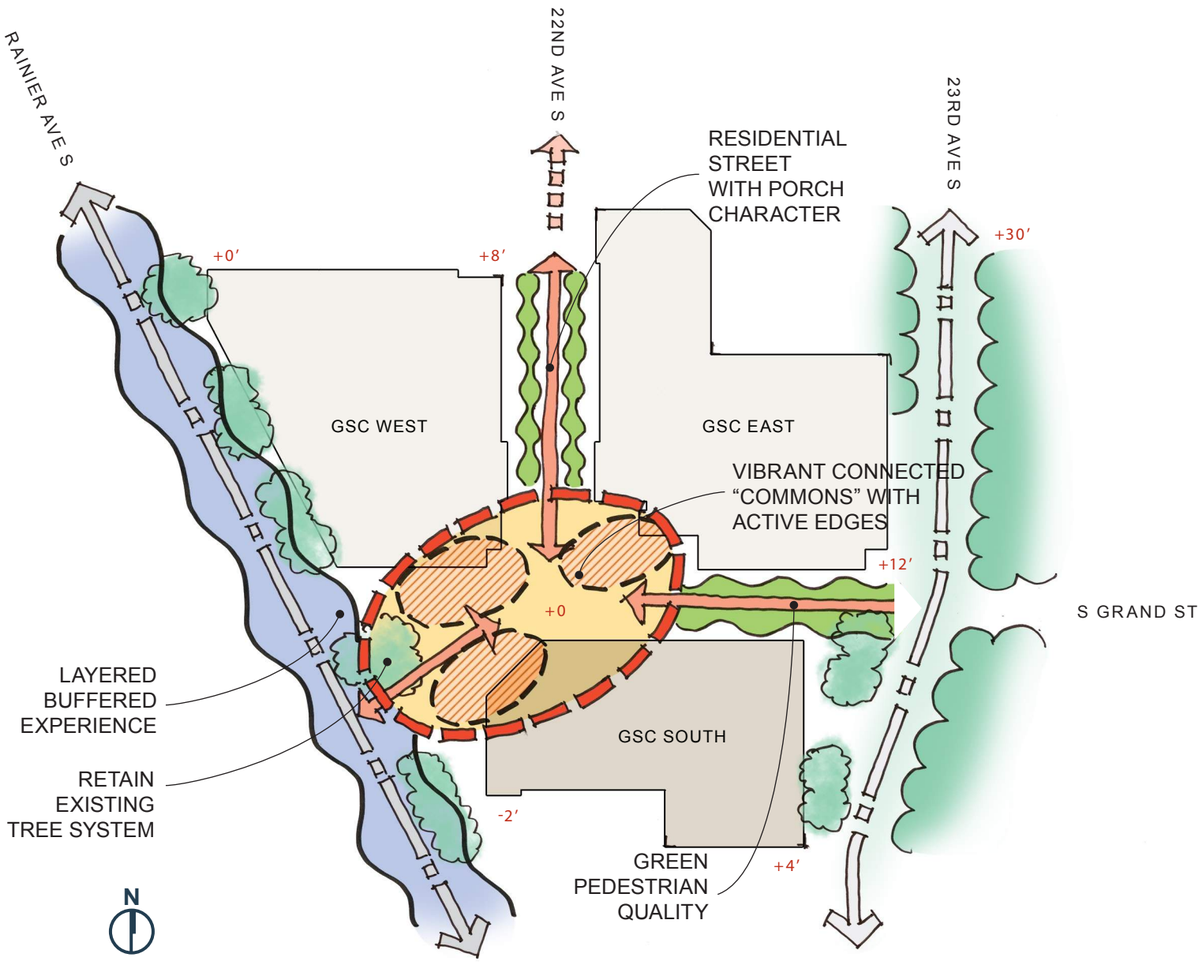
4 S HOLGATE STREET - LOOKING EAST



LEGEND

- PROJECT SITE
- GREEN SPACE SYSTEM
- RESIDENTIAL CHARACTER
- INDUSTRIAL / COMMERCIAL / INSTITUTIONAL CHARACTER
- SIGNALIZED INTERSECTION
- LINK LIGHT RAIL - JUDKINS STATION
- BUS STOP ROUTE #7 (FUTURE RAPID RIDE)
- GREEN SPACE INFLUENCE
- RESIDENTIAL INFLUENCE
- RAINIER FRONTAGE
- GRAND STREET GREEN PEDESTRIAN QUALITY
- 22ND AVE RESIDENTIAL SCALE AND TEXTURE
- RAINIER AVE/GRAND STREET COMMONS

GRAND STREET COMMONS
LANDSCAPE OPPORTUNITES




PRESERVE EXISTING TREES


RESIDENTIAL STREET CHARACTER

ACTIVE EDGES


GREEN PEDESTRIAN QUALITY


THE COMMONS PLAZA


PEDESTRIAN AMENITY

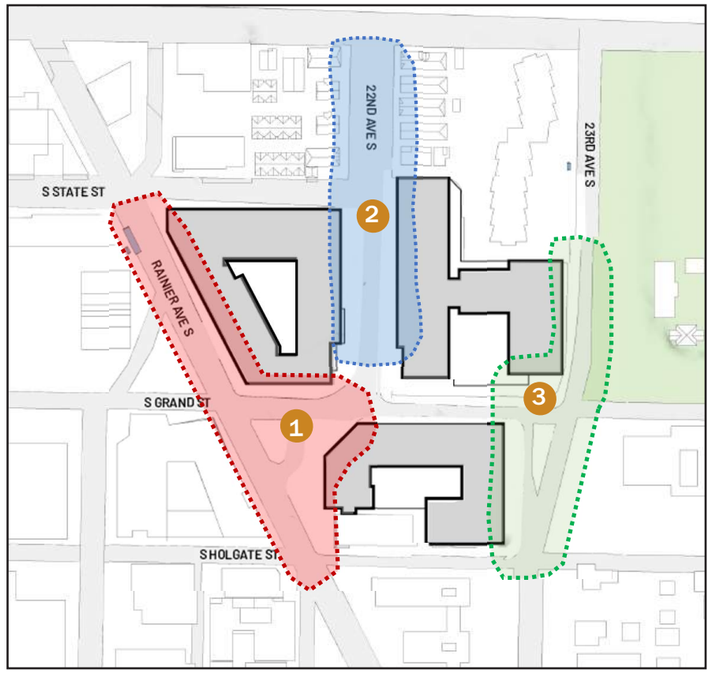

STORMWATER INTEGRATION

GRAND STREET COMMONS
SITE PLAN

RUNBERG ARCHITECTURE GROUP

THREE BUILDINGS

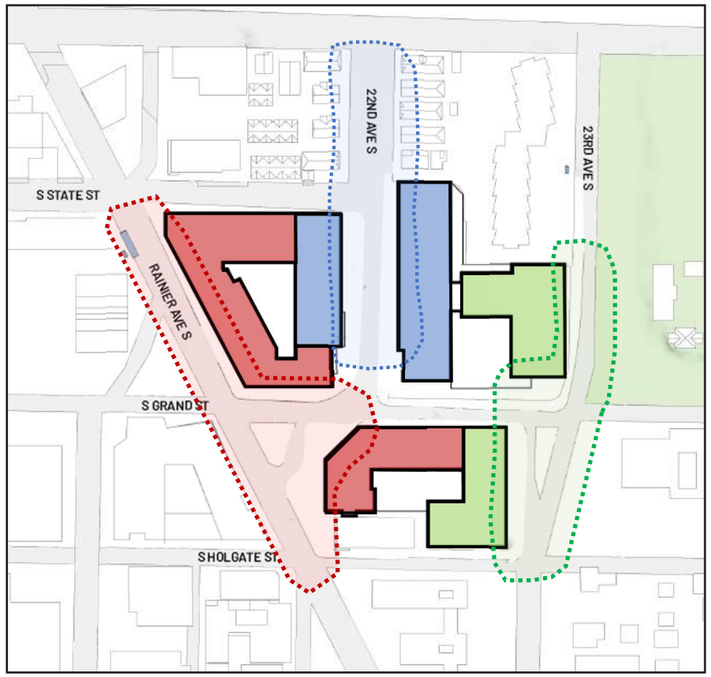
If the three blocks in Grand Street Commons were to be redeveloped in a more common scenario, it's likely each of the three buildings would have their own unique character as they would be developed at different times by different design and development treams. Massing and materials would be developed to respond to the existing context at project inception, which may or may not include the adjacent buildings. Inherently (and often unintentionally), outdoor rooms are created by the new building massing along the adjacent right-of-ways.



STREET CHARACTER

Developing three city blocks at once provides the opportunity to focus on the development of the outdoor rooms into an intentional excercise that will provide maximum benefit to the neighborhood at large. Grand Street Commons has several opportunities to create outdoor rooms between the new buildings:

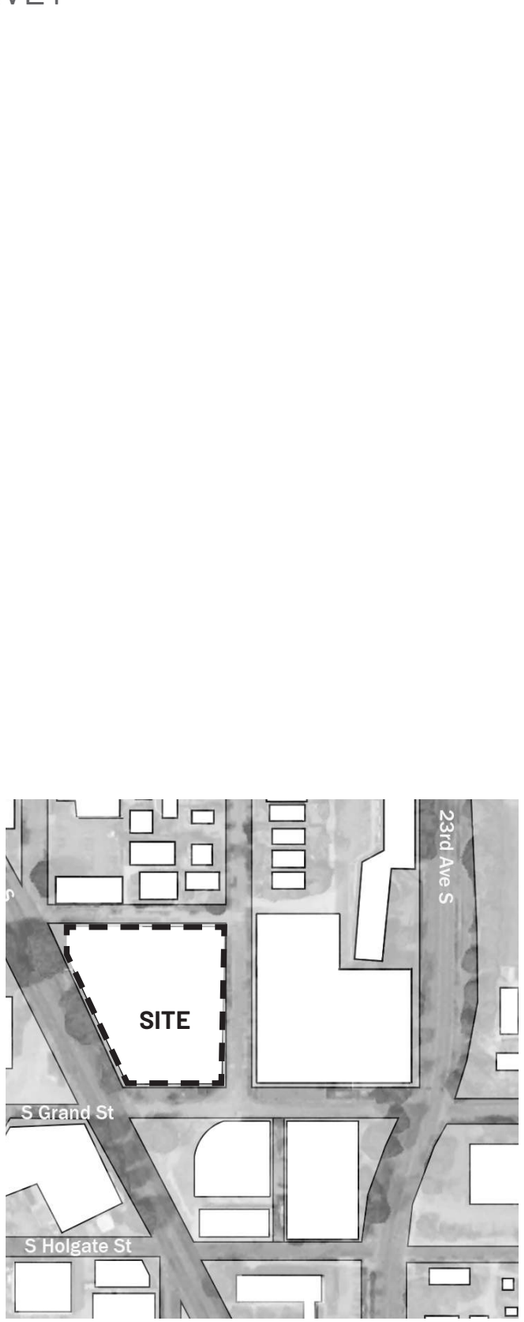
1. Grand Street Plaza along Rainier Ave S
2. Residential Corridor along 22nd Ave S
3. Intersection of S Grand Street and 23rd Ave S

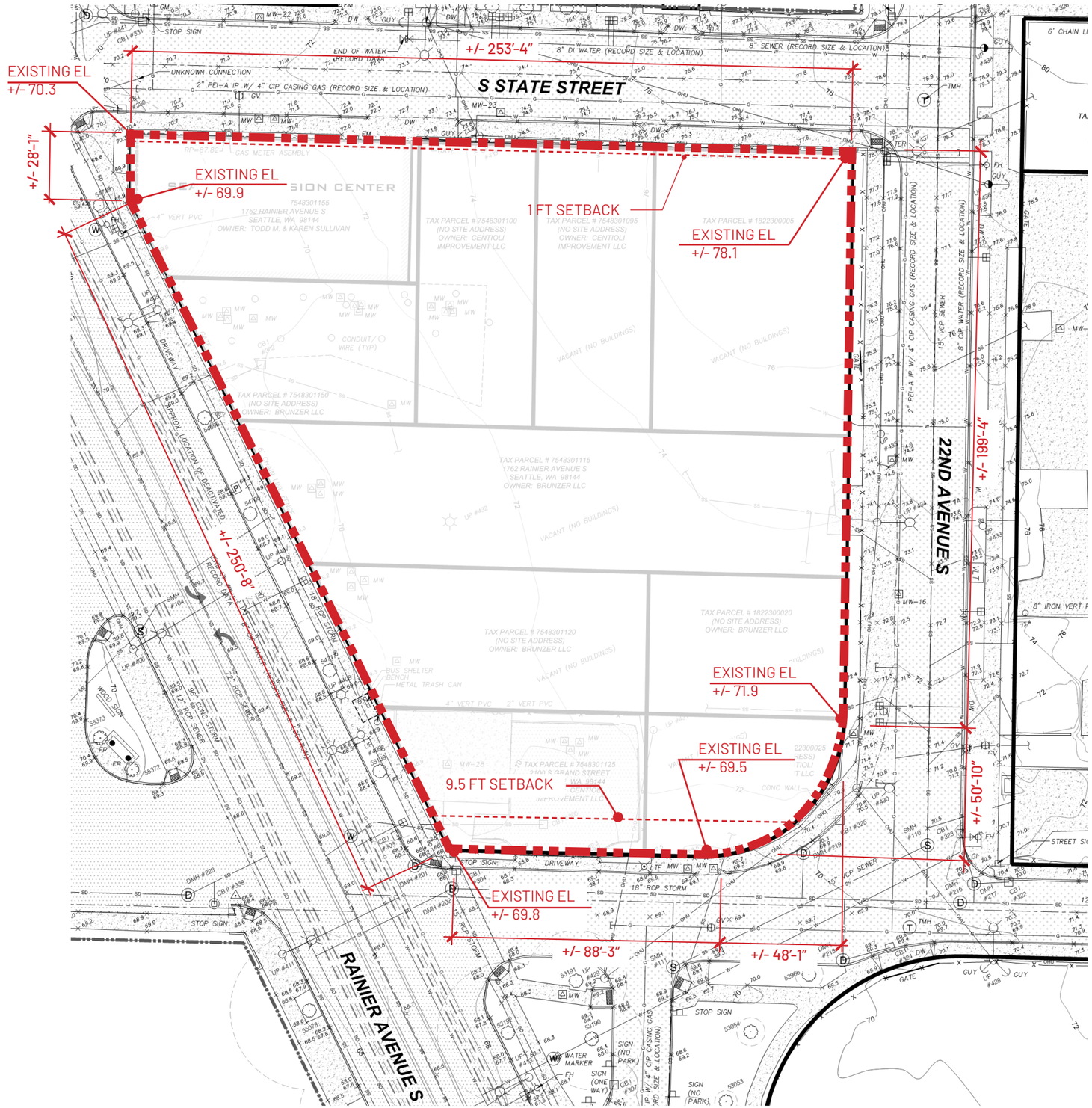


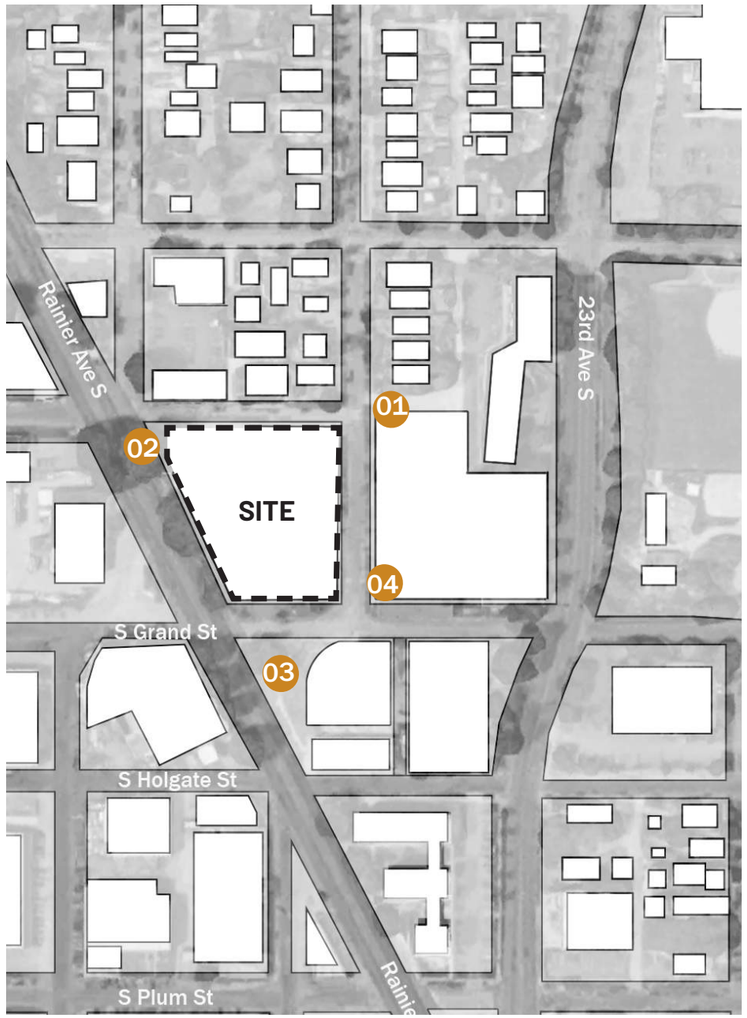
GRAND STREET COMMONS

Grand Street Commons proposes to embrace the outdoor room concept to maximize the public experience of the full three block development. The new buildings will have an intentional relationship through massing and materials to the buildings proposed for the opposite side of the right-of-way, creating a cohesive backdrop to the three primary outdoor rooms and a dynamic and unique urban environment.

WEST BLOCK ANALYSIS
SITE SURVEY







01 S STATE STREET

02 RAINIER AVE S

03 SOUTH PROPERTY LINE

04 SITE ALONG 22nd AVE

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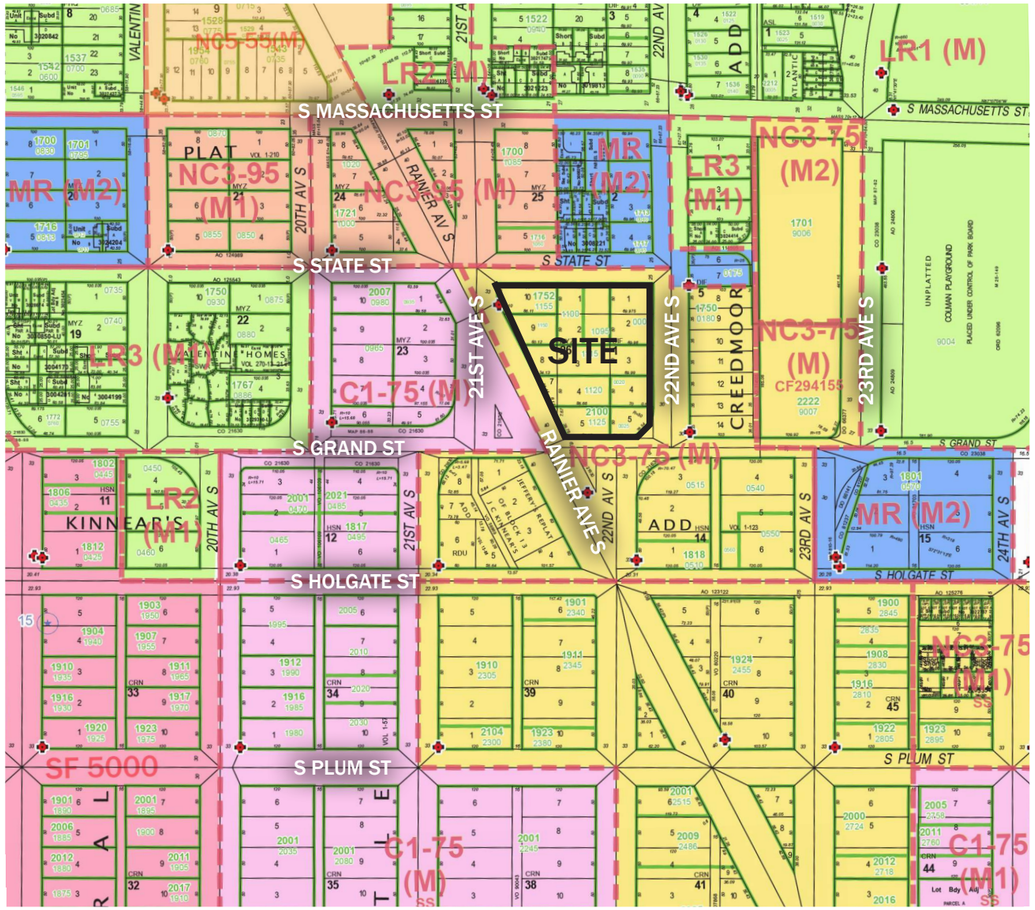


LR1 & LR2& LR3

NC3-95

NC3-75

C1-75

MR

SF 5000

ZONING DESIGNATION

NC3-75' (M)

NEARBY ZONING

Northwest of Site: NC3-95' (M)

Northeast of Site: MR (M2)

West of Site: C1-75 (M)

South and East of Site: NC3-75' (M)

NC3-75'
Chapter 23.47A - Commmercial
Key Zoning Code Criteria

Code Section	Topic	Summary
23.47A.005.C	**Street Level Uses**	Limits to residential use at grade do not apply to this project.
23.47A.008.A.2	**Blank Facades**	Blank Facades may not exceed 20' in width or 40% of the width of a structure along the street.
23.47A.008.B	**Non-Residential requirements**	60% Transparency required
		Average depth of 30' and min. depth of 15'
		Floor to floor height is min. 13'-0"
23.47A.008.D	**Residential at grade**	At least on street-level, street-facing façade shall have a visusally prominent entry
		The floor of a dwelling unit shall be 4' above or below sidewalk grade or be set back at least 10 feet from the sidewalk.
23.47A.012	**Structure Height**	Per zone - 75'
23.47A.013	**Floor Area Ratio (FAR)**	FAR = 5.5
23.47A.014	**Setback Requirements**	Upper level setback abutting an MR zone - does not apply when MR zone is part of the same building.
		Upper level setback for street-facing facades - setback of 8 feet is required above 65 feet.
	Façade Modulation	Structures > 250' in width must have one protion of the structure 30 feet or greater setback 15 feet min from the front property line.
	Decks and Balconies	Are permitted within the setback area.
23.47A.016	**Green Factor**	Green Factor of 0.3 or greater is required.
23.47A.022	**Light and Glare**	Exterior lighting must be shielded and directed away from adjacent uses.
		Driveways and parking areas shall be screened from adjacent properties by a fence or wall between 5 feet and 6 feet in height
23.47A.024	**Amenity Area**	5% total fross floor area in residential use.
		Amenity areas shall not be enclosed.
23.47A.032	**Parking Access**	Parking shall be from the alley.
23.54.015	**Parking requirements**	no minimum parking required for residential or commercial use

ZONING SUMMARY

The entire project site is zoned NC3-75' (M). The same zone extends across 22nd Ave S to the east and S Grand Street to the south. The block west of the site on the opposite side of Rainier Ave S is zoned C1-75'. North of the site, there are two zones along the north side of S State Street: NC3-95' (M) to the NW and MR (M2) to the NE.

STREET ELEVATION - S GRAND STREET

PROJECT SITE

RAINIER AVE S

A. NORTH ELEVATION OF GRAND STREET

23RD AVE S

B. SOUTH ELEVATION OF GRAND STREET

STREET ELEVATION - S GRAND STREET

23RD AVE S

RAINIER AVE S

WEST BLOCK ANALYSIS

STREET ELEVATION - 22nd AVE S

PROJECT SITE

A. WEST ELEVATION OF 22ND AVE S

B. EAST ELEVATION OF 22ND AVE S

WEST BLOCK ANALYSIS
STREET ELEVATION - 22nd AVE S

S STATE ST

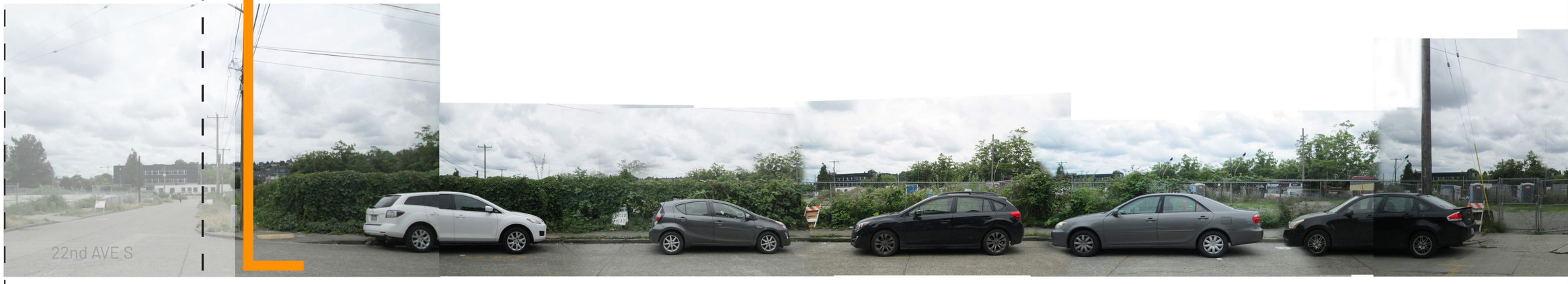
WEST BLOCK ANALYSIS

STREET ELEVATION - S STATE STREET

RAINIER AVE S

A. NORTH ELEVATION OF S STATE STREET

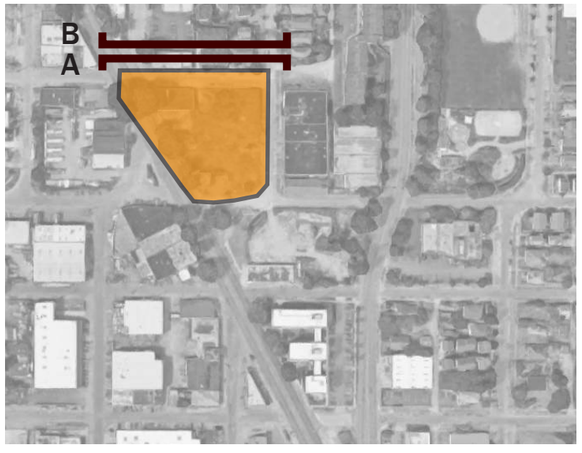
PROJECT SITE



B. SOUTH ELEVATION OF S STATE STREET

STREET ELEVATION - S STATE STREET

22nd AVE S



RAINIER AVE S

WEST BLOCK ANALYSIS

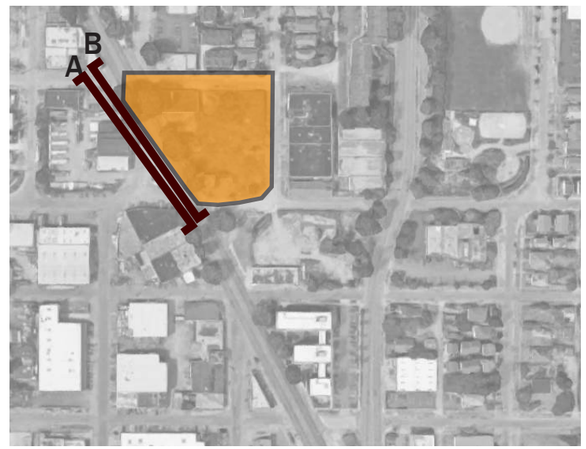
STREET ELEVATION - RAINIER AVE S

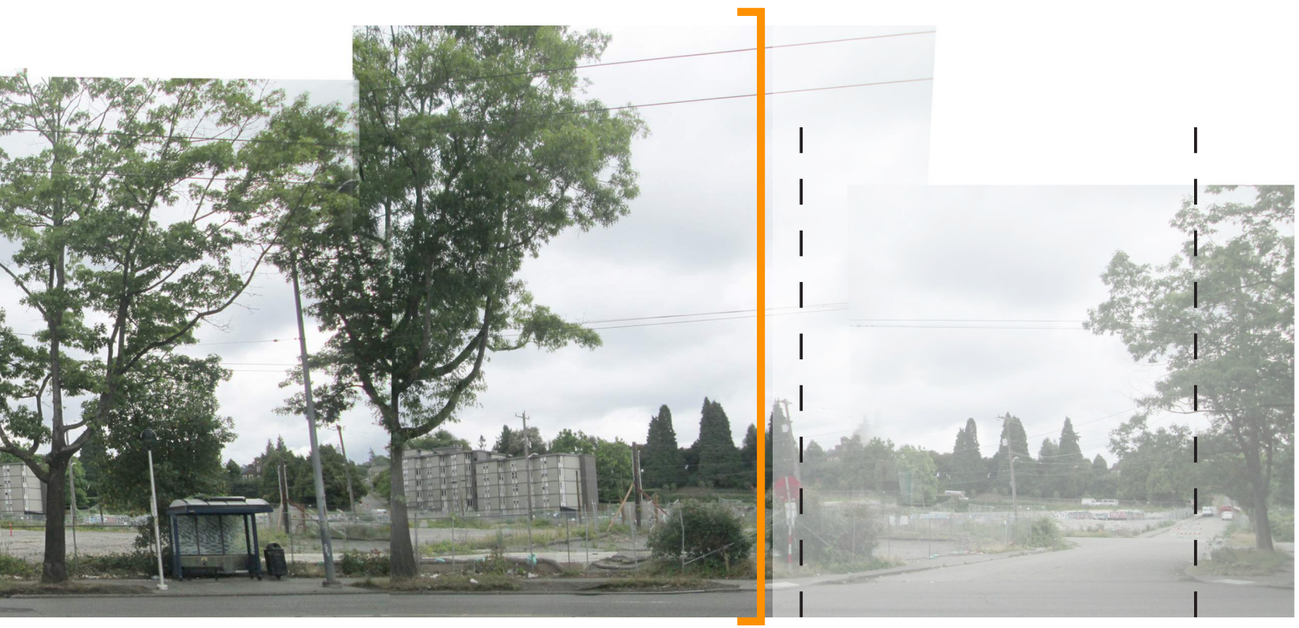
PROJECT SITE

A. EAST ELEVATION OF RAINIER AVE S

B. WEST ELEVATION OF RAINIER AVE S

STREET ELEVATION - RAINIER AVE S





GRAND ST

STATE ST

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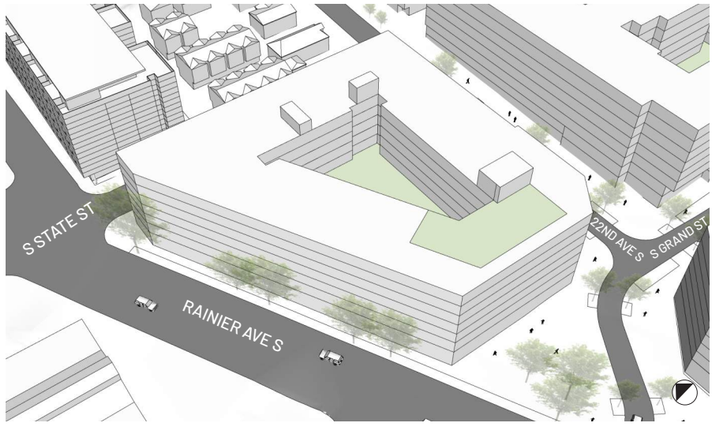
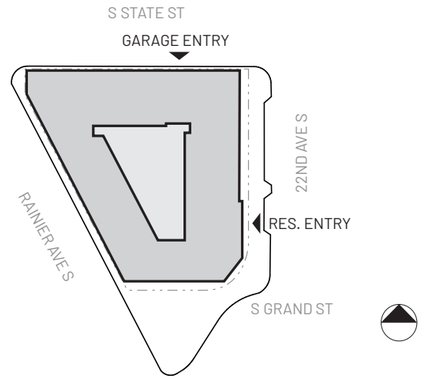
OPTION A (CODE COMPLIANT)





PROPOSED GROSS RESIDENTIAL: 343,527 SF

- Total Residential Units: 282
- Total Parking: 279
- Total Commercial Area: 27,562 SF

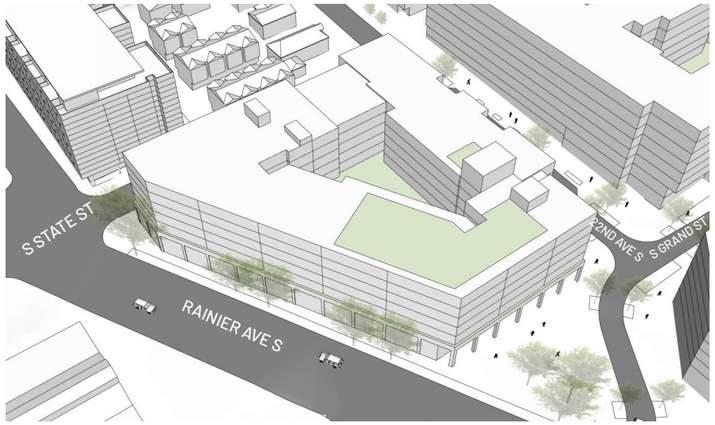
PROS

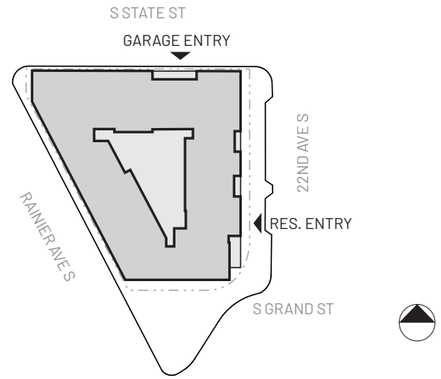
- Code compliant scheme

CONS

- Minimal modulation on all sides
- No relationship between massing and ground plane concepts
- No opportunity for different Porch options facing public spaces
- Loading truck turn radius at curb cuts do not work for proposed program

OPTION B





PROPOSED GROSS RESIDENTIAL: 337,572 SF

- Total Residential Units: 280
- Total Parking: 262
- Total Commercial Area: 26,523 SF

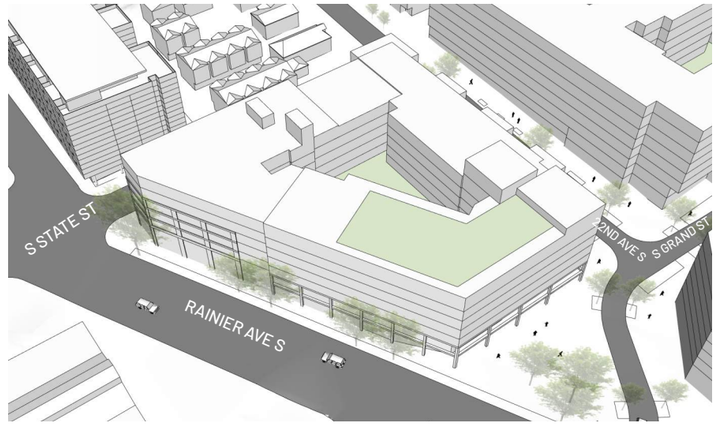
PROS

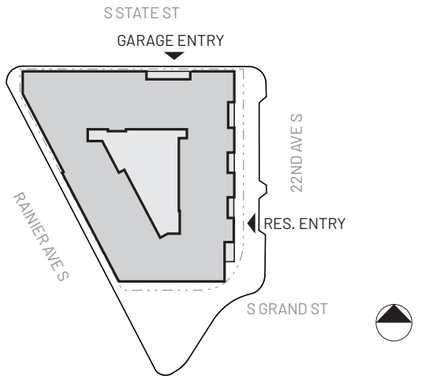
- Consistent facade treatment across Rainier Ave S
- Two-story massing at retail
- Recessed Porch concept (portico) at south plaza
- Modulation and opportunities for stoops/patios along 22nd Ave S

CONS

- Large curb cut on S State St (departure required)

OPTION C





PROPOSED GROSS RESIDENTIAL: 337,850 SF

- Total Residential Units: 280
- Total Parking: 262
- Total Commercial Area: 26,638 SF

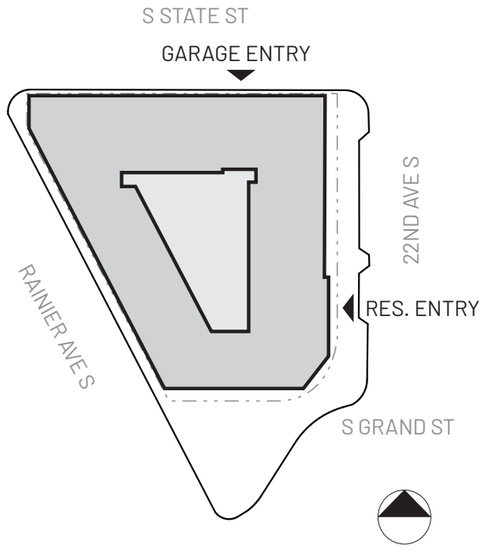
PROS

- Greater facade breakdown along Rainier Ave S and 22nd Ave S
- Recessed Porch concept (portico) at south plaza
- Increased modulation and opportunities for stoops/patios along 22nd Ave S

CONS

- Large curb cut on S State S (departure required)

MASSING CONCEPTS
OPTION A - MASSING



PROPOSED GROSS RESIDENTIAL: 343,527 SF

- Total Residential Units: 282
- Total Parking: 279
- Total Commercial Area: 27,562 SF

PROS

- Code compliant scheme

CONS

- Minimal modulation on all sides
- No relationship between massing and ground plane concepts
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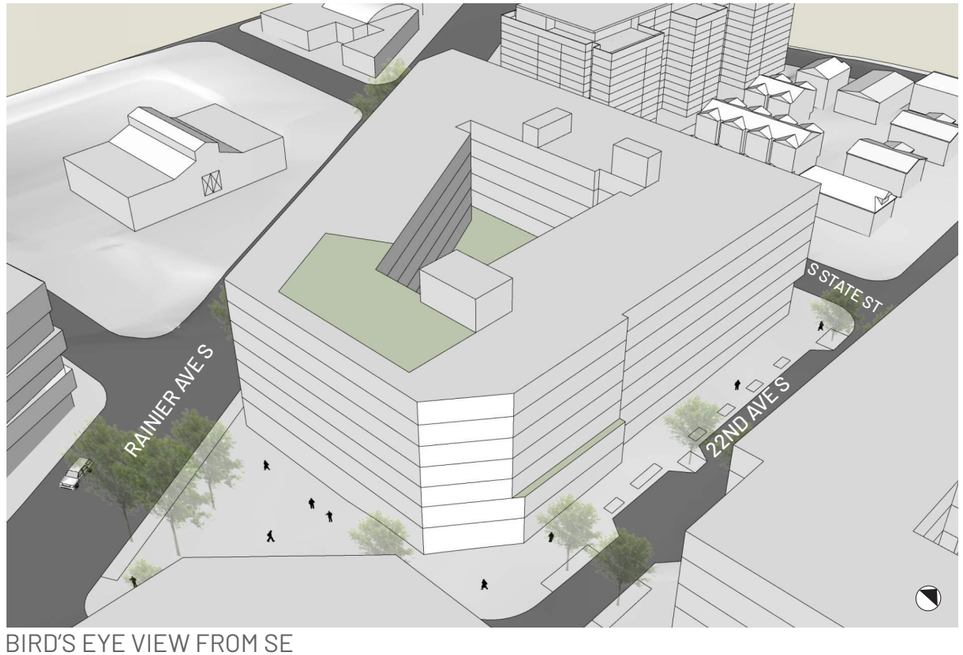
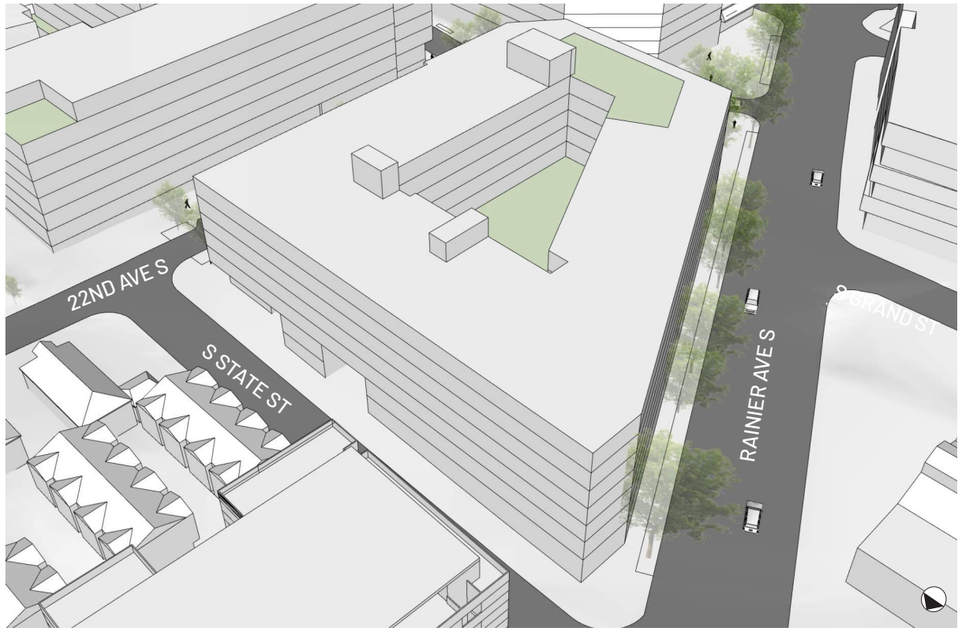
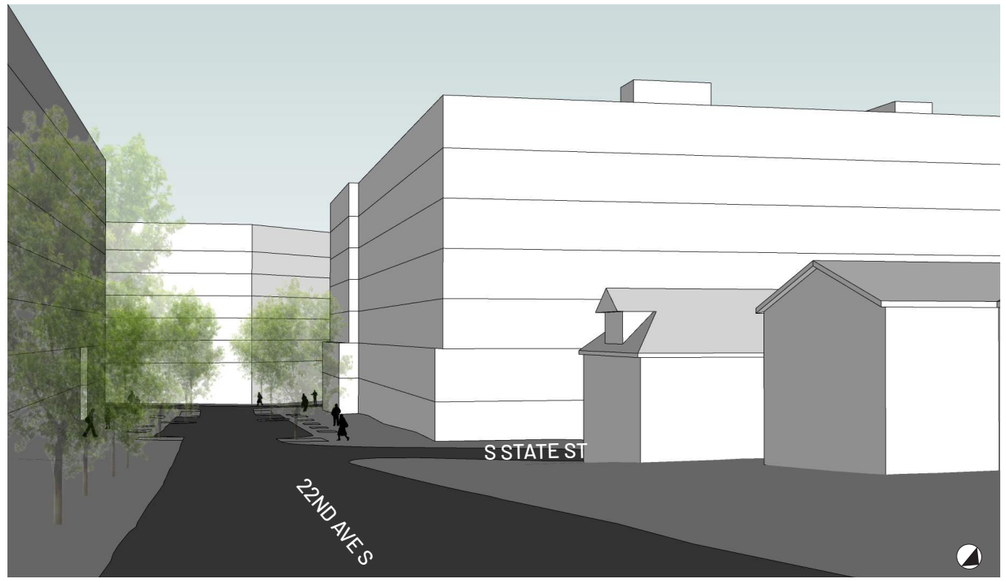


BIRD'S EYE VIEW FROM SE

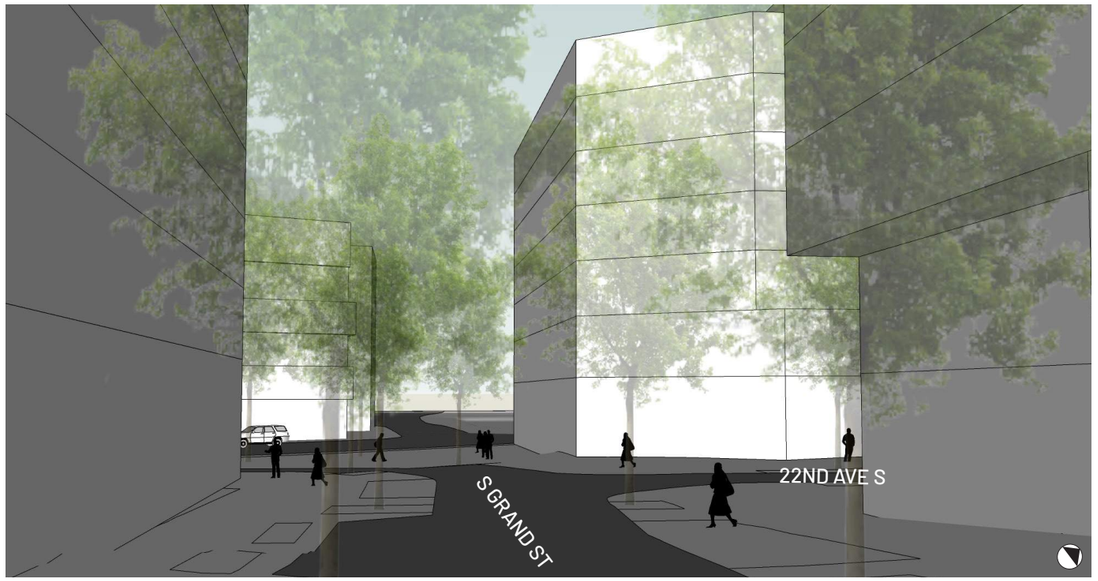


BIRD'S EYE VIEW FROM NW

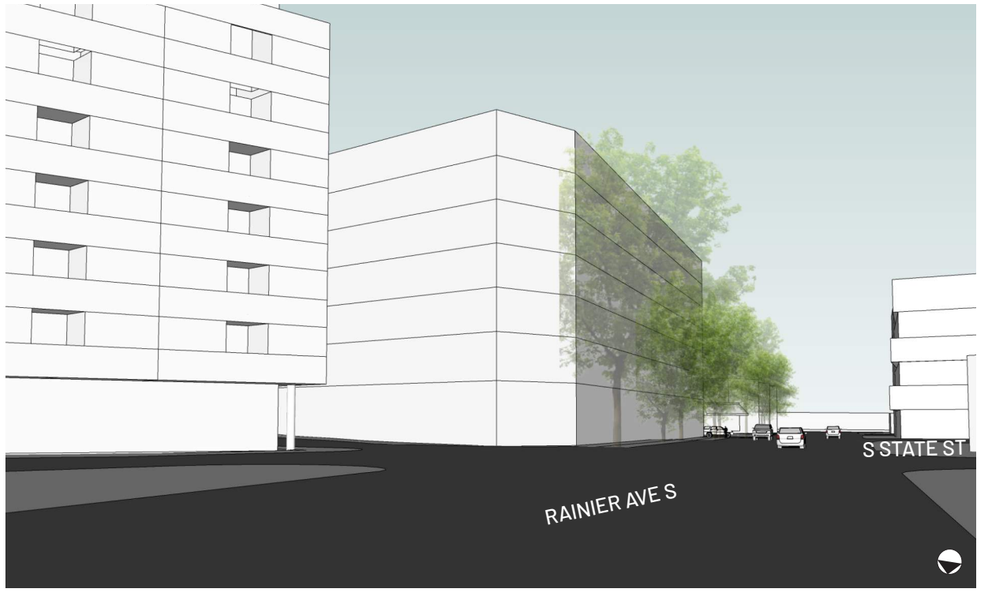
BIRD'S EYE VIEW FROM NE



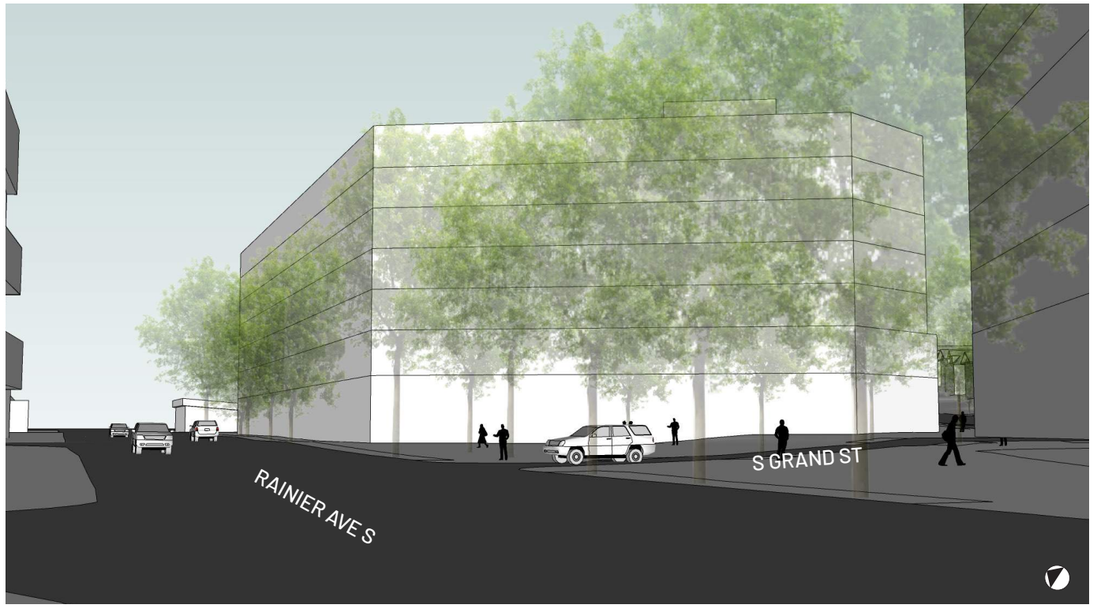
STREET VIEW LOOKING SOUTH ON 22ND AVE



GRAND ST PEDESTRIAN VIEW FROM EAST

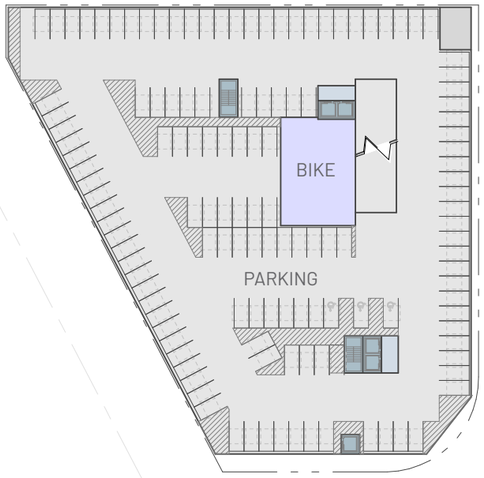


STREET VIEW LOOKING SOUTH ON RAINIER AVE S



STREET VIEW LOOKING NORTH ON RAINIER AVE S

MASSING CONCEPTS
OPTION A - FLOOR PLANS



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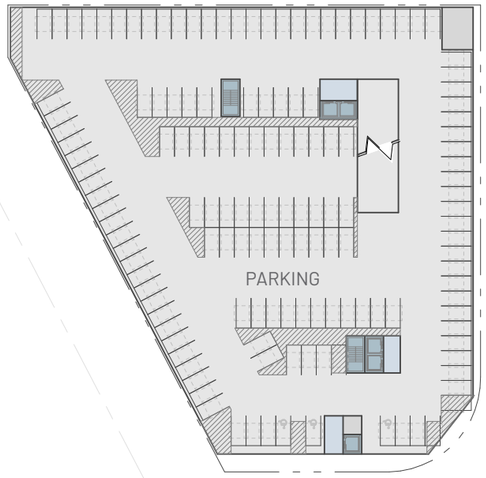
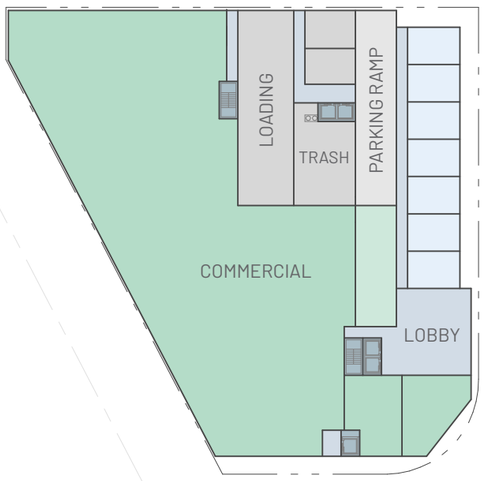


LEVEL P1



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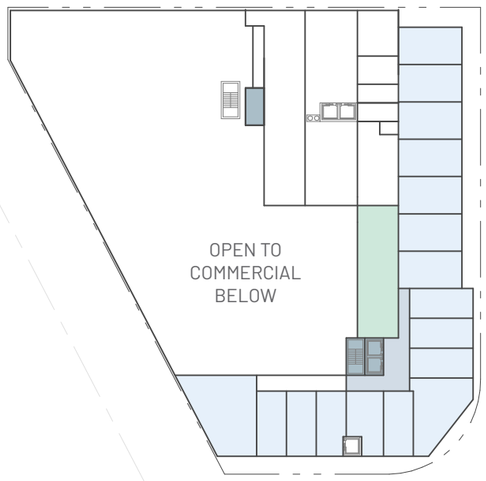
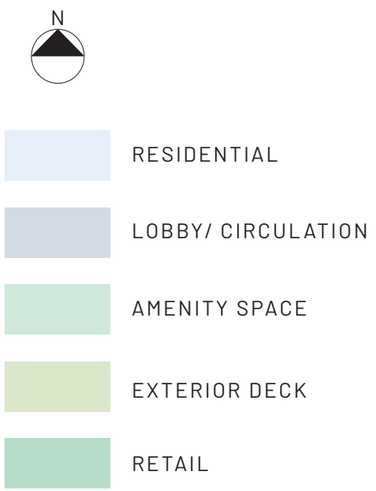
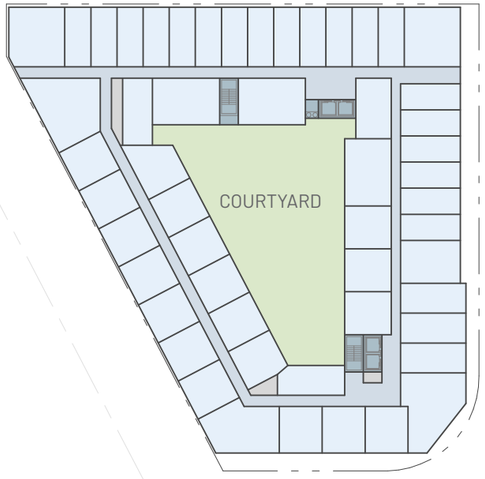


LEVEL 2





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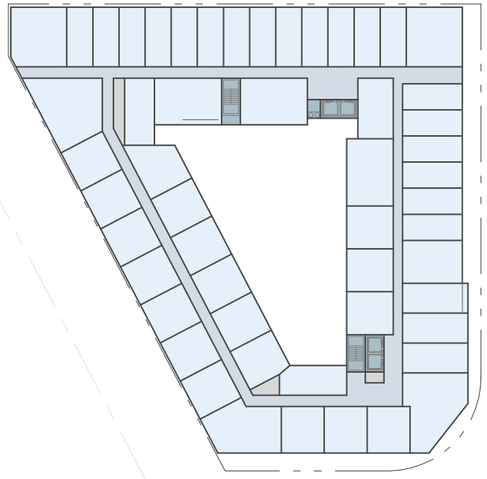
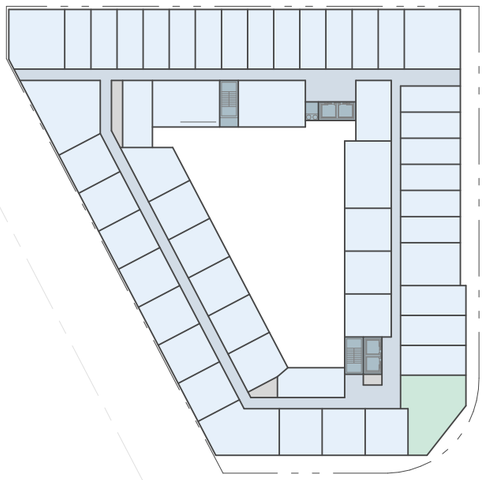
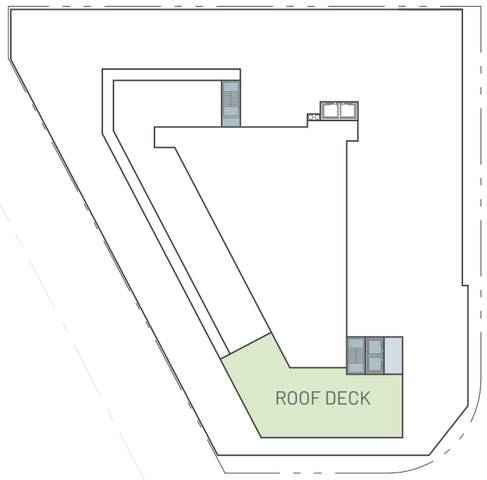


LEVEL 4-6



LEVEL 7



ROOF LEVEL

RESIDENTIAL

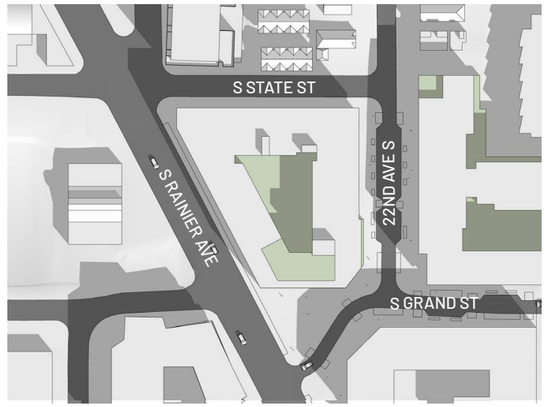
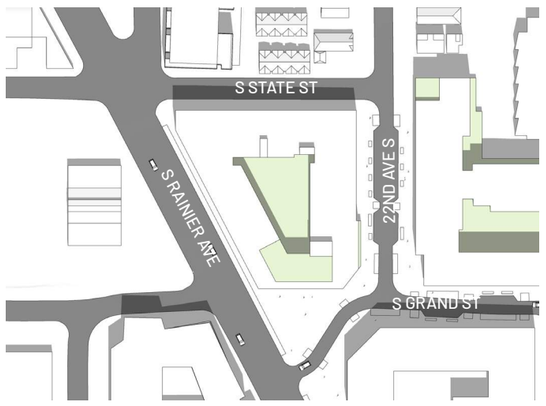
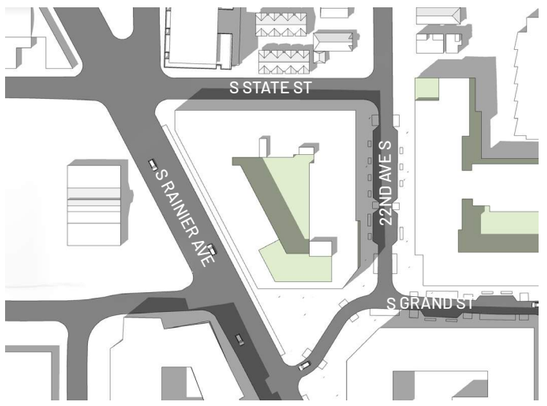
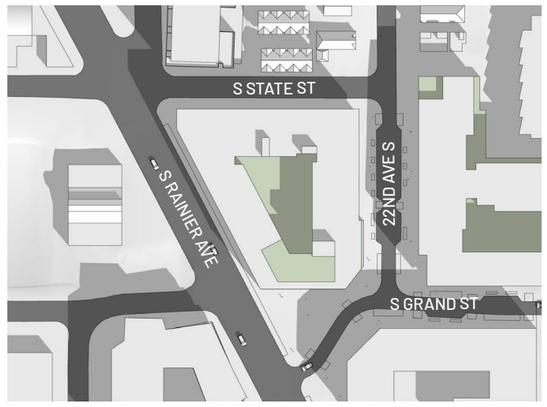
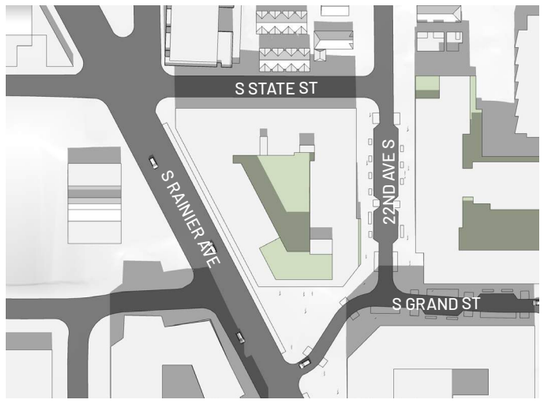
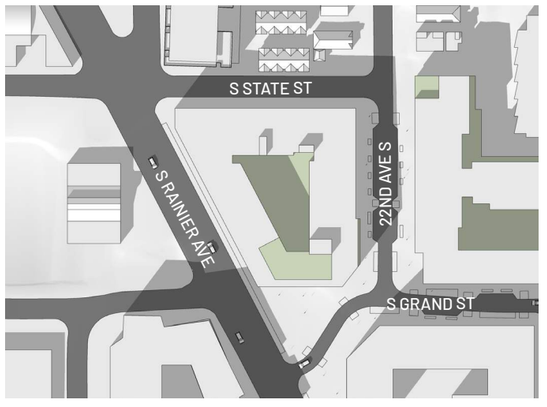
LOBBY/ CIRCULATION

AMENITY SPACE

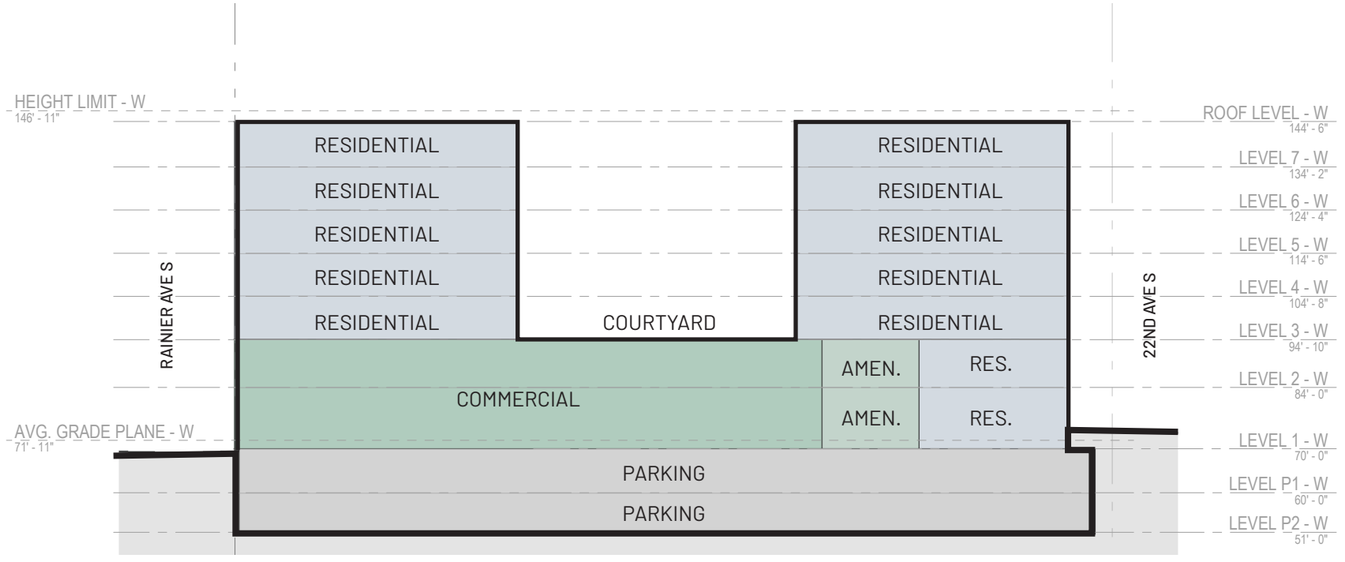
EXTERIOR DECK

RETAIL

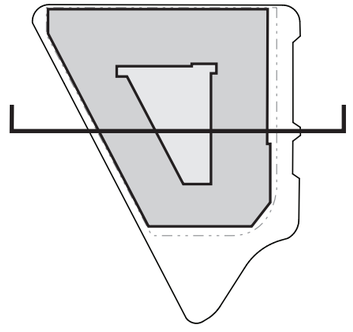
MASSING CONCEPTS
OPTION A - SUN STUDIES

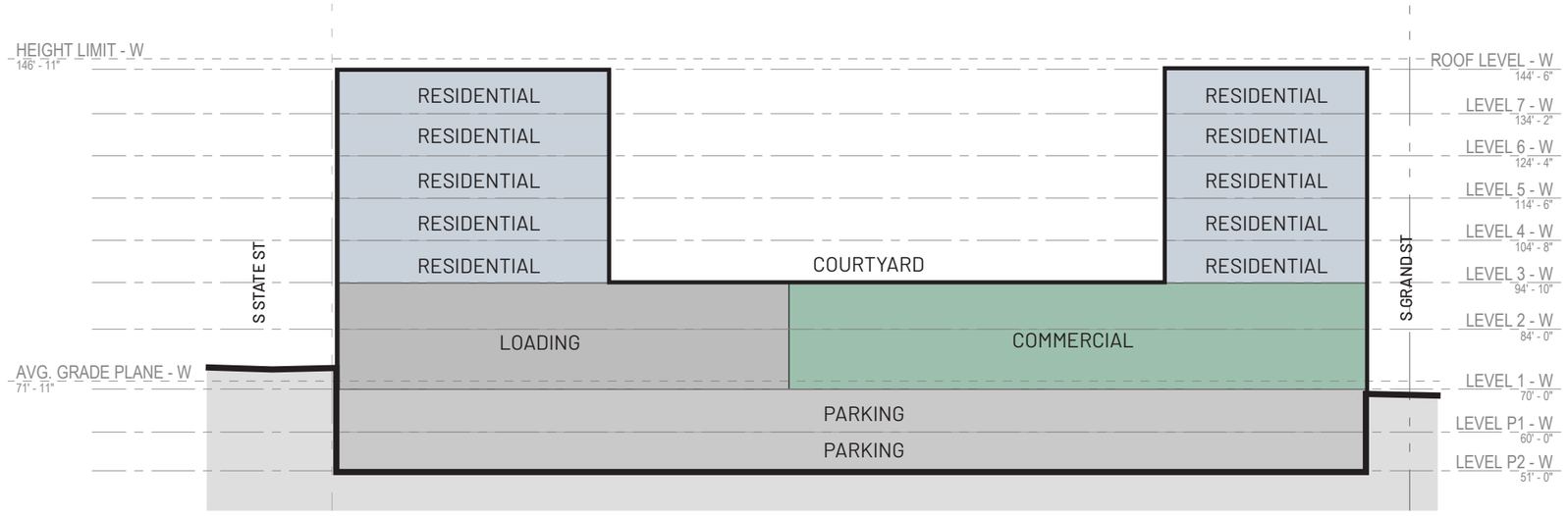
	10 AM	12 PM	2 PM
JUN 21			
MAR/SEP 21			
DEC 21			

OPTION A - BUILDING SECTION



SECTION





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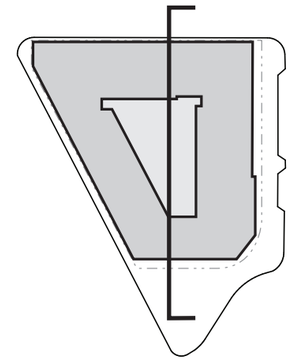
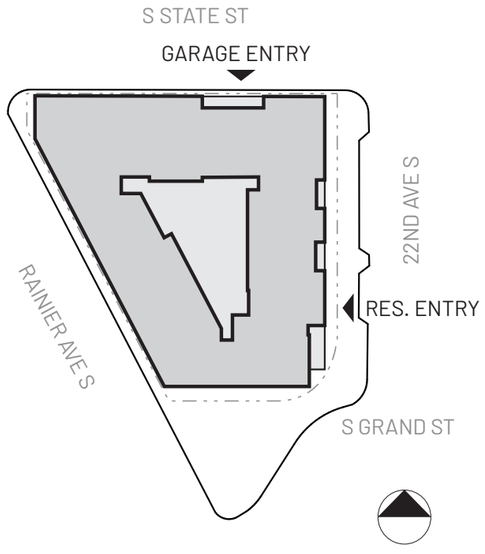


MASSING CONCEPTS
OPTION B - MASSING



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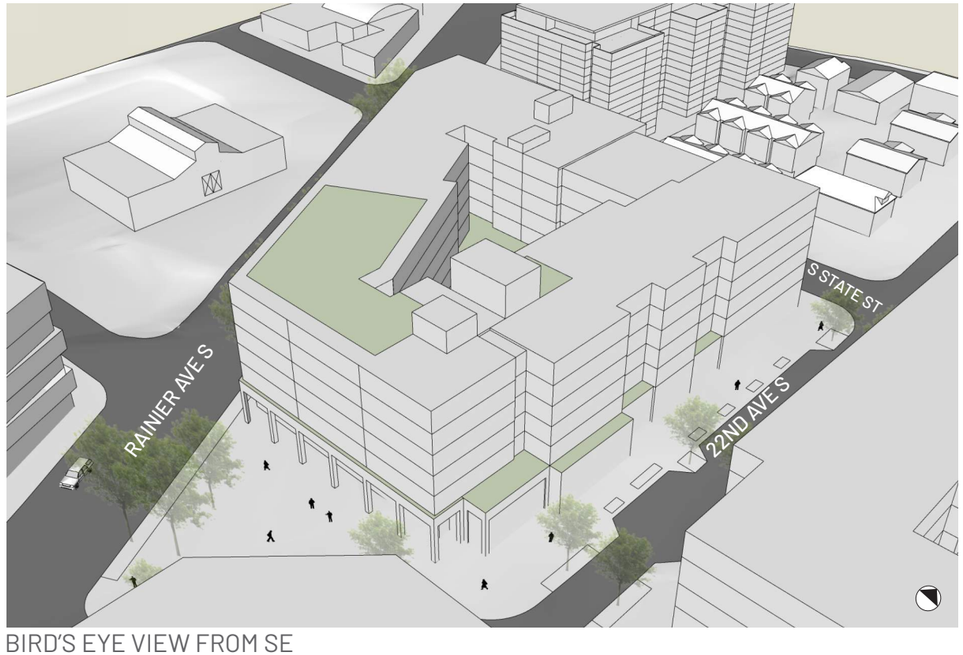


BIRD'S EYE VIEW FROM SE

BIRD'S EYE VIEW FROM NW

BIRD'S EYE VIEW FROM NE

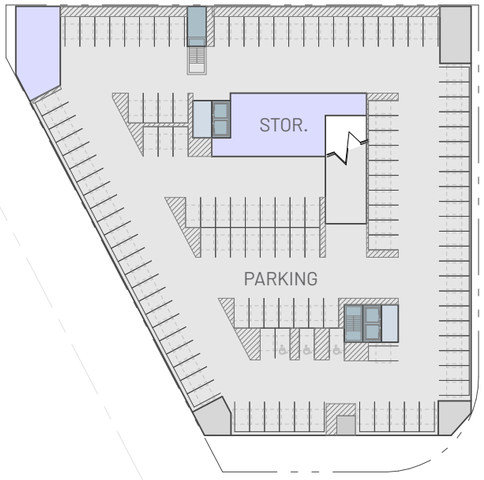
STREET VIEW LOOKING SOUTH ON 22ND AVE

GRAND ST PEDESTRIAN VIEW FROM EAST

STREET VIEW LOOKING SOUTH ON RAINIER AVE S

STREET VIEW LOOKING NORTH ON RAINIER AVE S

MASSING CONCEPTS
OPTION B - FLOOR PLANS



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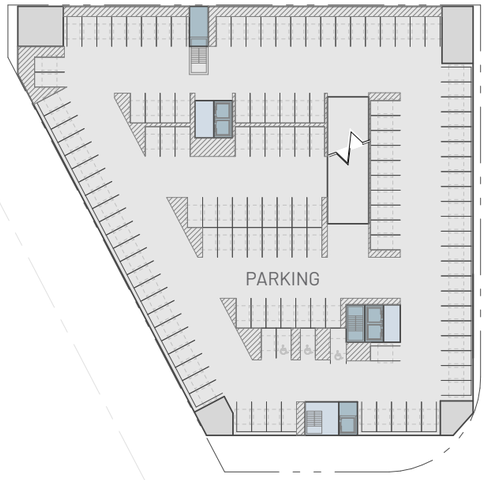
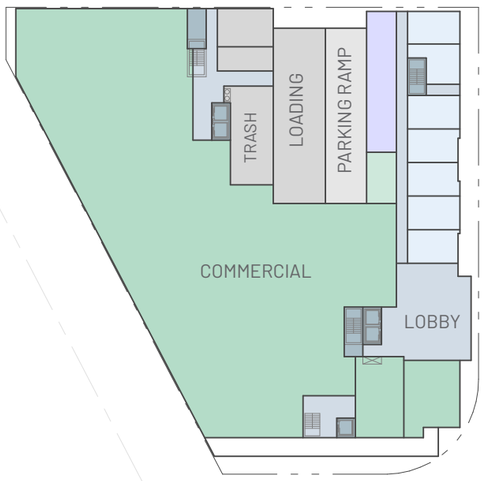
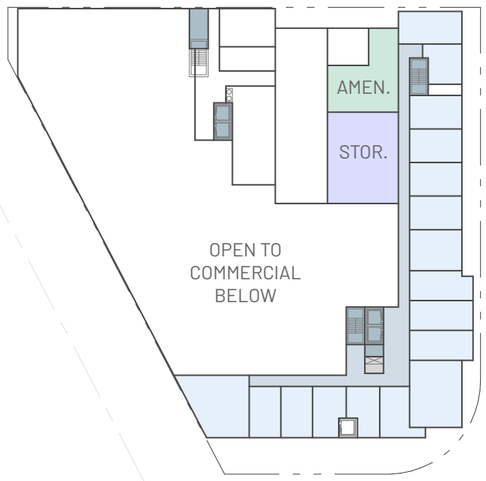


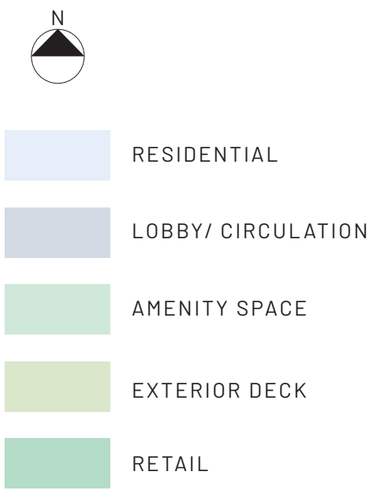
LEVEL P1

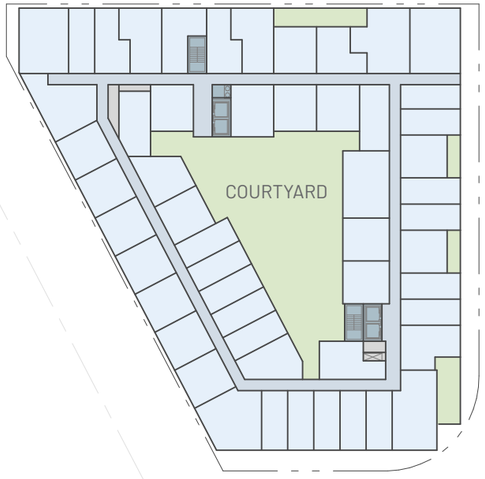


LEVEL 1

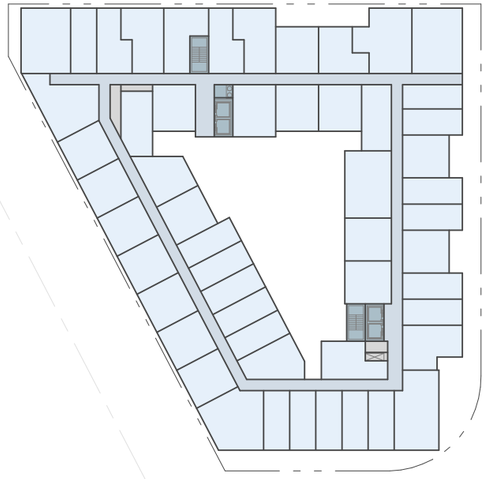


LEVEL 2

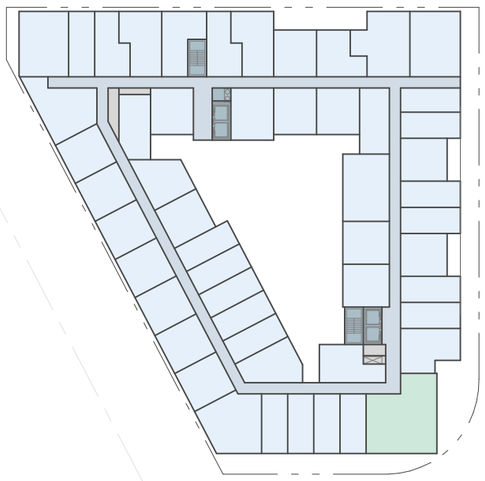




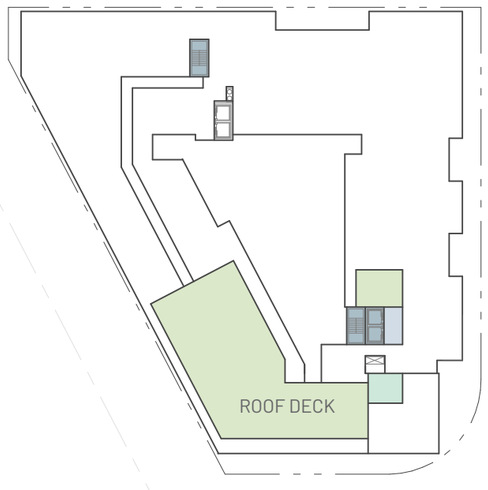
LEVEL3



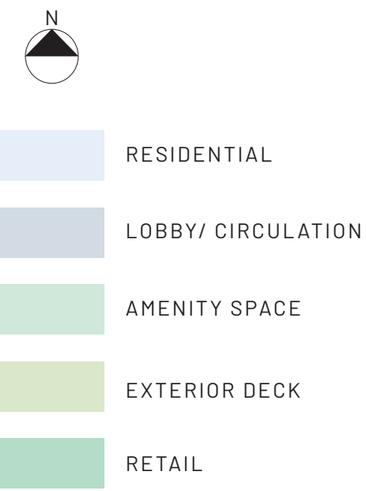
LEVEL 4-6



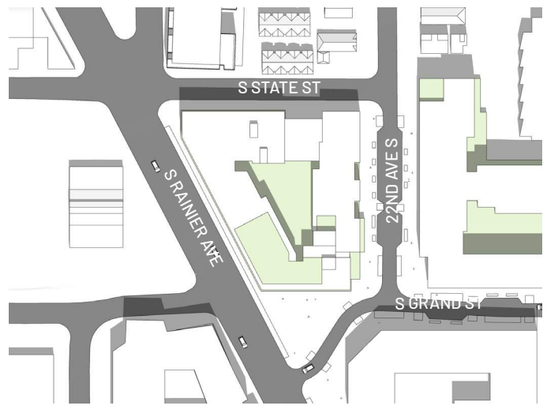
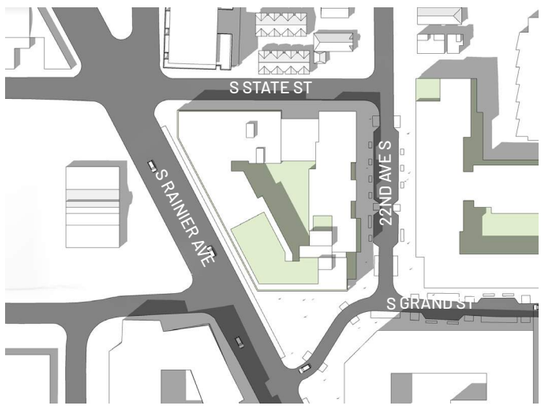
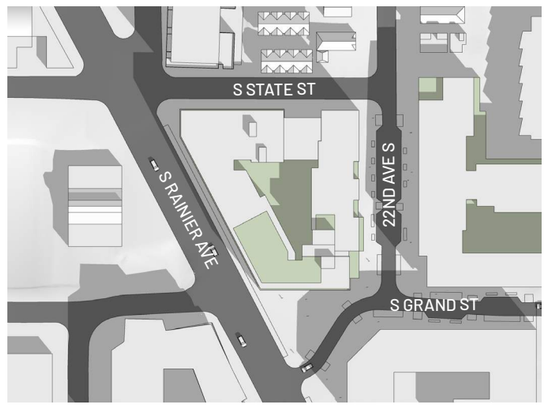
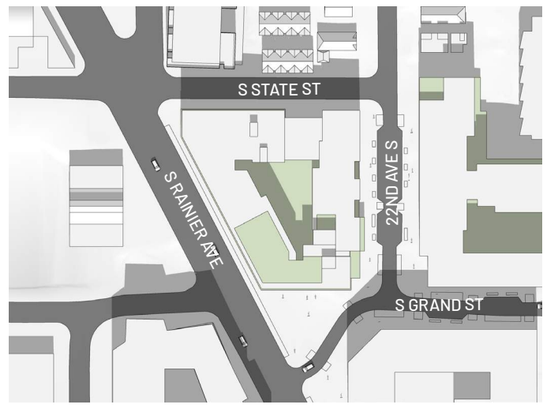
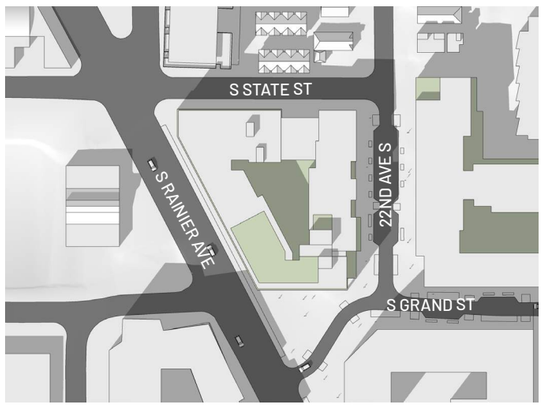
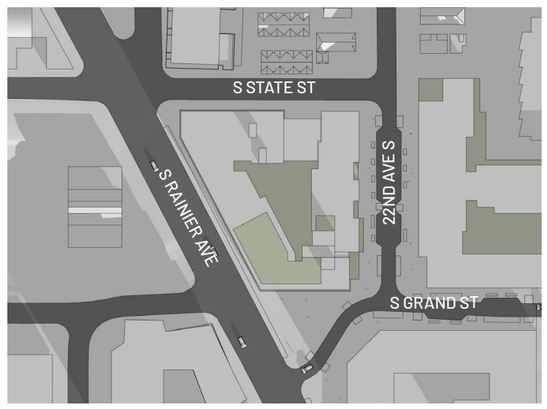
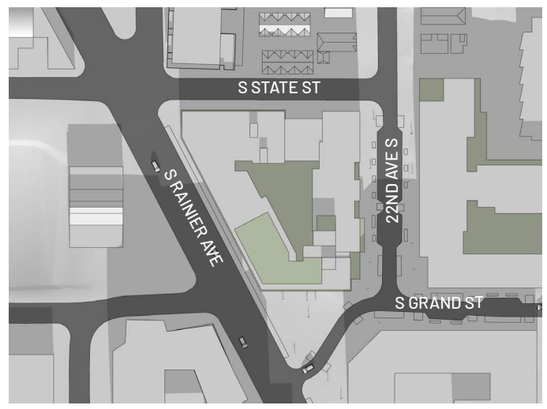
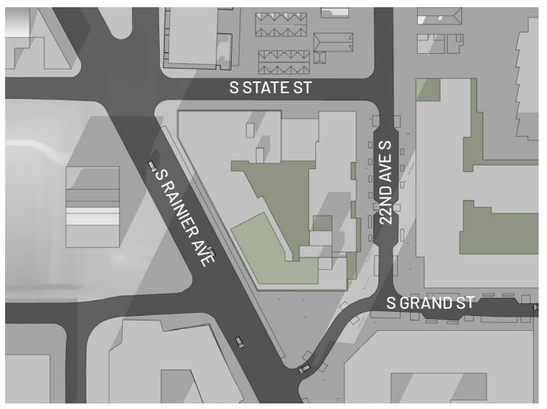
LEVEL 7



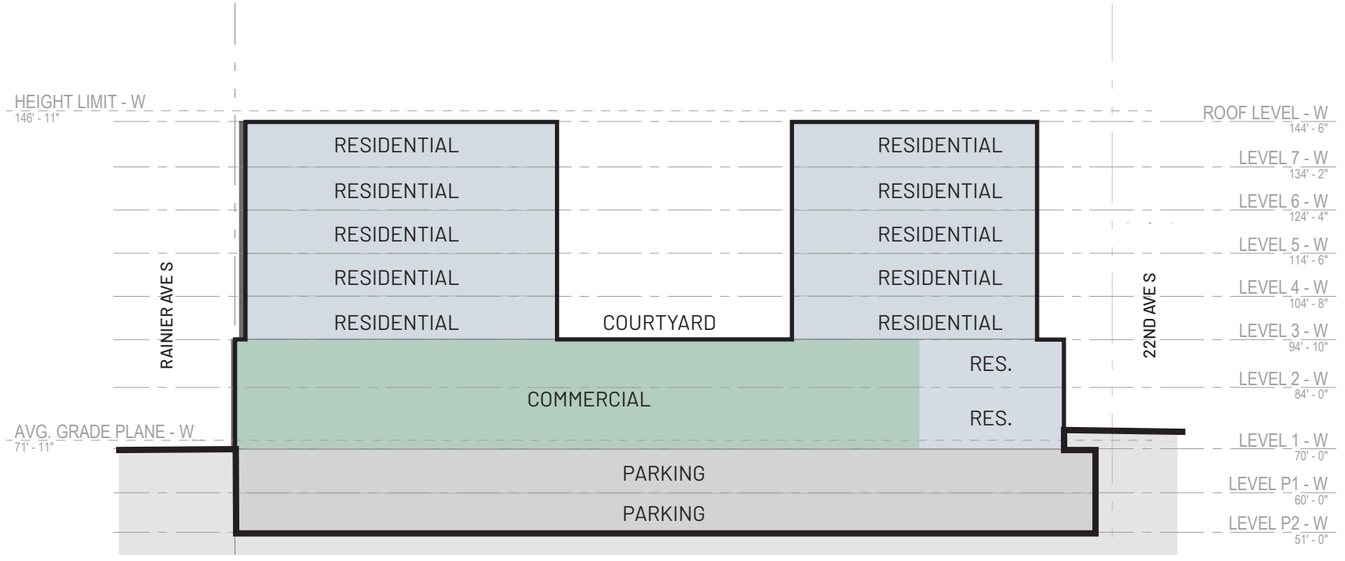
ROOF LEVEL



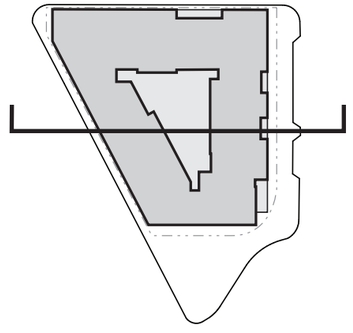
MASSING CONCEPTS
OPTION B - SUN STUDIES

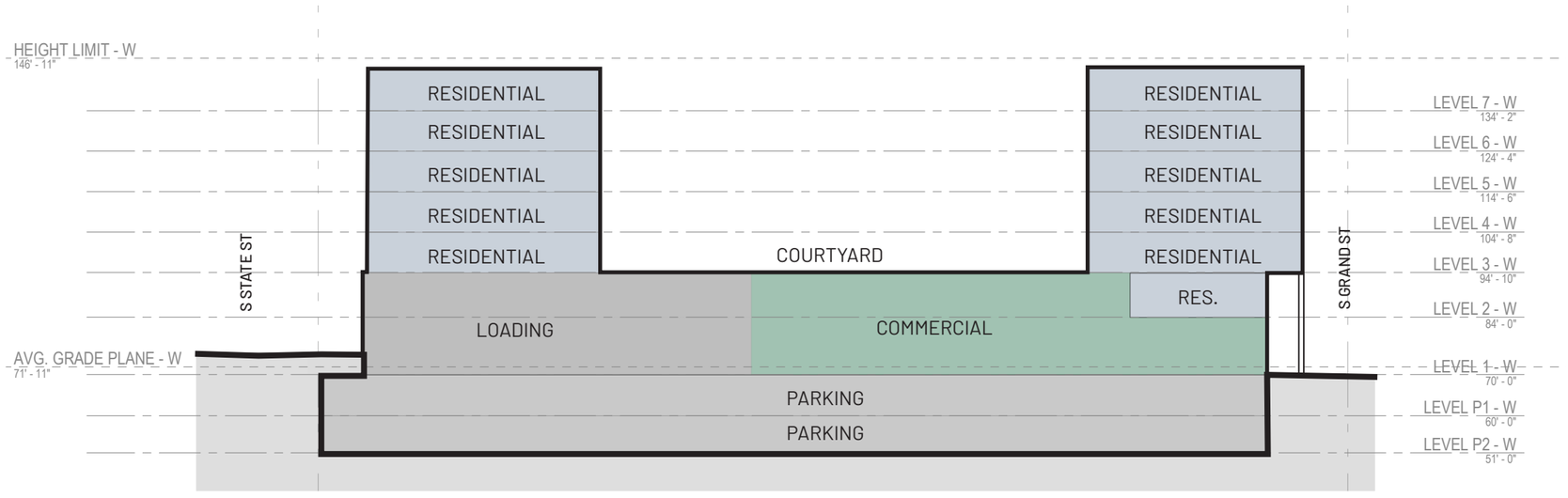
	10 AM	12 PM	2 PM
JUN 21			
MAR/SEP 21			
DEC 21			

OPTION B - BUILDING SECTION



SECTION





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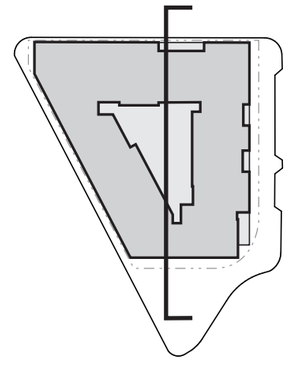
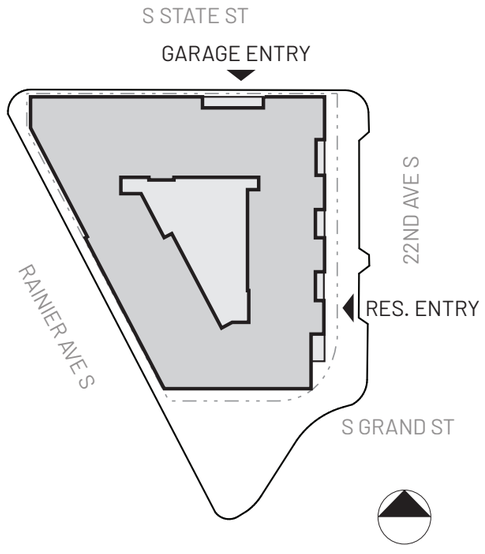


MASSING CONCEPTS
OPTION C - MASSING



PROPOSED GROSS RESIDENTIAL: 337,850 SF

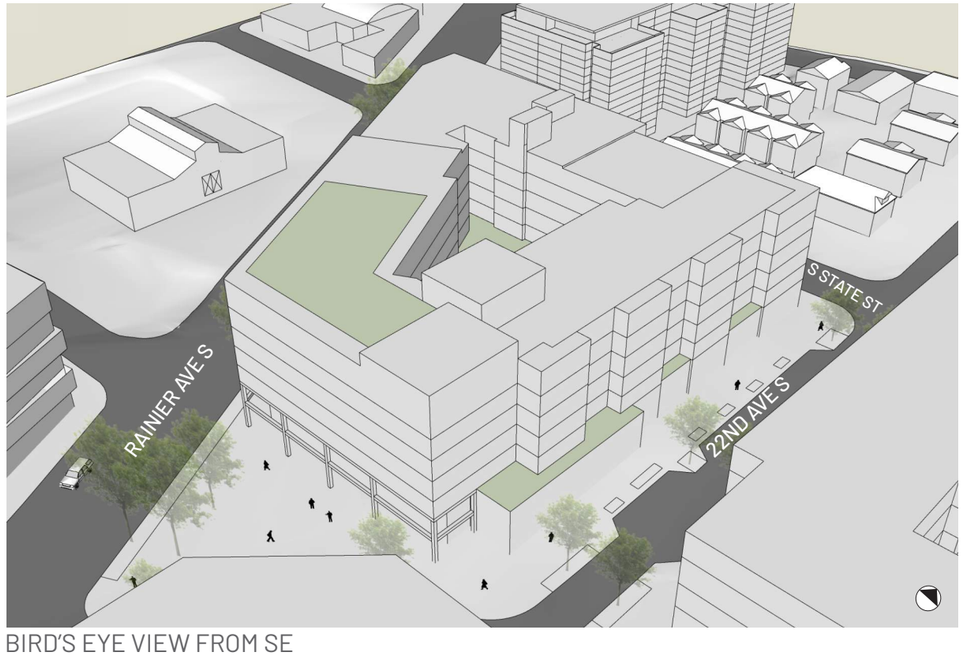
- Total Residential Units: 280
- Total Parking: 262
- Total Commercial Area: 26,638 SF

PROS

- Greater facade breakdown along Rainier Ave S and 22nd Ave S
- Recessed Porch concept (portico) at south plaza
- Increased modulation and opportunity for stoops/patios along 22nd Ave S

CONS

- Large curb cut on S State S (departure required)



BIRD'S EYE VIEW FROM SE

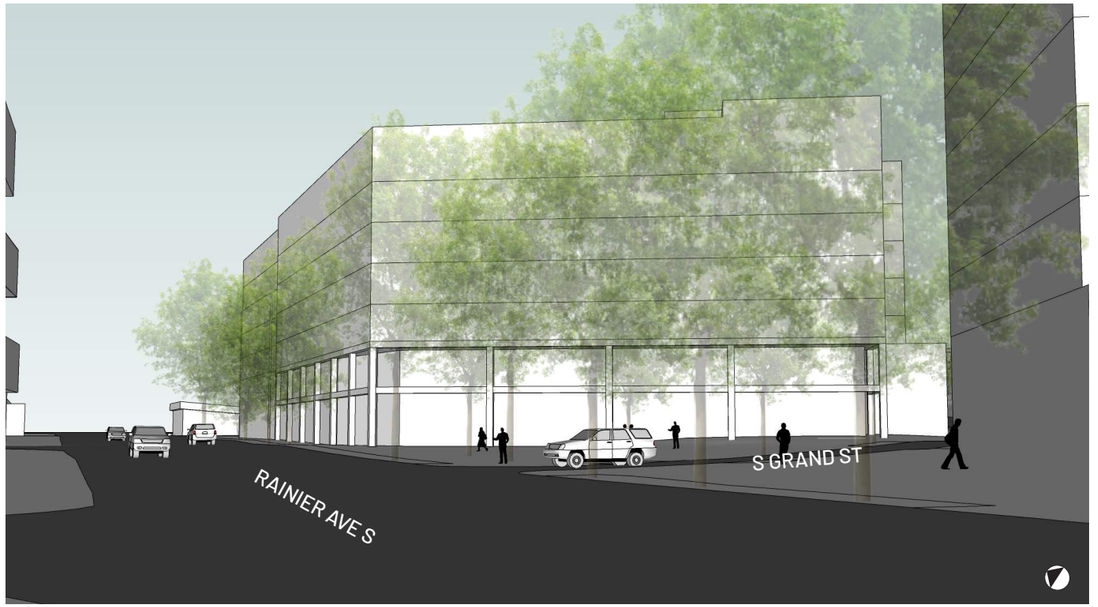
BIRD'S EYE VIEW FROM NW

BIRD'S EYE VIEW FROM NE

STREET VIEW LOOKING SOUTH ON 22ND AVE

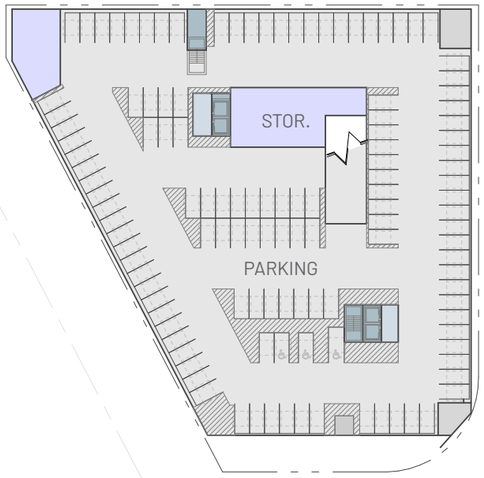
GRAND ST PEDESTRIAN VIEW FROM EAST

STREET VIEW LOOKING SOUTH ON RAINIER AVE S

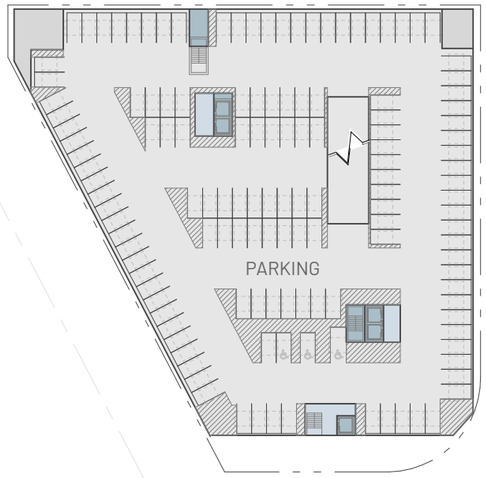


STREET VIEW LOOKING NORTH ON RAINIER AVE S

MASSING CONCEPTS
OPTION C - FLOOR PLANS



LEVEL P2



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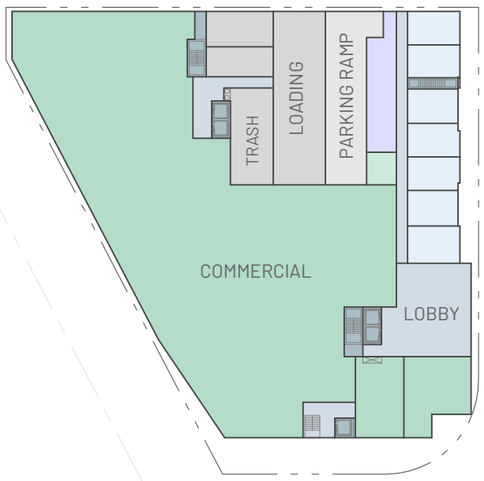
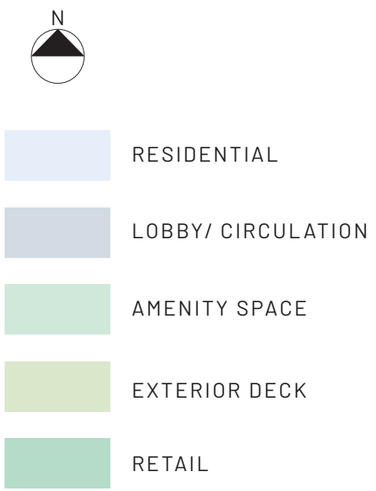


LEVEL 1

LEVEL 2



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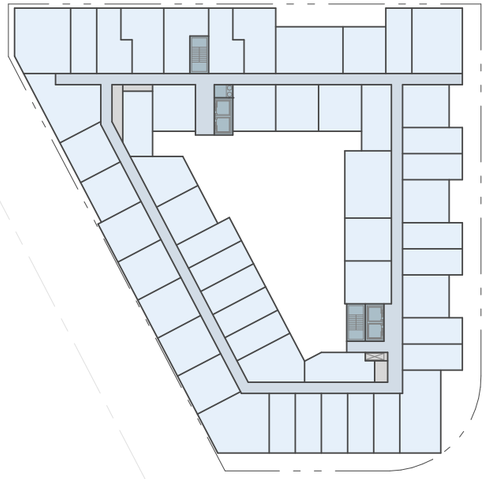
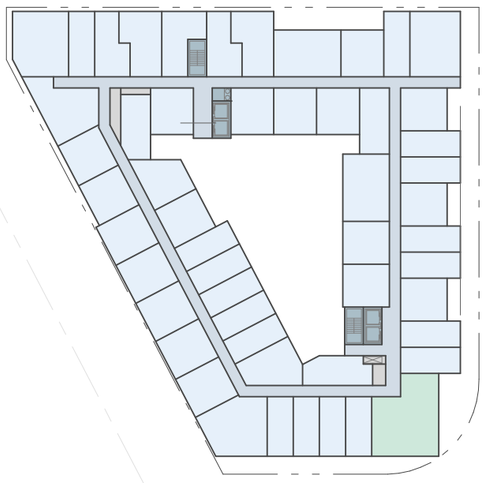
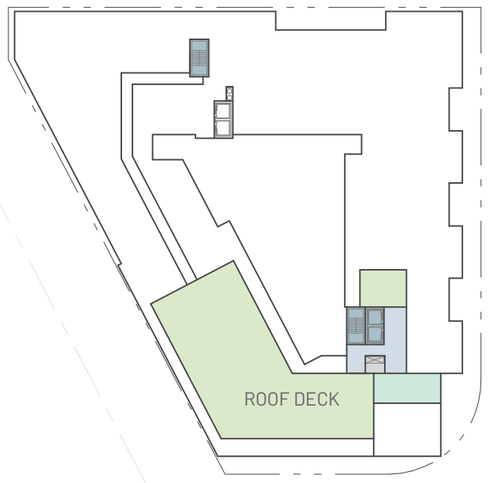


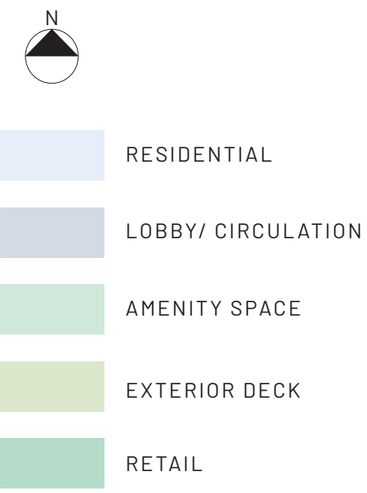
LEVEL 4-6



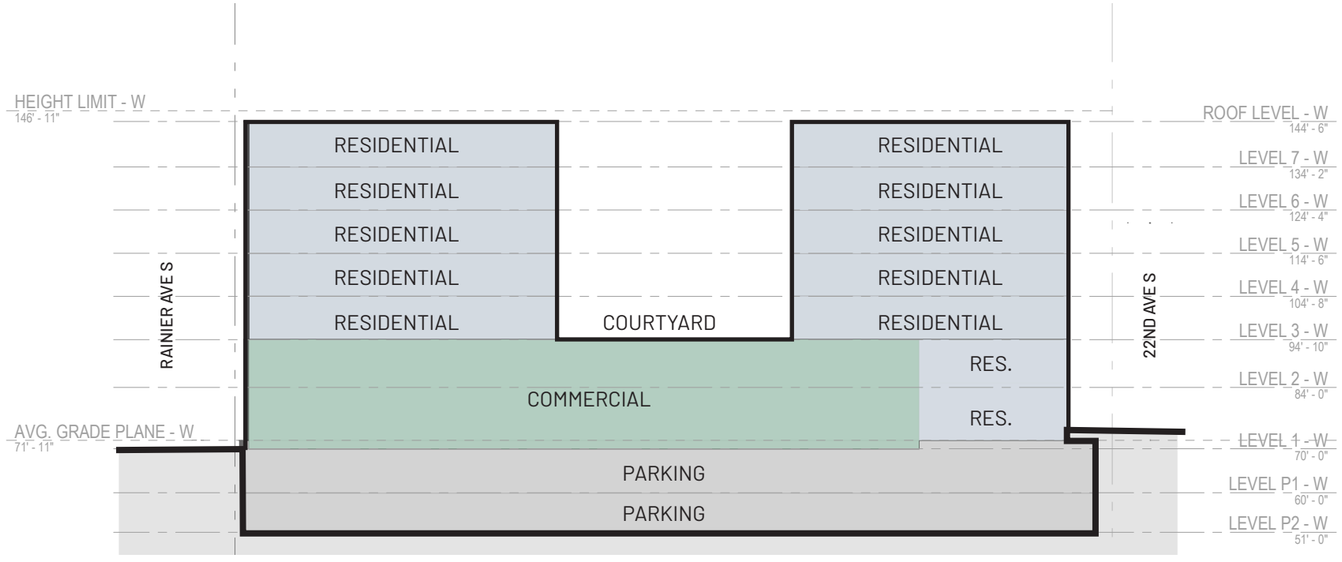
LEVEL 7



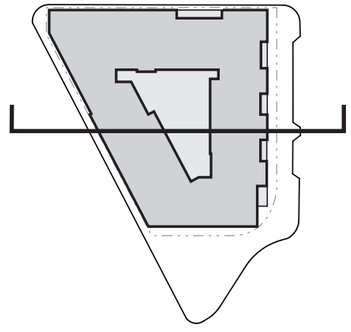
ROOF LEVEL

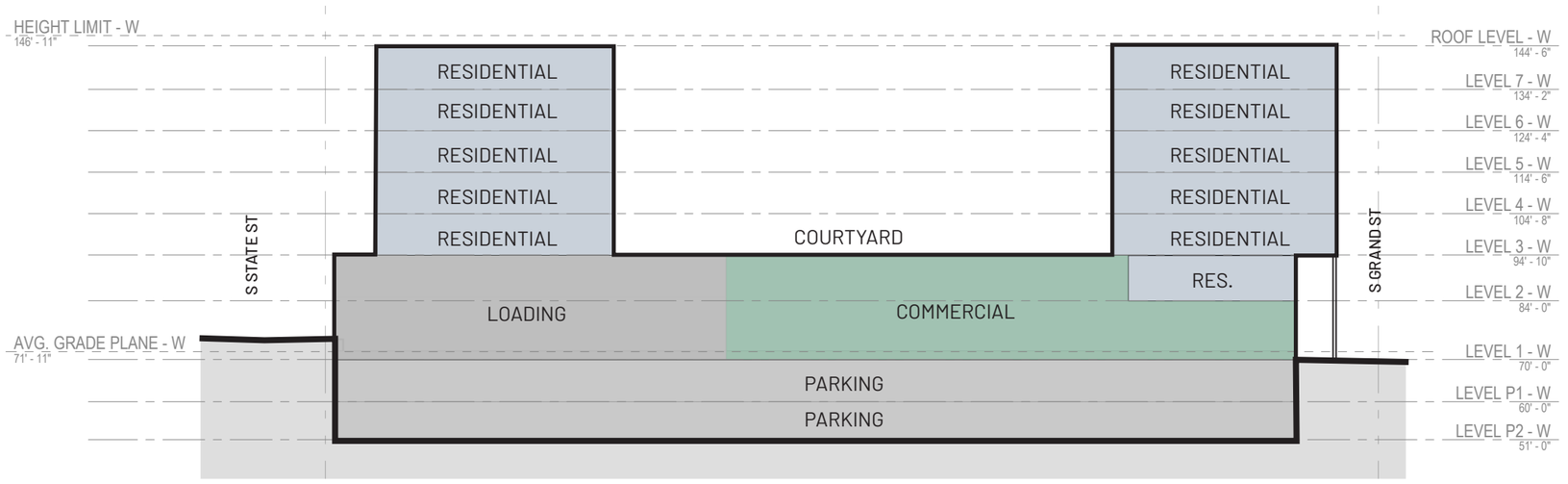


MASSING CONCEPTS
OPTION C - SUN STUDIES



SECTION





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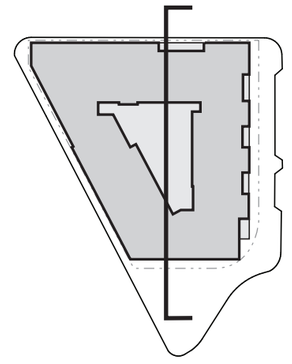


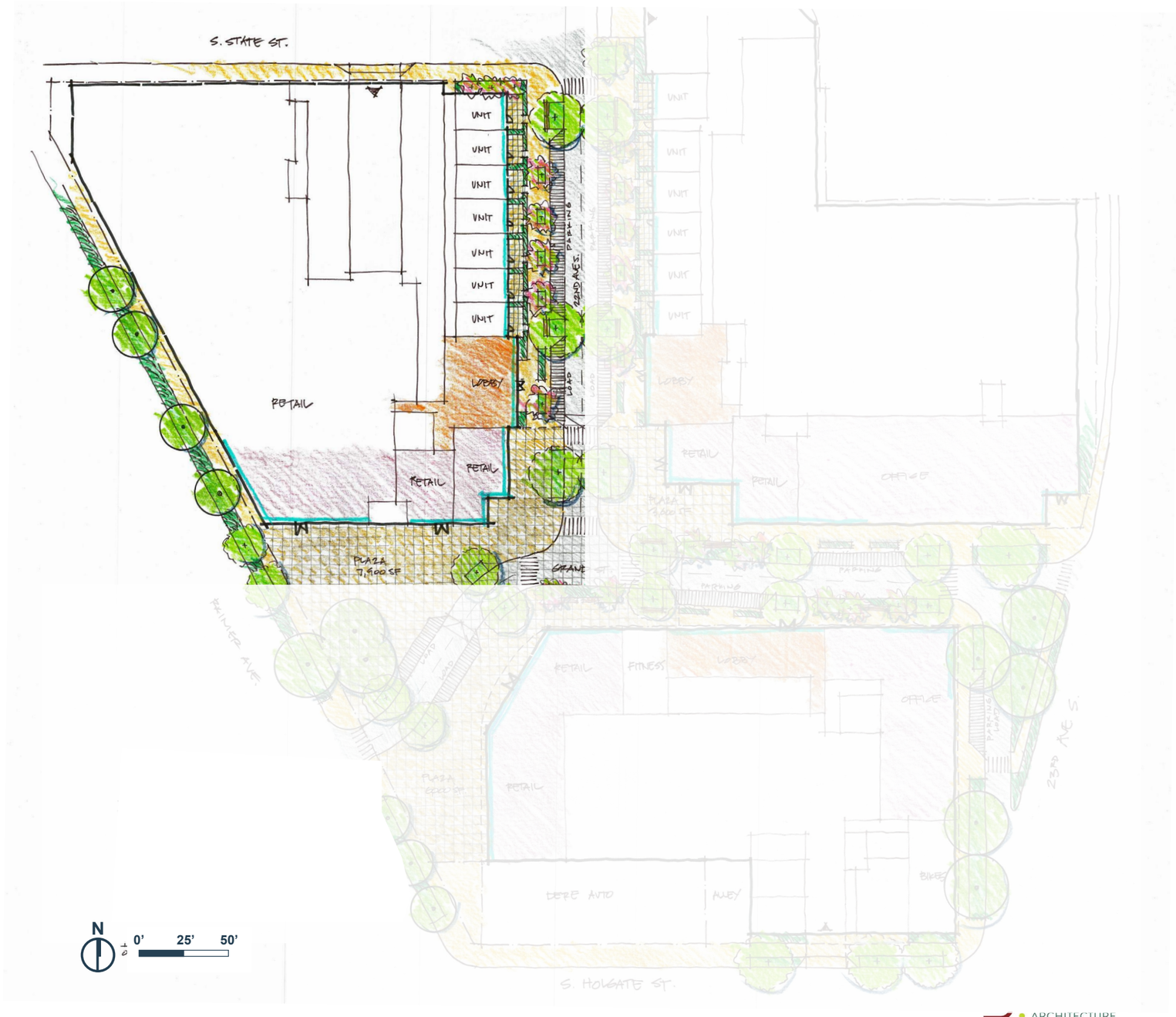
RESIDENTIAL STREET CHARACTER

STORMWATER INTEGRATION

GREEN PEDESTRIAN EXPERIENCE

RETAIL SPILL OUT

LOBBY ENGAGEMENT



DEPARTURES
POTENTIAL DEPARTURE #1

DEVELOPMENT STANDARD

23.54.030.F.2.B.2: For two-way traffic, the minimum width of curb cuts is 22 feet, and the maximum width is 25 feet, except that the maximum width may be increased to 30 feet if truck and auto access are combined

DEPARTURE REQUEST/PROPOSAL:

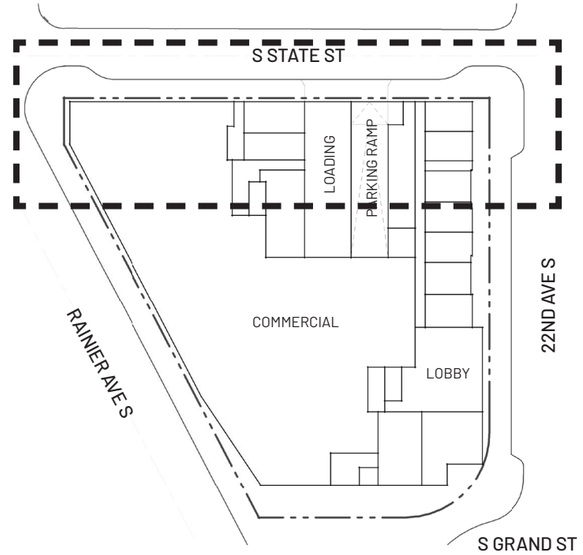
Allow a curb cut in excess of 30 feet on S State Street, an access street.

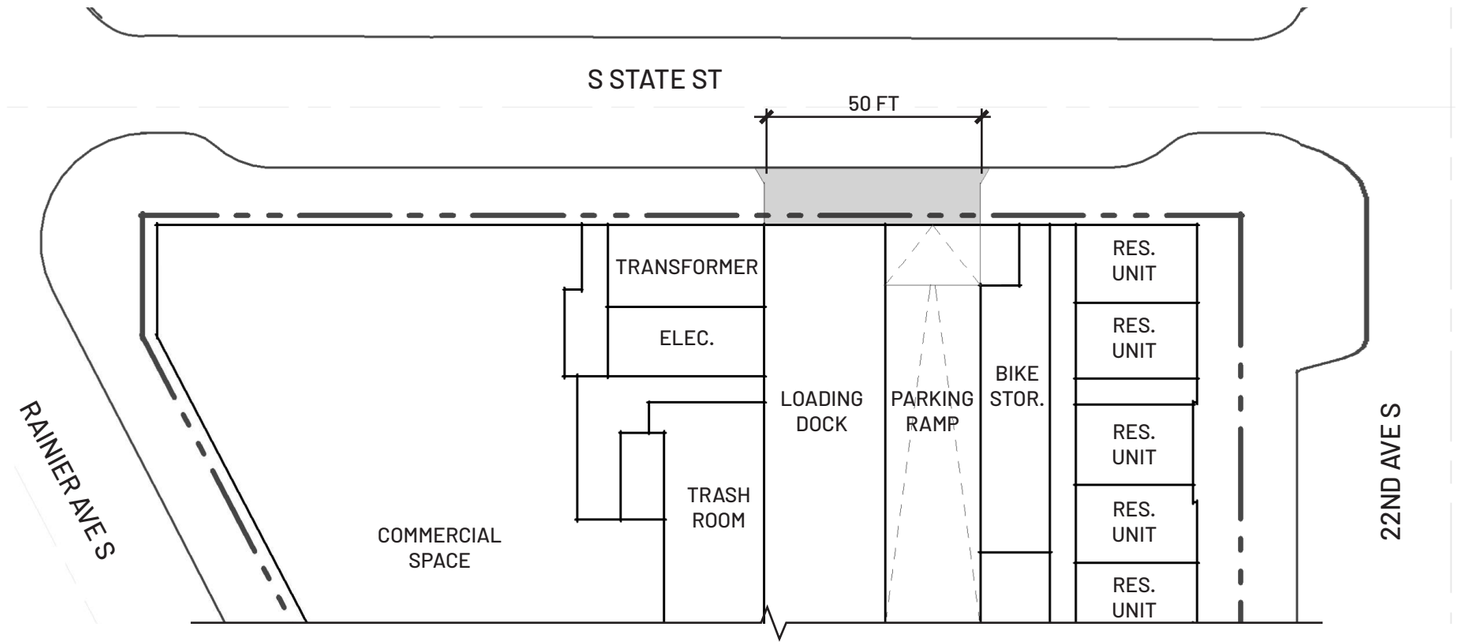
JUSTIFICATION

One combined curb cut is proposed for parking access and loading dock access. The single combined curb-cut consolidates vehicular access and maximizes uninterrupted sidewalks along S State St. City-wide Design Guideline DC1.B.1 encourages minimizing conflict between vehicles and non-motorists and encourages shared driveway use and minimizing number of curb cuts.

SUPPORTING DESIGN GUIDELINE

DC1.B.1 Access Location and Design





DEVELOPMENT STANDARD

23.47A.008.D.2: The floor of a dwelling unit located along the street-level, street-facing facade shall be at least 4 feet above or 4 feet below sidewalk grade or be set back at least 10 feet from the sidewalk

DEPARTURE REQUEST/PROPOSAL:

Allow one side of dwelling unit exterior facing S State S to be setback less than 10 feet from sidewalk.

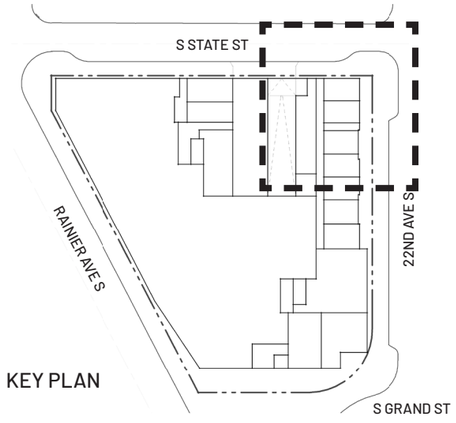
JUSTIFICATION

The primary street-facing facade of the street-level dwelling unit is along 22nd Ave S and is setback by 10 ft to comply with the standard as well as provide landscape and stoop/porch conditions. The north side of the unit that is street-level and street facing will have reduced number of window openings to provide privacy. If this wall was to be setback, a potentially unsafe alcove condition would be created with few 'eyes' on it. Additionally, Central Area design guidelines encourage building forms to engage the ground plane.

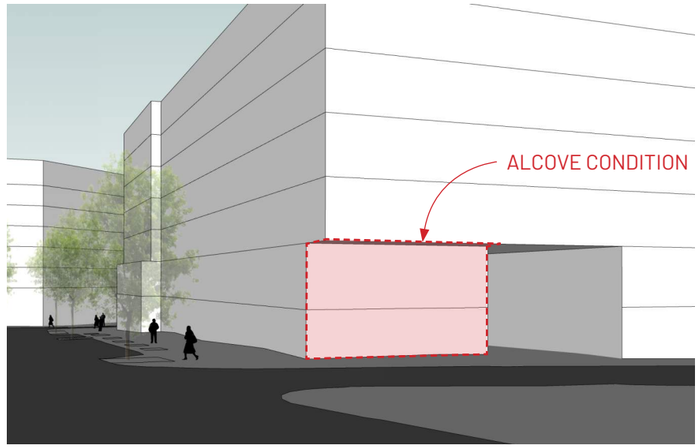
SUPPORTING DESIGN GUIDELINE

PL2.B.1 Eyes on the Street

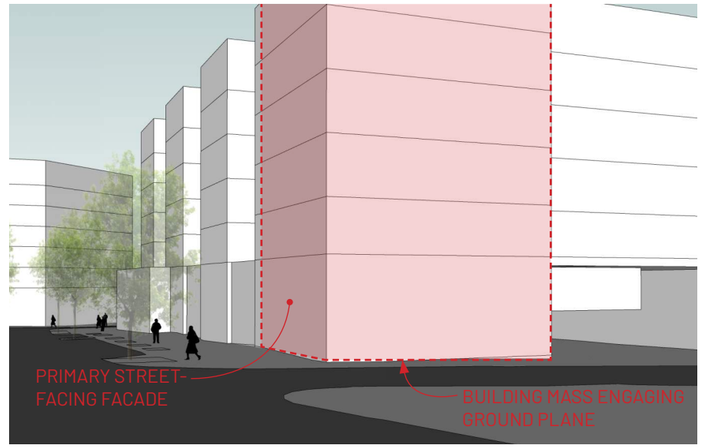
DC2.1.b Building Layout and Massing



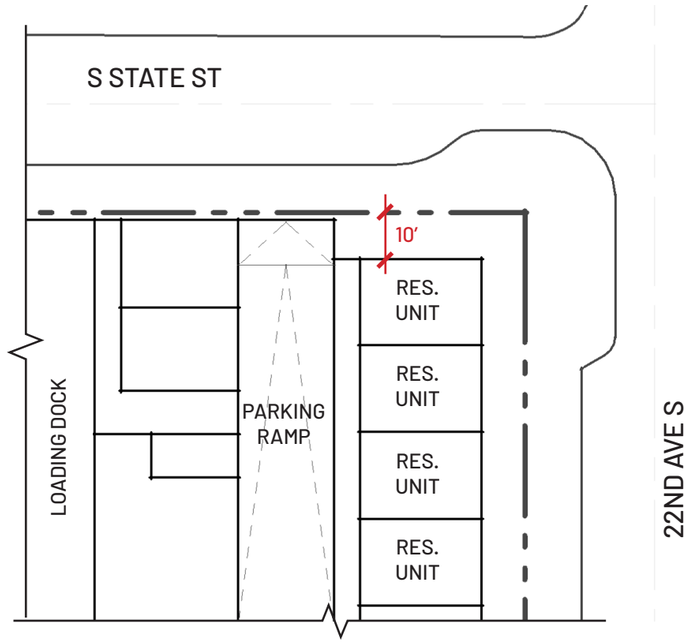
KEY PLAN



STREET VIEW

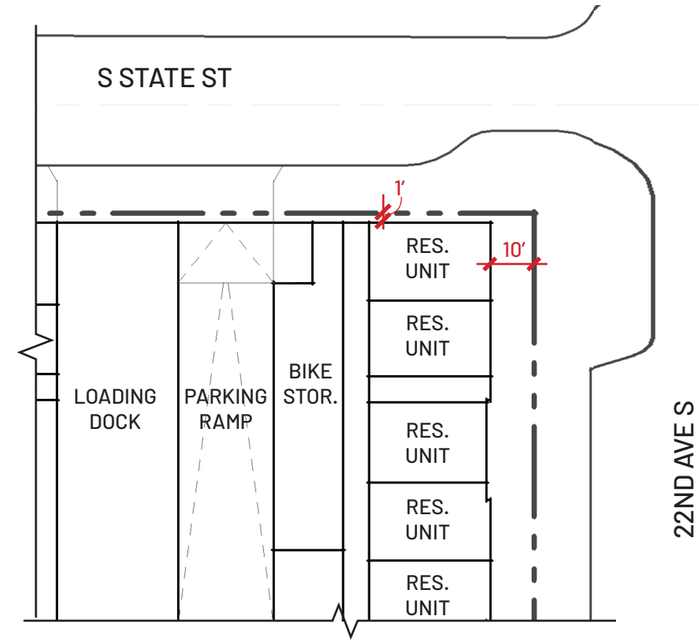


STREET VIEW



PLAN

CODE COMPLIANT CONDITION



PLAN

PROPOSED CONDITION