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Construction Completion Report Environmental Remediation System Installation

Circle K 1461 Seattle, Washington

20 May 2025

Prepared for

Toxics Cleanup Program
3190 160th Avenue SE
Bellevue, Washington 98008-5452

KJ Project No. 2196008*00

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Section 1: Introduction

Kennedy/Jenks Consultants, Inc. (Kennedy Jenks) has prepared this Construction Completion Report (CCR) on behalf of the Washington State Department of Ecology (Ecology) to summarize work completed in 2023, 2024, and 2025 at the Circle K Station #1461 (site) under the City of Seattle Construction permit 6996584-CN. The site is located at 2350 24th Avenue East in the City of Seattle, King County, Washington (see Figure 1). This site is listed on the Ecology Site Information System and Hazardous Sites List as Circle K 1461, under cleanup site ID 5086 and facility/site ID 2322.

The remedial action activities described herein were performed in general accordance with the Project Manual dated December 2022 prepared jointly by Ecology and Kennedy Jenks (Kennedy Jenks 2022). The Project Manual contains construction issue specifications and plans (Project Documents) for construction. The system will be operated in accordance with the Operations and Maintenance Manual (O&M Manual) and associated Compliance Monitoring Plan (CMP) and Sampling and Analysis Plan / Quality Assurance Project Plan (SAP/QAPP) (Kennedy Jenks 2025a).

Through a competitive bidding process under a public works contract, Ecology designated Glacier Environmental Services, Inc. (Glacier, Contractor) as the responsive low bidder. Glacier received Notice to Proceed on 28 April 2023.

This CCR describes remedial action activities performed, including contractor means and methods, obstacles encountered, and changes to construction issue Project Documents. Record Drawings, photographs, and other pertinent field documents are provided in the appendices of this report.

Section 2: Site Description and Background

2.1 Site Description

From 1968 to 1990, the site was operated as a Circle K-branded gasoline service station. During operation, four gasoline underground storage tanks (USTs), one pump island, one waste oil UST, and one heating oil UST were located at the site, as shown in Figure 2. The site was redeveloped in 1990 and 1991 to its current configuration. Two businesses currently operate at the site including a general store (Mont's Market) and a dry-cleaning business (Jay's Cleaners).

The site is located on Tax Parcel 6788201335 and is zoned for commercial use. According to the King County Department of Assessments, the tax parcel is currently owned by Mr. Kuk Jin Choung and Kathy-Kyung D. Choung. The legal description of the parcel is:

PIKES 2nd ADD TO UNION CITY 1 & 2 LESS E 6 FT; PLAT BLOCK 29, PLAT LOT 1-2

Jay's Cleaners is operated by the Choung family. The Mont's Market space is owned by the Choung family but is leased out and operated by another party.

2.2 Site History and Previous Investigations

2.2.1 Site History Prior to 2016

In 1989, a leak was discovered in one of the four on-site gasoline USTs. It was estimated that approximately 4,000 to 6,000 gallons of gasoline were released to the subsurface. Following the discovery of the release, all six on-site USTs and the pump island were removed. In addition, approximately 900 cubic yards (cy) of petroleum hydrocarbon-containing soil were excavated and removed from the site.

A free product recovery, groundwater treatment, and vapor extraction system were installed at the site prior to 6 December 1989 by Chemical Processors, Inc., Environmental Services Division. The soil vapor extraction (SVE) system reportedly operated from the early 1990s until 1997, at which time it was shut down because no significant hydrocarbons were detected in the extracted soil vapor for 2 consecutive months.

2.2.2 Remedial Investigation and Feasibility Study

In April 1992, Ecology entered into Consent Decree No. 82-2-08095-8 (CD) with Mr. Kuk Jin Choung and Ms. Kathy-Kyung D. Choung, owners of the property, to conduct a remedial investigation and feasibility study (RI/FS) and develop a cleanup action plan (CAP) for the site. After completion of the RI/FS and CAP, the CD requires performance of the cleanup action to protect human health and the environment in accordance with Model Toxics Control Act (MTCA) regulations. The RI/FS and CAP were finalized in December 2017 (Kennedy Jenks 2017a).

The RI/FS confirmed that gasoline-range organics (GRO) and benzene, toluene, ethylbenzene, and xylenes (BTEX) were still present in groundwater at the site, primarily beneath the parking lot and extending off-property to the north and west. The extent of groundwater impacts above

1,000 micrograms per liter (µg/L) is bounded along the north side of East McGraw Street, extends to the south to MW-17, and likely extends partially beneath the on-site building to the east and 24th Avenue East to the west. Groundwater along the western side of 24th Avenue East did not contain concentrations of GRO or BTEX constituents above laboratory reporting limits. The results of the groundwater samples indicate that the petroleum hydrocarbon plume appears to be stable and diminishing in size over time. Source removal (e.g., UST and fueling infrastructure removal) and subsequent remedial activities in conjunction with natural attenuation processes have contributed to plume stability. A shallow groundwater gradient across much of the site may also limit the lateral migration of dissolved-phase petroleum hydrocarbons in groundwater over time.

A bioremediation pilot test was conducted at the site to assess the effectiveness of enhancing biodegradation of dissolved petroleum hydrocarbons in groundwater. The pilot test was conducted in general accordance with the Pilot Study Work Plan (Kennedy Jenks 2017b) submitted to Ecology on 4 February 2017. The pilot study demonstrated that a groundwater recirculation system could be effectively established to support implementation of a bioremediation system.

2.2.3 Vapor Intrusion Assessment

Kennedy Jenks conducted an initial (Tier 1) assessment of the potential for vapor intrusion (VI) by petroleum hydrocarbon constituents into the main site structure and adjacent residences following the methods described in the United States Environmental Protection Agency's (EPA's) Technical Guide for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites (EPA 2015). The results of the Tier 1 assessment are presented in the RI/FS (Kennedy Jenks 2017a) and are summarized as follows:

- The occupied on-property commercial structure is within the lateral VI inclusion zone based on the maximum benzene, toluene, and xylene concentrations detected in groundwater near the building.

- Although groundwater at the site is typically encountered about 10 feet below ground surface (bgs) adjacent to the building, exceeding EPA's vertical groundwater separation distance criterion of six feet for bio-attenuation of petroleum hydrocarbons, the presence of underground utilities could provide a preferential pathway(s) for soil vapors to enter the on-site building. Consequently, the VI pathway into the on-site structure is considered potentially complete pending further characterization of preferential vapor pathways.

- The potential for VI into nearby residential structures appears to be very low based upon the proximity of the soil and groundwater contamination to such structures; however, in the absence of additional sampling at the residential properties to confirm subsurface conditions, the VI pathway for off-property residential areas must be regarded as potentially complete.

[Note: In addition to possible VI conduits, potentially explosive conditions could be created within sewer lines if substantial concentrations of gasoline vapors from proximal contaminated soil and groundwater were to accumulate.]

2.3 Nature and Extent of Contamination

The following sections describe the nature and extent of contamination at the site and identify areas requiring cleanup as required in Washington Administrative Code (WAC) 173-340-400(4)(a)(v). The discussion below is based on the findings of the RI/FS.

2.3.1 Contaminants of Concern

As noted above, based on the results from RI field activities, GRO and BTEX constituents are present in soil and groundwater at concentrations above MTCA Method A cleanup levels (CULs). These constituents are considered to be the primary contaminants of concern (COCs) in soil and groundwater associated with former fueling activities at the site. GRO and benzene are used to describe the extent of impacted soil and groundwater in the discussions below. Toluene, ethylbenzene, and xylenes are also considered to be COCs and are present in site soil and groundwater at concentrations above MTCA Method A CULs, where GRO and/or benzene are also reported.

2.3.2 Impacted Soil

Based on analytical results and field observations collected through 2016, the vertical extent of GRO concentrations exceeding the soil CUL appeared to be generally limited to the zone from eight to greater than 20 feet bgs. The approximate lateral extent of GRO- and benzene-impacted soil at concentrations above the MTCA Method A CUL is shown on Figure 3. The horizontal extent of GRO-impacted soil (approximately 5,300 square feet) is generally located beneath the on-site parking lot and may extend beneath the on-site building and into the roadways to the north and west of the property. The lateral and vertical extents of BTEX concentrations that exceed the soil CUL appear to coincide with the distribution of GRO; therefore, targeting the zone in which GRO concentrations exceed soil CULs for remediation will also address cleanup of the aromatic gasoline constituents.

During remediation system installation in 2024, impacted soil was observed at the site between one and 10 feet bgs, with deeper impacts extending below 20 feet bgs (Kennedy Jenks 2025b). These observed impacts are shallower than the eight feet bgs and deeper than the 20 feet bgs impacted zone previously estimated. Figure 4 shows the estimated lateral extent of shallow impacted soil based on field observations, analytical results, and well and soil boring logs from remediation system installation. The approximate extent of GRO and benzene impacts in soil based on the RI/FS (e.g., Figure 3) is shown for reference in Figure 4. Except for the area near the southern footings of the treatment system enclosure (Treatment Shed), the petroleum hydrocarbon impacts observed between two and 10 feet bgs in soil borings and during remediation system installation trenching activities are within the previously approximated extent of soil impacts.

2.3.3 Impacted Groundwater

The extent of GRO- and benzene-impacted groundwater at the site is shown on Figure 3. Petroleum hydrocarbons in groundwater at the site are limited to dissolved-phase impacts; light non-aqueous phase liquid (LNAPL) was not observed in any of the monitoring wells during RI groundwater monitoring events. The extent of dissolved-phase petroleum hydrocarbons

(approximately 10,900 square feet) and related compounds is bounded on the north side of East McGraw Street, and generally extends beneath the on-site parking lot. Dissolved-phase impacts may also extend beneath the onsite building and to the west beneath 24th Avenue East, though groundwater impacts are bounded along the western side of the street.

Although residual concentrations of dissolved-phase COCs are high, groundwater monitoring results indicate that the dissolved petroleum hydrocarbon plume at the site is either stable or diminishing in size. Source remediation and ongoing processes that have contributed to mitigating the spread of dissolved petroleum hydrocarbon concentrations in groundwater include:

- Removal of the USTs in 1989, including excavation of petroleum contaminated soil.
- Past remedial efforts including groundwater extraction, operation of the SVE system, and LNAPL recovery.
- Natural attenuation processes such as biodegradation, dispersion, dilution, sorption, and volatilization.

2.4 Cleanup Requirements

The objective of the cleanup action is to reduce potential risks to human health and the environment. Because the site is zoned as “Neighborhood-Commercial”, the proposed soil cleanup standards must be protective of unrestricted land use.

2.4.1 Remedial Action Objectives

Specific risk-based remedial action objectives include:

- Reduce the potential for human contact with soil and groundwater containing COCs at concentrations exceeding the selected CULs.
- Protect groundwater quality by addressing dissolved phase petroleum hydrocarbons exceeding the selected CULs.
- Reduce the potential for human exposure to vapors (primarily vapor intrusion into buildings) associated with soil and groundwater containing COCs at concentrations exceeding the selected CULs.

2.4.2 Cleanup Levels

The cleanup standards for soil and groundwater, as selected in the RI/FS, are noted below per WAC 173-340-400(4)(a)(i).

- **Soil:** MTCA Method A soil CULs for unrestricted land use based on WAC 173-340-740 and/or obtained from Ecology’s Cleanup Levels and Risk Calculation (CLARC) database. For those compounds where MTCA Method A levels may not be available,

soil CULs will be based on MTCA Method B values and/or leaching to groundwater values.

- **Groundwater:** MTCA Method A groundwater CULs for fuel components (GRO and BTEX constituents) based on WAC 173-340-740 and/or obtained from Ecology's CLARC database. For those compounds where MTCA Method A levels may not be available, groundwater CULs will be based on MTCA Method B values.

- **Vapor Intrusion:** CULs will be based on MTCA Method B groundwater screening levels for the vapor intrusion pathway obtained from Ecology's CLARC database. If sub-slab soil gas samples are collected, they will be compared to Method B sub-slab soil gas screening levels obtained from Ecology's CLARC database.

CULs for unrestricted land uses are proposed as part of the cleanup standards for this site. These standards are protective of human exposure via direct contact pathway and are protective of groundwater and surface water.

Groundwater CULs selected for the site are based on MTCA Method A CULs for fuel components (GRO and BTEX). MTCA Method A groundwater CULs for GRO and BTEX were selected for fuel components because they are the most applicable and protective standards for gasoline-range hydrocarbon compounds (including BTEX).

2.4.3 Points of Compliance

The points of compliance, based on the potential chemical exposure routes, are those points where cleanup levels established for the site shall be achieved. The points of compliance for site media were established as follows:

- **Soil:** Based on WAC 173-340-740, the point of compliance for soil is as follows:
    - Throughout the site for protection of groundwater.
    - From the ground surface to the depth of shallow groundwater for possible VI.
    - From the ground surface to a depth of 15 feet below grade for protection of humans based on direct contact.
- **Groundwater:** In accordance with WAC 173-340-720(8), throughout the site from the uppermost saturated zone to the lowest depth potentially affected by site contaminants.
- **Air:** In accordance with WAC 174-340-750(6), in ambient air throughout the site.

2.5 Remedial Design

The cleanup alternative chosen in the RI/FS and CAP included an SVE system for remediation of residual soil impacts and implementation of a groundwater recirculation system with injection of bioaugmentation reagents. As part the data gaps process and alternatives analysis completed during pre-design, an alternative process option of multiple phase extraction (MPE)

instead of SVE was identified and selected for implementation. Through consultation with Ecology, it was agreed that MPE was not a change to the chosen remedial alternative and so a revision of the RI/FS and CAP was not required. Kennedy Jenks prepared an Engineering Design Report (EDR) to document engineering concepts and criteria for the MPE and groundwater recirculation system (remediation system) to be used during design of the cleanup action (Kennedy Jenks 2021). The EDR provided the basis for the development of construction drawings and specifications for the remediation system. Construction drawings and specifications were prepared jointly by Ecology and Kennedy Jenks in December 2022 (Project Documents, Kennedy Jenks 2022).

Section 3: Remedial Action Activities

3.1 Overview

Implementation of the CAP is continuing under the CD with Ecology oversight, under Ecology contract number C2100069. The remediation system was installed to reduce concentrations of total petroleum hydrocarbons (TPH) as GRO and BTEX in the soil and groundwater below the site. Groundwater, soil, and vapor samples will be collected periodically to monitor treatment progress.

The project goal with respect to GRO and BTEX is to remove contaminant mass to attain MTCA Method A groundwater and soil CULs for unrestricted land use. Reducing contaminant concentrations to the extent practicable will require:

- Systematic optimization of mass removal and remedial chemical injections through adjustments to operating wells and airflow based on monitoring results.
- Documentation of progress towards the removal of GRO and BTEX from the site.
- Compliance with the requirements of all applicable federal, state, and local permits for construction and industrial activities, underground injection, air discharge, and sewer discharge.

To support these goals, monitoring techniques will be used to demonstrate remediation system operational success.

3.2 System Description

MPE involves the simultaneous extraction of groundwater and soil vapor from the subsurface for aboveground treatment. MPE has shown to be effective at removing petroleum hydrocarbons through past activities at the site, historical case studies, and scientific literature. The EPA states that MPE can address contamination in both the saturated and vadose zones, and affects mass removal by volatilization, dissolution, and advective treatment. MPE can remediate multiple phases of contamination and potentially create a large radius of influence (ROI) affecting a greater capture area (EPA 1999). MPE systems can also be designed to protect against VI.

The remediation system installed treats petroleum hydrocarbons in soil vapor and groundwater extracted from the subsurface via carbon adsorption using granular activated carbon (GAC) vessels. The GAC vessels are sized based on the estimated flowrate and maximum expected concentration of petroleum hydrocarbons in both vapor and groundwater.

The groundwater recirculation portion of the system involves the addition of amendments to treated groundwater prior to reinjection via the remediation wells. The system is designed to use a variety of amendments to enhance the removal and/or aerobic/anaerobic biodegradation of petroleum hydrocarbons and volatile organic compounds (VOCs) in saturated soils and groundwater in situ to reduce the remediation timeframe. Amendments will initially include

surfactants to enhance removal of hydrocarbon mass from the soil matrix and release it into the groundwater for extraction via the MPE system. Following surfactant-enhanced mass removal, amendments will include the addition of terminal electron acceptors (TEAs) for microbial respiration (such as dissolved oxygen or nitrate), depleted macronutrients (typically nitrogen as ammonia and phosphorous as phosphate), and/or bacteria that are selectively cultured for their petroleum-degradation capabilities. The amendments to be used in the remediation system will be designed to accelerate the microbial degradation of remaining petroleum hydrocarbon-impacted vadose zone soil and groundwater.

The remediation system was designed to incorporate three new vertical wells and three new slanted (angled) wells along with seven existing vertical wells into a single extraction / injection system for a total of 13 remediation wells. Each well within the network of remediation wells is individually connected through a single line to the extraction and injection manifolds in the Treatment Shed located on-site. The wells are organized into four banks of either three or four remediation wells (see Table 1). The vapor and water extracted from the wells is piped to the treatment system. The treatment train splits at a knock-out tank to a water treatment train and a vapor treatment train.

The water treatment train consists of a bag filter, two pairs of GAC vessels plumbed in series, a mixing tank in which surfactants, bacteria, and/or nutrients can be added, and an oxygen generator. Water can be discharged to the City sanitary sewer system before the mixing tank or reinjected to the wells through the injection manifold. A mixing tank and oxygen generator can introduce amendments or oxygen to the water project to reinjection into the subsurface.

The vapor treatment train consists of a temporary catalytic oxidizer used during system startup and a pair of vapor GAC vessels piped in series to be used after removal of the catalytic oxidizer. Treated air is discharged through an exhaust pipe.

The MPE system also includes three sub-slab depressurization (SSD) wells to extract vapor from underneath the existing buildings on site. The SSD wells are connected to an extraction manifold in the treatment system. The vapor extracted from the SSD wells is piped to the vapor treatment train. Four vapor monitoring points were installed within the existing on-site buildings for monitoring indoor air concentrations during system operation.

The system is designed to operate continuously, except for shutdowns for maintenance, replacement of treatment media, or as-needed monitoring.

3.3 Permitting

Prior to the installation of the new angled wells (SW-1, SW-2, and SW-3) on 24th Avenue East, the Contractor obtained a Utility Major Permit for the Work and issued Notice of Intents to Ecology. Prior to the start of remaining construction activities, the Contractor obtained a Seatle Department of Construction and Inspections (SDCI) Permit for the Work. Copies of the approved permits are included in the Contractor's Construction Completion Report (Glacier CCR; Appendix A).

3.3.1 Utility Major Permit

The Seatle Department of Transportation (SDOT) administered Utility Major Permit #SUUMP0000620 to the Contractor on 31 January 2024. The permit pertained to work in the right-of-way on 24th Avenue East and East McGraw Street. Tree protection and sidewalk restoration requirements were included in this permit.

3.3.2 SDCI Permit

The SDCI Permit included requirements for the treatment building, excavation and grading, drainage, parking, electrical, and construction stormwater management. A building permit and concrete footings were required for the treatment building; a structural engineer was subcontracted by Glacier for the footing details and structural calculations. The Contractor obtained the SDCI Permit (#6996584-CN) on 17 May 2024.

3.3.3 Air Permit Compliance Criteria

As a remediation project under a CD, the project is required to comply with the substantial requirements of the Puget Sound Clean Air Agency (PSCAA), however obtaining a PSCAA permit is not required. The MPE system will be operated to substantially meet the PSCAA operation and monitoring requirements (included in Appendix B of the O&M Manual) for remediation systems that use catalytic oxidizers and GAC for treatment of extracted soil vapors prior to discharge. Operation and monitoring requirements include moderating influent flow rate to the treatment system and collection of field vapor measurements from treatment devices (i.e., the catalytic oxidizer and GAC vessels) to demonstrate compliance with control efficiency requirements for the treatment devices.

The system shall be operated such that the effluent of the vapor treatment system meets the WAC 173-460-150 Small Quantity Emission Rate (SQER) limits for the following constituents in pounds per day (lbs/day) or pounds per year (lbs/year) as applicable:

Constituent	SQER (lbs/day)	SQER (lbs/year)
Benzene	0.058	21
Toluene	370	135,050
Ethylbenzene	0.178	65
Total Xylenes	16	5,840

Compliance will be verified through vapor samples collected at the influent, midpoint, and effluent of the vapor treatment system.

3.3.4 Discharge Permit Compliance Criteria

Due to the discharge of treated groundwater to the sanitary sewer as part of the system design, the project is required to comply with the requirements of a King County Industrial Waste (KCIW) Program Wastewater Discharge Authorization (WDA). Effluent limits for the constituents to be self-monitored as part of permit compliance are included in Section 4.2.8 of the SAP/QAPP. Compliance will be verified through samples collected from the water treatment

system. Monitoring requirements are included in the KCIW WDA (Appendix A of the O&M Manual).

3.4 Health and Safety

Kennedy Jenks prepared a site-specific health and safety plan (HASP) for use by Kennedy Jenks employees during construction and sampling field activities. Glacier prepared a separate HASP for their employees. The HASPs identified key personnel and planned activities; assessed physical and chemical hazards associated with common construction practices and with the Work; and assessed potential community hazards. Glacier conducted daily safety briefings prior to field activities to discuss scope of work and health and safety considerations relevant to the day's activities. Safety briefings were attended by Glacier employees, Kennedy Jenks field staff, and subcontractors. No injuries were reported during construction activities.

3.5 Mobilization and Area Preparation

The Contractor completed site preparation activities prior to the start of the Work in accordance with permit requirements and the Project Documents.

3.5.1 Utility Locate

Prior to mobilization of equipment to the site, the Contractor completed two public utility locates and two private utility locates. One public utility locate was competed in October 2023 to support permitting. One public utility locate and one private utility locate were completed in January and February 2024, respectively, prior to well installation. A final private utility locate was completed during trenching activities when unknown utilities were encountered (refer to Section 3.7.1).

3.5.2 Site Security

Glacier provided plans for site security, temporary facilities, and erosion control in their Environmental Protection Plan. A copy of this plan is included in the Contractor's Construction Completion Report (Glacier CCR; Appendix A). The Contractor conducted construction activities in phases to limit disruptions to the Site. The Contractor installed temporary chain-link fence and locks around the Work. Trees located in the Right of Way along 24th Avenue East and East McGraw Street were protected using temporary barriers. Equipment was staged in one centralized location when not in use and small tools were stored and locked in a toolbox at the end of the workday.

3.5.3 Construction Sediment and Erosion Control

The area of disturbance was less than one acre, therefore an NPDES Permit and Stormwater Pollution Prevention Plan was not required. Glacier developed a Construction Stormwater Control Plan in accordance with City of Seattle requirements. The Contractor employed stormwater runoff control BMPs including catch basin inlet protection.

3.6 Well Installation

Six extraction/injection wells (SW-1, SW-2, SW-3, RW-8, RW-9, and RW-10) were installed in February 2024 by Cascade Drilling in accordance with the Contractor's Well Installation Plan (included in Appendix D of Glacier CCR, Appendix A).

Three angled wells (SW-1, SW-2, SW-3) were located along 24th Avenue East. Due to overhead power lines, installation of SW-1 required shut down of the adjacent bus trolley line, therefore installation was completed on a Saturday during a coordinated shut down of the trolley line. The three vertical remediation wells (RW-8, RW-9, and RW-10) were installed in the parking lot on the site. Final well locations are shown on the Record Drawings presented in Appendix B.

3.6.1 Extraction/Injection Wells

Drilling for the six extraction/injection wells (EIWs) was performed using sonic drilling techniques, using an 8-inch inside diameter (ID) borehole. For the vertical wells, 8-inch boreholes were completed to a depth of 22 feet bgs (RW-8 and RW-9) and 30 feet bgs (RW-10). The angled wells were drilled at a 30-degree angle to a depth of 20 feet bgs (correlating to 23 feet along the angle).

The remediation wells were constructed inside the 8-inch ID sonic borehole using 4-inch-diameter Schedule 40 polyvinyl chloride (PVC) casing and 0.010-inch machine-slotted screen and packed with 3/8-inch minus pea gravel. The screen intervals of the vertical wells measured approximately five to 15 feet in length, from 25 to 30 feet bgs (RW-10) and five to 20 feet bgs (RW-8 and RW-9), respectively. The installed screen interval at RW-10 is a deviation from the Project Documents, which specified a screen interval for RW-10 as 23 to 28 feet bgs. The screen interval of the slanted wells measured approximately 13 feet in length, from five to 18 feet bgs (six to 21 feet along the angle).

Krazan & Associates (Krazan) performed well logging, field screening, and soil sampling during installation. Field screen tests were performed every two feet or at significant changes in lithology. Krazan performed field screening using a photoionization detector (PID), sheen testing, and visual and olfactory observations. At least two soil samples were collected from each boring and analyzed to characterize the soil for off-Site disposal. Soils encountered were visually classified using the Unified Soil Classification System (USCS), and observations were recorded in the Well Construction Logs (see Appendix D of Glacier CCR, Appendix A).

3.6.2 Sub-slab Depressurization Wells

The horizontal SSD wells were installed during trenching and piping activities (see Section 3.7). The SSD wells were placed approximately 1-foot below the bottom of the perimeter footing of the existing buildings and were constructed using 4-inch Schedule 40 PVC. The SSD wells were connected to the remediation system using 2-inch PVC.

3.6.3 Vapor Pins

Cascade Environmental Services installed four vapor pins (VP-1, VP-2, VP-3, and VP-4): two within Mont's Market and two within Jay's Cleaners as shown in the Record Drawings (Appendix

B). Vapor pin locations were discussed with the property owners/tenants and approved by Kennedy Jenks staff prior to being drilled.

3.7 Trenching and Piping

To connect the extraction/injection wells and the SSD wells to the system, trenches were excavated and piping was installed in accordance with the Project Documents. Pipelines were installed concurrently with trenching and backfill to limit Site disturbance. Salinas Cutting used a Husqvarna FS 7000D Floor Saw to cut the lateral trench extent for each pipeline alignment. Glacier proceeded to remove the asphalt with a Hilti TE 3000-AVR jackhammer and hand dug soils to the required trench depths. Trenches extended to a maximum of five feet bgs. HDPE or PVC pipe was installed on top of 3/8-inch x #4 pea gravel pipe bedding. Import backfill material was sampled by Krazan and tested to confirm accordance with the analytical requirements specified in the Project Documents prior to installation. Analytical laboratory results for import backfill are provided in Appendix C. The backfill was compacted by Glacier using a Jumping Jack Rammer BS 60-4s compactor prior to repaving with 6-inch of asphalt. Compaction testing was completed prior to repaving; results are included in Appendix E of Glacier CCR (Appendix A). Trenches in sidewalk were patched using temporary asphalt until concrete sidewalk restoration could be completed. Concrete sidewalk restoration was completed in accordance with the Project Documents and the Utility Major Permit. Subsurface piping from the EIWs and SSDs daylighted on the west side of the Treatment Shed and penetrated through the wall of the shed to connect with the extraction/injection manifolds (see Section 3.10.1).

3.7.1 Unknown Utilities

During trenching within the parking lot, Glacier encountered unexpected utilities that had not been identified during surveying or utility locates completed prior to start of construction. The utilities consist of approximately 22 small diameter steel pipes. The approximate locations of these pipes are shown in the Record Drawings (Appendix B) and on Figure 4. The pipes were assumed to be associated with the former pump island and USTs. Glacier left encountered pipes in place, unless otherwise noted (see Figure 4), collected soil samples, and adjusted trenching depths and locations as needed to complete system installation. Details are included in the Unknown Utilities and Shallow Soil Impacts Encountered Technical Memorandum (Shallow Soil TM; Kennedy Jenks 2025b).

3.7.2 Field Monitoring and Sample Collection

Petroleum odors and stained soil were observed by Kennedy Jenks field staff in areas to the north and south of the former pump island during trenching. Field staff collected PID readings to confirm these observations. After discussion with Ecology, Glacier collected soil samples from sidewalls and bottom of trenches in three locations, labeled as North Trench, South Trench, and West Trench (refer to Figure 4). In each location, the Contractor collected three samples: one from the bottom of the trench, and one from each trench side wall, for nine samples total. Collected samples were analyzed for GRO by Ecology Method NWTPH-Gx, DRO and ORO by Ecology Method NWTPH-Dx without silica gel cleanup (SGC), and BTEX by EPA Method 8021. Sample results were compared to the established cleanup levels for the site – MTCA Method A

CUL values for unrestricted land use (Table 740-1). The results are included in the Shallow Soil TM (Kennedy Jenks 2025b) and presented in Table 2.

Odor observations and/or soil sample results indicated potential shallow petroleum impacts from approximately two to three feet bgs in the North and West Trench areas and from three to five feet bgs in the South Trench area. Field staff also observed petroleum odors at approximately one foot bgs during excavation of soil for installation of concrete footings for the remediation system building.

3.8 Investigation-Derived Waste

During well installation and trenching and piping activities, the following investigation-derived waste (IDW) was generated:

- **Drilling Soil Cuttings:** Soil cuttings generated during advancement of soil borings and construction of EIWs. Soil cuttings were transferred to labeled 55-gallon steel drums and stored onsite pending characterization and disposal. Samples from drilling soil cuttings were analyzed in accordance with the Project Documents; results were used to characterize the drilling soil cuttings and excavated soil for offsite disposal.

- **Excavated Soil:** Excavated soil was generated during trenching activities. Excavated soil was direct-loaded into a truck for off-Site disposal. Excavated soil was characterized for disposal via the drilling soil cutting sample results.

- **Drilling Water:** Water generated during well drilling, development, and testing was collected separately in 55-gallon drums. Water samples were analyzed for characterization for disposal in accordance with the Project Documents. The water was discharged to the King County Sewer system by Marine Vacuum Services located at 1516 South Graham Street in Seatle.

- **Demolition Debris:** Asphalt and concrete was generated during trenching activities and was recycled at Renton Concrete Recyclers.

3.9 Disposal and Transport

Drilling soil cuttings and excavated soil was transported by truck to Seattle Subtitle D Transfer Station to Republic Services' Roosevelt Landfill by way of the 3rd & Lander Transfer Station. A total of 99.92 tons of soil was disposed. Waste manifests provided by Glacier are included in Appendix C of Glacier CCR (see Appendix A).

3.10 Remediation System Installation

Treatment system components and the Treatment Shed were supplied by Product Recovery Management, Incorporated (PRM), a subcontractor to Glacier, and were delivered to the Site in the Treatment Shed (an 8-foot by 20-foot shipping container). Prior to arrival to the site, Glacier installed concrete footings and anchors for the Treatment Shed. The Treatment Shed was delivered and offloaded using a crane and forklift and placed on and anchored into the footings. Components of the treatment system were pre-assembled by PRM inside the Treatment Shed.

Additional components were installed by Glacier both inside and outside the Treatment Shed. Aboveground equipment was connected using schedule 80 PVC and carbon steel piping as shown on the Record Drawings (Appendix B).

3.10.1 Equipment

System equipment installed by Glacier and their subcontractors is shown on the Record Drawings (Appendix B) and detailed in the O&M Manual. A brief description of equipment installed is as follows:

- Manifold A: Manually controls extracted soil gas from the three SSDs. Manifold A includes a pressure gauge, isolation ball valve, flow control gate valve, ¼-inch sampling ball valve, and 3/8-inch threaded plug (for pitot tube) for each SSD well.

- Manifold B: Controls extracted air and water from each well. Individual well extraction pipes are grouped into three or four lines connected to a single extraction bank identified as Well Bank 1 through Well Bank 4. Each of the four well banks include a globe valve for overall bank flow control, a pneumatic solenoid-controlled isolation ball valve, and a manual isolation ball valve. The pneumatically operated ball valve is connected to the Programmable Logic Control (PLC) via an electric solenoid and controls whether the well bank is used for extraction. The individual well extraction pipes associated with each individual well include the following: isolation ball valve, flow control gate valve, ¼-inch sampling port valve, 3/8-inch threaded plug, and pressure indicator.

- Manifold C: Controls treated and amended water for recirculation back into the wells. The individual well reinjection pipes are grouped into three or four lines connected to a single injection bank identified as Well Bank 1 through Well Bank 4. The wells grouped together in the injection well banks are identical to the wells grouped together in the Manifold B well banks. Each of the four well banks include a globe valve for overall bank flow control, an electronic solenoid isolation ball valve, and a manual isolation ball valve. The electronically operated ball valve is connected to the PLC and controls whether the well bank is used for injection. The individual well injection pipes associated with each individual well include the following: gate valve, ball valve, pressure gauge, ¼-inch sampling port valve, 3/8-inch threaded plug, and flow meter/totalizer.

- Electric solenoid valves that interlock Manifold B and Manifold C so that when one well bank is open on Manifold B to a group of wells, the corresponding electric solenoid valve on Manifold C to the same well bank is closed.

- A 40-gallon, steel vapor liquid separator tank with level switches to separate the liquid and vapor treatment streams.

- A 300 cubic feet per minute (CFM) liquid ring pump that exerts vacuum on the wells to extract groundwater and soil vapor. The liquid ring pump is equipped with vacuum, pressure, level, and temperature gauges and transmitters.

- An air-cooled heat exchanger with temperature transmitter to reduce the temperature of the vapor treatment stream.

- A FALCO 300 electric catalytic oxidizer installed temporarily for treatment of soil vapor for approximately the first three to six months of operation until concentrations of COCs have decreased to a level suitable for treatment via the vapor granular GAC vessels. Note: the catalytic oxidizer was disconnected from service by Glacier on 15 April 2025 and removed from the site.

- A coalescing filter located prior to the vapor GAC vessels for capturing any residual oils and water from the vapor stream. Collected fluid drains back to the inlet side of the vapor liquid separator via 5/16-inch tubing.

- Vapor GAC: two 2,000-pound (lb) GAC vessels plumbed in series for soil vapor treatment.

- Bag filter: in-line bag filter located prior to the liquid GAC vessels.

- Liquid GAC: four 55-gallon liquid GAC vessels plumbed in lead-lag arrangement. Each vessel contains approximately 200 lbs of GAC.

- Water storage: One 500-gallon and one 300-gallon polyethylene water storage tank for storage of water prior to and after treatment.

- Mixing tank: One 300-gallon polyethylene mixing tank with vented lid and electric motor for mixing amendments with treated groundwater for reinjection.

- Oxygen generator: AirSep Topaz oxygen concentration monitor with integrated air compressor connected to the injection piping via a venturi-type differential pressure injector with flow control valves to inject oxygen into the treated/amended groundwater prior to reinjection.

- Transfer pumps, flow meters, pressure and temperature gauges, and a variety of valves.

- Control Panel and PLC: Electronic monitoring and controlling equipment capable of sensing system faults, powering off in the event of a system fault, and notifying specified persons of system fault events through an autodialer.

- Piping and hosing that connects equipment in the treatment trains.

3.10.2 Electrical

Glacier's subcontractor SHJ Electric, Incorporated. installed the electrical system as shown on the Record Drawings (Appendix B). Power for the treatment system is provided by Seattle City Light through a new overhead service connection.

3.11 Fencing

Glacier's subcontractor Fence Specialists installed permanent fencing surrounding the Treatment Shed and aboveground treatment system equipment, as shown on the Record Drawings (Appendix B). There are three single swing gates and one double swing gate in the

fence for field staff access and equipment removal and replacement. Gates are padlocked for security.

3.12 Site Restoration

As described in Section 3.7, repaving occurred after backfill and compaction. Asphalt paving was completed in the parking lot. Salinas Construction Incorporated restored three sidewalk panels in the right-of-way in accordance with the Utility Major Permit. As required by Seattle Urban Forestry, the broken asphalt on East McGraw Street was replaced with arborist wood chip mulch. Puget Sound Striping re-striped the parking lot in accordance with the Project Documents.

Section 4: Resident Engineering Services and Record Drawings

Kennedy Jenks provided resident engineering services to observe and document construction and to communicate and troubleshoot field issues encountered. A Kennedy Jenks resident engineer or geologist was onsite throughout remediation system installation activities. The resident engineer documented daily construction efforts through daily field reports and photographs. The Kennedy Jenks office team coordinated weekly meetings with Ecology and Glacier, and other relevant parties as needed, reviewed contractor-provided submittals for compliance with the Project Documents, developed work change directives, and answered requests for information.

The Submittal Register documenting Glacier's submittals and Kennedy Jenks's responses is included in Appendix D. Construction photographs are included in Appendix E. Contractor requests for information (RFIs) are included in Appendix F. Work change directives issued by Ecology and Kennedy Jenks to Glacier are included in Appendix G. Daily field reports are included in Appendix H.

4.1 System Testing

System testing was completed prior to final completion of construction. PRM completed testing of the treatment system components prior to delivery to the site. A copy of the completed PRM checklist is included in Appendix E of Glacier CCR (Appendix A). Additional testing was completed during system startup and commissioning on the site. Details on system testing completed on-site are included in this section.

4.2 System Startup

Remediation system startup and testing was conducted at the site between 29 October and 6 November 2024. System startup and testing activities included:

- Observation of equipment connections for leaks
- Confirmation that switches, alarms, and valves were operational
- Confirmation that gauges and meters were reading correctly
- Measurement of noise (decibels) during system operation
- Measurement of pressure at wellheads, manifold legs, and before and after the bag filter
- Evaluation of the vacuum and flow relationship for each well
- Collection of vapor VOC readings from SSD wells and vapor monitoring pings
- Establishment of normal operating pressure for the liquid ring pump

- Inspection of electrical equipment

System startup activities also included inspections and verifications that remedial system components (type, materials, dimensions, functionality, etc.) and ranges (where applicable) for gauges and meters met the specifications of the Project Documents. Discrepancies were recorded in a punch list which was provided to Glacier to address during startup activities and prior to/during the substantial and final punch list walk throughs.

4.2.1 Temporary SVE Operation

During system startup and testing activities, Kennedy Jenks and Glacier field staff observed water ponding at the catch basin connected to the sanitary sewer discharge. Storm drain piping connecting the catch basin to the sanitary sewer main was determined to be blocked after closed-circuit television (CCTV) inspection. A new connection to the sanitary sewer was necessary for discharge of treated water during system operation. Existing remediation piping on the property was determined to be connected to the sanitary sewer and was selected as the new discharge location. The City of Seattle and the KCIW Program were contacted for approval of the new discharge location. Upon receipt of approval, Glacier was directed to connect the treated water discharge piping to the existing remediation piping (refer to Work Change Directive 5, Appendix G).

While the changes to the discharge piping were being constructed, the remediation system was temporarily operated in SVE mode from 16 December 2024 until 5 February 2025. Procedures for SVE operation were included in the SVE Operation Technical Memorandum (Kennedy Jenks 2024). On 5 February 2025, the system was returned to MPE operation, as originally designed.

4.2.2 MPE Operation

Based on system startup testing results and observations from October and November 2024 (refer to Section 4.2), Kennedy Jenks provided a list to Glacier on 7 November 2024 identifying items that need correction. Glacier addressed these items over several months during temporary SVE operation (Section 4.2.1). On 28 February 2025, Kennedy Jenks conducted a site walk with Glacier and established substantial completion. On 4 March 2025, Engineering/Remediation Resources Group, Incorporated (ERRG, Operator) took over operation of the system from Glacier. On 5 March 2025, Kennedy Jenks provided Glacier with the final punch list for items to be completed prior to Final Completion. Kennedy Jenks conducted a site walk on 7 April 2025 with Glacier to review the final punch list items. Glacier completed the remaining punch list items and achieved final completion on 15 April 2025.

4.3 Radius of Influence (ROI)

Kennedy Jenks calculated the estimated vapor extraction ROI for each well using field measurements collected during the October and November 2024 system startup and testing activities. Glacier operated the remediation system in extraction mode for approximately 30 minutes per remediation well. An extraction step test was conducted at each well, testing three extraction vacuums for approximately 10 minutes per vacuum step. At each step, Kennedy Jenks field staff measured the induced vacuum at the manifold and wellhead for the test well, and at the wellheads for several nearby wells and used the data to estimate the vapor extraction

ROI at each test well. The extraction ROI was calculated by plotting the log of the measured induced vacuums at the wellheads versus the distance from the extraction well. The estimated ROI is the distance at which the curve intersects a vacuum of 0.1 inches of water.

Table 3 shows the tested vacuum range for each remediation well and the corresponding calculated vapor extraction ROI range. Under normal operating conditions, the vapor extraction ROI of the wells is anticipated to range from 18 to 46 feet, with an average of 31 feet, consistent with the values presented in the EDR. During system operation, the effective extraction extent of influence resulting from more than one remediation well operating at a time can be estimated from induced vacuums at Site monitoring wells.

The vapor extraction ROIs of the wells encompass the estimated lateral extent of soil impacts. Operation of the MPE system will include extraction of soil vapor from within the remediation well screen intervals up to the impervious surfaces (e.g., zero to five feet bgs), including the vertical interval of shallow soil impacts. Therefore, operation of the remediation system is expected to be effective in addressing the observed soil petroleum hydrocarbon impacts under normal operating conditions.

4.4 Baseline Sampling

The Operator conducted baseline monitoring in October 2024 prior to commencing system operation. Baseline monitoring included collection of the following samples:

- Groundwater samples from 17 monitoring wells analyzed for GRO and BTEX
- Vapor samples from 13 monitoring wells analyzed for VOCs via summa canister.

Additional details on baseline sampling are included in the Compliance Monitoring Plan (CMP). The results of these samples are reported in the Startup and January 2025 Monthly Remedial Progress Evaluation Report (ERRG 2025).

Section 5: Summary and Conclusions

The overall intent of the Circle K 1461 remediation system installation was to construct the MPE system for operation by Ecology's operations contractor (ERRG) to remove and treat contaminated groundwater and soil vapor to MTCA cleanup standards. Ecology's construction contractor (Glacier) completed construction of the remediation system, including installation of EIWs, SSDs, vapor pins, piping, Treatment Shed, catalytic oxidizer, GAC vessels, oxygen generator, and associated tanks, pumps, piping, and electrical equipment.

Based on startup testing results and observation of the system, the remediation system has been constructed in substantial compliance with the Project Documents.

ERRG is currently operating the system in accordance with the O&M Manual (Kennedy Jenks 2025a). It is anticipated that the system will operate for up to approximately five years, or until the site COCs have been reduced significantly in the wells or Site cleanup levels are achieved. At the conclusion of the active remediation system operation, the Site will transition to a period of monitored natural attenuation and confirmation monitoring. Compliance monitoring activities, including performance monitoring during system operation and confirmation monitoring to demonstrate attainment of site cleanup levels, are described in the CMP and in the SAP/QAPP (Appendix H of the O&M Manual).

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Tables

Table 1: Multi-Phase Extraction System Well Details

	Well Bank #	Screened Interval (ft bgs)	Sand Interval (ft bgs)	Applied Vacuum (in.w.c.)	Casing Diameter (in)	Pipe Diameter (in)	Pipe Run[a] (ft)
Existing Monitoring/Remediation Wells							
MW-4	4	4-18.8	5-22	28	2	1	160
RW-2	4	5-20	5-22	28	4	1	110
RW-3	1	5-20	5-22	28	4	1	100
RW-4	2	5-20	5-22	28	4	1	90
RW-5	3	5-20	5-22	28	4	1	70
RW-6	4	5-20	5-22	28	4	1	130
RW-7	1	5-20	5-22	28	4	1	70
New Remediation Wells							
SW-1	2	6-21[b]	4-21[b]	28	4	1	110
SW-2	3	6-21[b]	4-21[b]	28	4	1	80
SW-3	1	6-21[b]	4-21[b]	28	4	1	80
RW-8	2	5-20	5-22	28	4	1	100
RW-9	1	5-20	5-22	28	4	1	50
RW-10	3	25-30	5-22	28	4	1	80

Note and Abbreviations:

(a) Pipe run approximated from Construction Drawings.

(b) Depth expressed as measured depth within well casing. Well drilled at 30 degree angle.

ft bgs = feet below ground surface.

in.w.c. = vacuum or pressure in inches water column.

in = inches

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Table 2: Trench Soil Sample Analytical Results

		Sample Name		NW Trench	NB Trench	NE Trench	SW Trench	SB Trench	SE Trench	WS Trench	WB Trench	WN Trench
		Sample Date		06/12/2024	06/12/2024	06/12/2024	06/12/2024	06/12/2024	06/12/2024	6/21/2024	6/21/2024	6/21/2024
Constituent	**CAS #**	**Units**	**CUL**									
Gasoline Range Organics		mg/kg	30	**78**	**74**	**5.7**	**73**	**1,200**	**520**	**28**	< 3.0	**3.6**
Benzene	71-43-2	mg/kg	0.03	**0.059**	**0.041**	< 0.030	**0.053**	**0.67**	**0.46**	**0.38**	< 0.030	**0.04**
Toluene	108-88-3	mg/kg	7	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Ethylbenzene	100-41-4	mg/kg	6	< 0.050	**0.26**	< 0.050	**0.58**	**12**	**4.1**	**0.12**	< 0.050	< 0.050
Total Xylenes	1330-20-7	mg/kg	9	**0.23**	**0.74**	< 0.20	**0.33**	**5.2**	< 0.20	< 0.20	< 0.20	< 0.20
Diesel Range Organics		mg/kg	2000	< 25	< 25	< 25	**30**	**37**	< 25	< 25	< 25	< 25
Motor Oil	PHCMO	mg/kg	2000	**63**	< 50	< 50	< 50	< 50	< 50	**79**	< 50	< 50

Notes, Abbreviations, and Symbols:

78	Detected concentrations above the cleanup level are shaded orange and bolded.
30	Detected concentrations at or above the laboratory reporting limit are shown in bold.
< 0.10	Non-detect values are shown in gray font.

mg/kg = milligrams per kilogram

CUL = Model Toxics Control Act (MTCA) Method A values for unrestricted land use (Table 740-1) (Method A) based on Washington State Administrative Code (WAC) 173-340-740.

Sample naming:

NW, NB, NE Trench: Samples collected from west sidewall, bottom, and east sidewall of southern portion of north-south trench where impacts were noted.

SW, SB, SE Trench: Samples collected from west sidewall, bottom, and east sidewall of southern portion of north-south trench where impacts were noted.

WS, WB, WN Trench: Samples collected from south sidewall, bottom, and north sidewall of east-west trench where impacts were noted.

Table 3: Field Measurements and Estimated ROI

			Baseline Measurements (prior to Startup)				During Startup[d]	
Bank	Well	Screen Interval	Vacuum / Pressure (in WC)[a]	VOCs (ppm)[b,c]	O_2 (%)[b,c]	CO_2 (%)[b,c]	Tested Vacuum Range (in WC)	Calculated ROI Range (feet)
1	MW-4	4-18.8	-3.0	584.0	7.6	14.8	37 - 67	35 - 43
	RW-6	5-20	-0.003	743.0	7.1	16.7	70 - 76	27 - 28
	RW-2	5-20	-0.003	758.0	7.4	15.1	34 - 74	43
2	RW-10	25-30	-0.89	18.8	20.7	0.3	39 - 140	23 - 24
	RW-5	5-20	-0.003	22.7	20.7	0.3	12 - 20	40 - 45
	SW-2	6-21[e]	-0.003	5.0	20.1	1.0	14 - 90	21 - 25
3	SW-1	6-21[e]	-0.023	65.0	16.0	4.0	25 - 85	24 - 27
	RW-8	5-20	+0.006	227.0	16.9	2.8	34 - 100	18
	RW-4	5-20	+0.013	247.5	15.8	2.5	22 - 120	24 - 30
4	RW-7	5-20	-0.003	890.0	9.7	5.0	45 - 123	40 - 49
	SW-3	6-21[e]	-0.037	87.7	20.7	0.2	30 - 80	22 - 27
	RW-3	5-20	+0.006	42.0	20.7	0.2	40 - 93	28 - 31
	RW-9	5-20	-0.033	395.0	19.3	1.1	20 - 125	30-35
							Average ROI	**31**

Notes and Abbreviations:

ROI = radius of influence

in WC = inches water column

VOCs = volatile organic compounds

ppm = parts per million

O_2 = oxygen

CO_2 = carbon dioxide

(a) Vacuum / pressure measured at wellhead.

(b) VOCs, O_2, CO_2 measured at treatment system manifold.

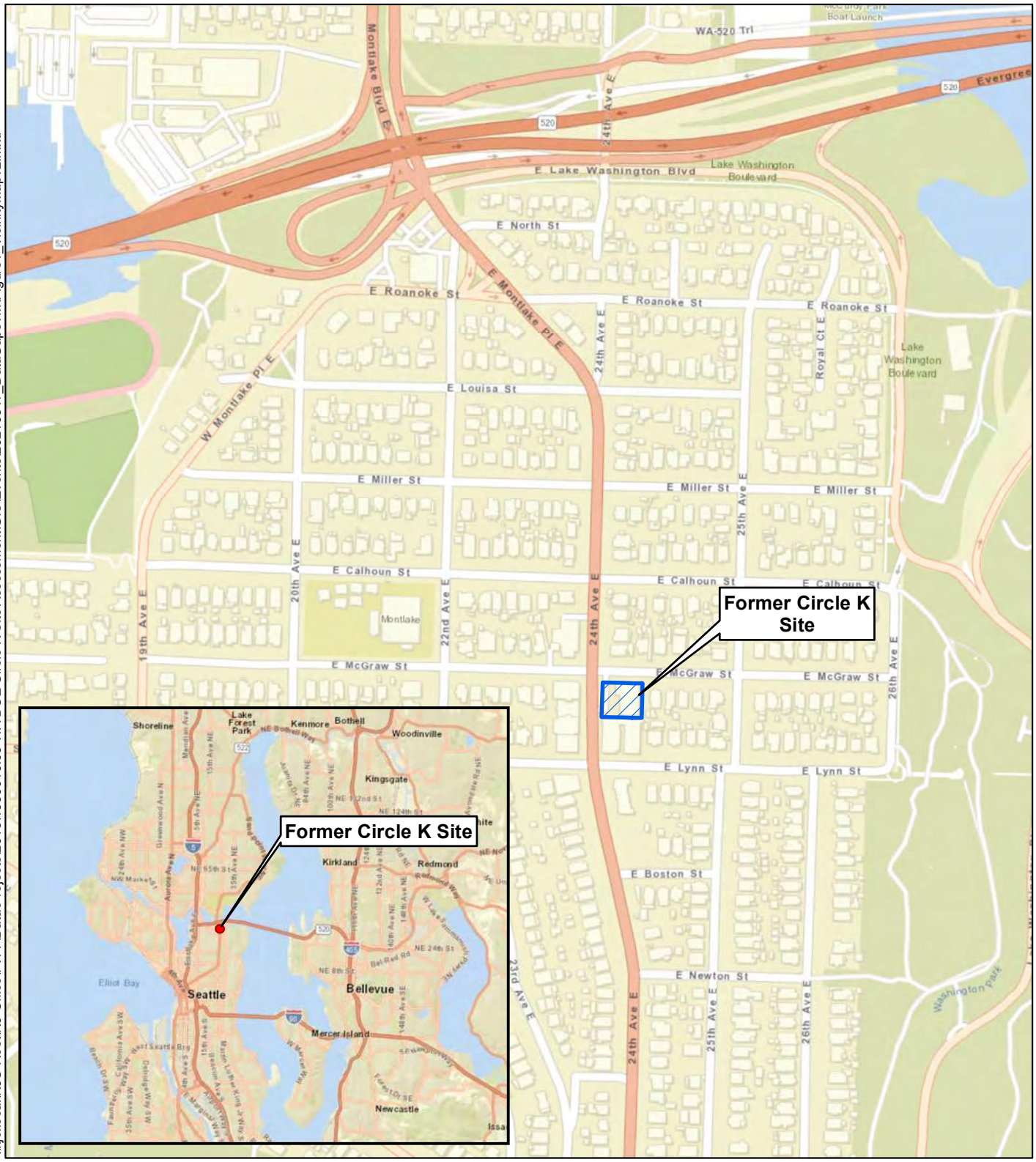
(c) VOCs, O_2, CO_2 measured using photo-ionization detection meter and 5-gas meter.

(d) System operated for approximately 30 minutes with valves open 100% except for sub-slab depressurization wells. Individual wells isolated from vacuum by closing valves while system was still running to allow for sampling.

(e) Depth expressed as measured depth within well casing. Well drilled at 30 degree angle.

(f) Measurements taken and recorded by Kennedy Jenks on October 31, 2024.

Figures



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors,

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Legend

Site Location

N

0 200 400

Scale: Feet

Former Circle K Site
Seattle, Washington

Site Location and Vicinity Map

K/J 2196008*00

Figure 1

Note:
1. All locations are approximate.

\\kjc.local\KJC-Root\KJ-Office\FWY\Data\Projects\2016\1696010.00 WA DOE Circle K Site Assessment\GIS\Events\20210517_DataGapsTM\Figure1_VicinityMapv2.mxd

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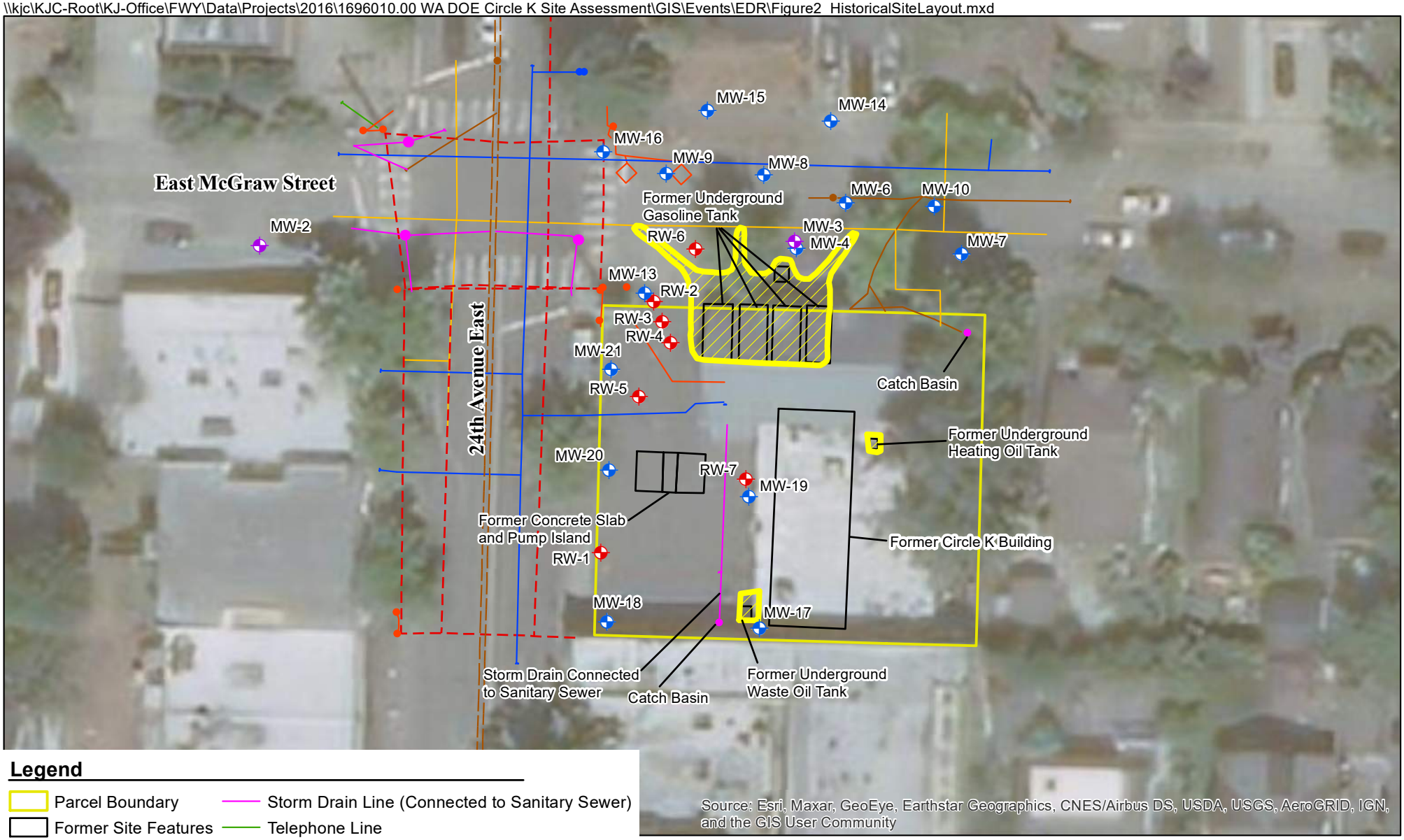

Legend

- Parcel Boundary
- Former Site Features
- Previous Excavations
- Monitoring Well
- Landau Well
- Multipurpose Wells
- Storm Drain Line (Connected to Sanitary Sewer)
- Telephone Line
- Power Line
- Gas Line
- Overhead Power Line
- Sanitary Sewer Line
- Water Line
- 90" RCP Sanitary Sewer Line

Notes:

1. All locations are approximate.
2. Sewer and water line locations are based on available site information and not appropriate for construction purposes.
3. Former feature locations georeferenced from *Report of Geotechnical Services Subsurface Contamination Study and Remedial Action Monitoring Circle K Facility 1461 Seattle, Washington*, dated 6 March 1990 by GeoEngineers.

N

0 20 40

Scale: Feet

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Former Circle K Site
Seattle, Washington

Historical Site Features, Monitoring Wells and Soil Boring Locations

K/J 2196008*00

Figure 2

Path: H:\GIS_CloudProjects\WA DOE\Circle K\SAP\Figure3_ExtentofImpact.mxd ©2022 Kennedy/Jenks Consultants

Legend

- Existing Well
- Existing Well to be Used for Extraction/Injection
- New Extraction/Injection Well
- New Slant Well
- New Vapor Monitoring Pin
- Parcel Boundary
- Approximate Extent of Gasoline-Range Organics and/or Benzene in Groundwater above MTCA Method A Cleanup Levels
- Approximate Extent of Gasoline-Range Organics and/or Benzene in Soil above MTCA Method A Cleanup Levels

Notes:
1. All locations are approximate.
2. GRO = gasoline range organics
3. CUL = clean up levels

N

0 15 30
Scale: Feet

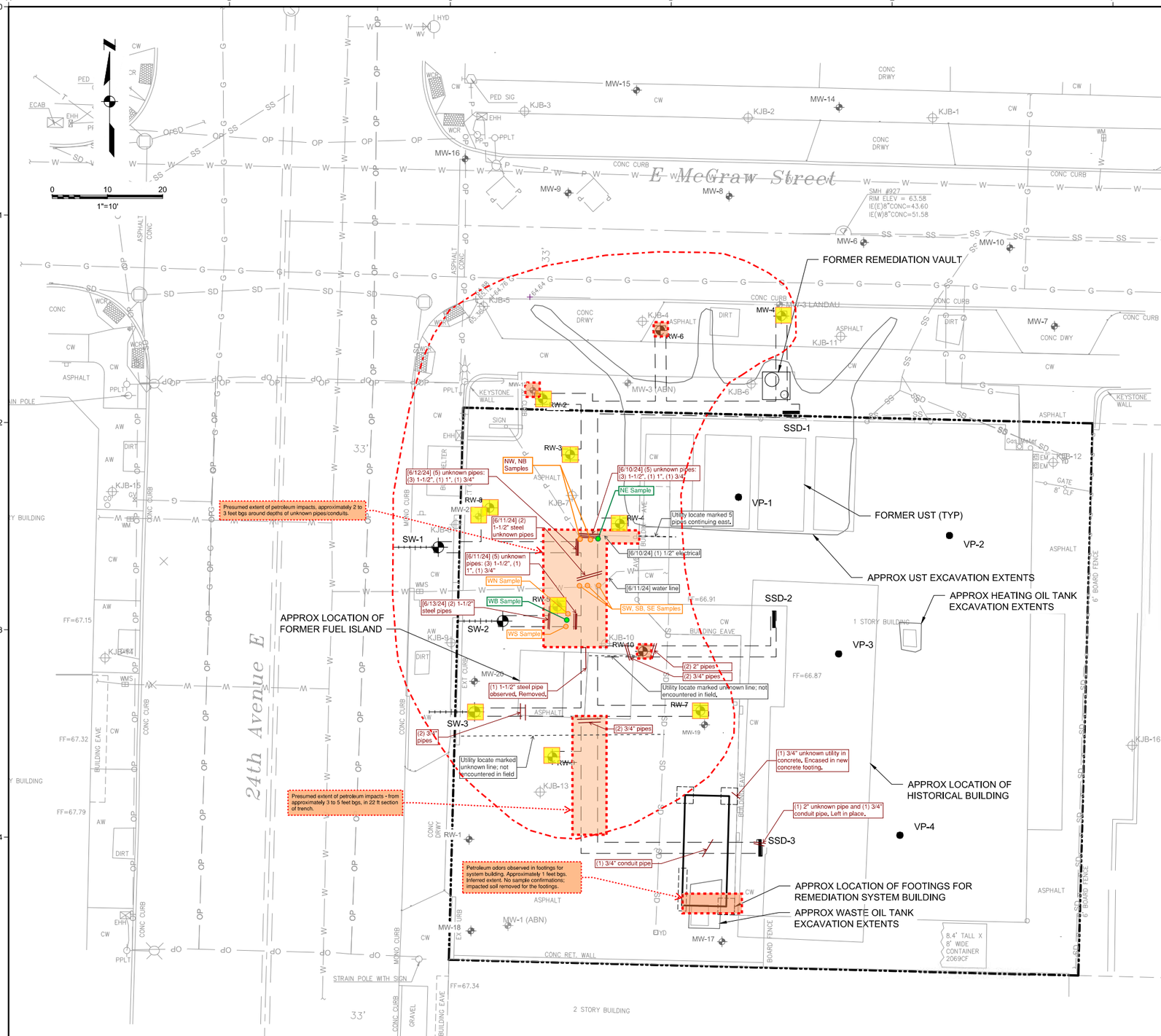
Kennedy Jenks

Former Circle K Site
Seattle, Washington

Approximate Extents of GRO and Benzene Impacts to Soil and Groundwater

K/J 2196008*00

Figure 3



NOTES

1. WELL AND BORING TERMINOLOGY:
   - 1A. MW = EXISTING MONITORING WELL
   - 1B. RW = REMEDIATION WELL (EITHER EXISTING OR TO BE INSTALLED)
   - 1C. VP = VAPOR MONITORING PIN TO BE INSTALLED
   - 1D. SW = SLANT WELL TO BE INSTALLED
   - 1F. SSD = SUB-SLAB DEPRESSURIZATION WELL
   - 1G. KJB = BORING DRILLED BY KENNEDY JENKS
   - 1H. LANDAU = WELL DRILLED BY LANDAU ASSOCIATES
   - 1I. ABN = ABANDONED WELL
2. ALL LOCATIONS ARE APPROXIMATE.

LEGEND

- Trench soil sample with at least one constituent reported at concentrations above MTCA Method A CULs (refer to Table 2).
- Trench soil sample with constituents reported at concentrations below MTCA Method A CULs (refer to Table 2).
- Shallowest soil TPH impacts observed less than 5 ft bgs in trench or boring.
- Shallowest soil TPH impacts observed at 5-10 ft bgs in boring.
- Approximate extents of GRO and/or Benzene in Soil above MTCA Method A CULs (from RI/FS 2017)
- Utility marked during utility locate but not encountered during construction.
- Unknown/unmarked utility encountered during trenching.
- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL
- HISTORICAL SOIL BORING LOCATION
- SUB-SLAB DEPRESSURIZATION WELL
- APPROXIMATE EXTENT OF TRENCH
- APPROXIMATE EXTENT OF CONCRETE FOOTINGS FOR REMEDIATION SYSTEM BUILDING
- VAPOR MONITORING PIN
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- OP — EXISTING OVERHEAD POWER LINE
- SS — EXISTING SANITARY SEWER LINE
- P — EXISTING UNDERGROUND ELECTRICAL LINE
- SD — EXISTING STORM DRAIN
- PROPERTY BOUNDARY

NO	REVISION	DATE	BY

SCALES 0 — 10"

DESIGNED
DRAWN
CHECKED

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

DIFFERING SITE CONDITIONS

SCALE 1:10
JOB NO 2196008.00
DATE FEBRUARY 2025

FIGURE 4

Plot Date: 10/31/2024 9:13 AM
User: CAYLA WHITESIDE
File: C:\bms\kjce-pw\d0181576\HistoricalSiteFeatures.dwg

Appendix A

Glacier Construction Completion Report

CONSTRUCTION COMPLETION REPORT

CIRCLE K SITE 1461

SEATTLE, WASHINGTON

Prepared by:

Glacier Environmental Services, Inc.

7509 212TH St SW

Edmonds, WA 98026

Prepared for:

DEPARTMENT OF
ECOLOGY
State of Washington

May 2025

Introduction

Glacier Environmental Services, Inc was contracted by the Washington Department of Ecology to furnish and install a multi-phase extraction and groundwater recirculation system for the Circle K Site 1461 Remediation Project. The Project Site is located at 2350 24th Ave E in the Montlake neighborhood of Seattle. Glacier has prepared this Final Completion Report in accordance with the Project Specifications to document the construction activities and as-built conditions.

Generally, the scope of work on this project included: obtaining all necessary permits; construction of six remediation wells (three vertical wells and three slant wells), three sub-slab depressurization wells and four vapor monitoring pins; installation of the underground piping system between wells; procurement and installation of a treatment system; and site restoration.

Site Background

The site previously operated as a gasoline service station. During operation, four gasoline underground storage tanks (USTs), one pump island, one waste oil UST, and one heating oil UST were located at the site. The site was redeveloped in 1990 and 1991 to its current configuration. Two businesses currently operate at the site including a general store and a dry-cleaning business.

All construction operations were conducted without closing the existing businesses. Glacier provided safe access to the businesses and limited disruption by phasing the site work and coordinating with the business owners.

Permits

The slant wells installed on 24th Ave E required a Utility Major Permit issued by Seattle Department of Transportation (SDOT); this permit also covered protection of street trees and necessary restoration to the rights-of-way on 24th Ave E and East McGraw. Glacier applied for this permit with Kennedy Jenks Consultants preparing the required plan sheets and details. Permit # SUUMP0000620 is included in Appendix A.

All other site work and the treatment building itself was covered by a Construction Permit issued by the Seattle Department of Construction and Inspections (SDCI). This is a comprehensive permit process that considers the treatment building, excavation and

grading, drainage plan, parking, electrical, and construction stormwater management. Many of the elements of this permit were exempted due to the small scale of the project, for example a drainage review was not required because of limited disturbance to impervious surface.

The treatment system is partially located within an 8'x20' shipping container, which required a building permit and structural design. Glacier hired structural engineering firm Swenson Say & Faget to provide the footing details and structural calculations for the container/building. Kennedy Jenks Consultants provided the site plans and architectural drawings required by SDCI. Permit #6996584-CN is included in Appendix A.

Preconstruction Submittals

Prior to mobilization, Glacier prepared multiple planning documents including:

- Well Installation Plan
- Soil and Waste Management Plan
- Construction Quality Assurance & Quality Control Plan (QAQCP)
- Environmental Protection Plan
- Spill Prevention, Control and Countermeasures Plan

Copies of these documents are included in Appendix B.

Summary of Construction

During the permitting phase, the multi-phase treatment system was built by Product Recovery Management, Inc (PRM) of North Carolina.

The initial onsite activity was drilling the six new wells. The well drilling was conducted by Cascade Environmental of Woodinville. To drill the slant wells on 24th Ave E, Glacier coordinated shut down of the bus trolley electrical lines, which also meant this work was required to take place on a weekend. All water and drill spoils were collected and stored in drums for offsite disposal. The soil was later profiled, comingled with trench spoils, and hauled to the 3rd & Lander transfer station for ultimate disposal at Roosevelt Landfill. Drummed water was pumped, transported, and treated by Marine Vacuum Services, Inc. of Seattle for permitted discharge to sewer. Records of disposal are included in Appendix C.

Krazan & Associates of Lynnwood logged the wells and collected soil samples in accordance with the plans and specifications. The samples were transported to ALS Laboratories in Everett, WA for analysis. Well Logs and sample results are included in Appendix D.

Once the SDCI Construction permit was issued, Glacier mobilized to the site to begin trenching and excavation activities. The work was completed in sections, with the work on

the north side of the site first, allowing access through the driveway on 24th; and then shifting the work to the south and allowing access to the driveway on E McGraw. During excavation all soil was either direct loaded into a truck or stockpiled on plastic and covered.

A waste profile for Republic Services' Roosevelt Landfill was submitted with the analytical data collected during well drilling activities. While the shallower trench soils were presumed clean, the small quantity, as well as the site constraints, made it impractical for reuse. Therefore, all soil generated was disposed under the same profile as contaminated soil. The drummed soil from drilling activities was tipped into a dump truck with the trench spoils and hauled to the 3rd & Lander transfer station. Disposal records for all waste are included in Appendix C, in total 99.92 ton of contaminated soil were disposed.

HDPE piping was installed concurrent with trenching and backfill to limit open trenches. Pipe was placed in accordance with the plans and bedded with imported pea gravel; plywood piping spacers were used to maintain pipe spacing. In multiple locations abandoned fuel piping or unknown piping presumed to be part of the former fueling station were found. In these locations, additional soil samples were collected and sent for laboratory analysis, the results of which are included in Appendix D.

Following bedding, the trenches were backfilled with CSBC, compacted and then patched with 6" of asphalt. Trenches that crossed the sidewalks were temporarily patched with asphalt until the full concrete sidewalk restoration was completed.

Once the piping was nearing completion, Glacier began preparing the area for the treatment system building with footings and anchors for the container. The system was delivered and offloaded into place using a crane and forklift. Connection of the system from the wells and piping of the exterior treatment components was completed using SCH80 PVC and carbon steel piping.

Power the treatment system is provided by Seattle City Light through a new overhead service connection.

As Built Plans of the site work, electrical and system are included in Appendix F.

Discharge Troubleshooting & Reroute

Water generated that is not reinjected into the wells is discharged to a combined sanitary/storm line in E. McGraw. The initial discharge location was located in a catch basin in the parking lot. During initial startup and testing, the discharge catch basin would backup quickly indicating there was a blockage or damage to the pipe downstream. A series of investigations (CCTV), testing, and attempts to clear were conducted and it was determined that there was pre-existing damage to the owner's onsite storm lines preventing discharge.

Thankfully, it was discovered that there were remnants of the previous treatment system in place that had a 2” PVC discharge still connected to the sewer. Glacier performed a dye test on this line to confirm that it connected to the City owned sewer in E. McGraw. Following the work change directive, the discharge was rerouted to this existing pipe; this change is reflected in the As-Built Plans.

System Commissioning and Startup

Initial startup and testing was conducted once the system had power, however until the discharge issue was resolved, the ability to fully run the system was limited. In the interim period, Glacier operated the system focusing just on vapor extraction to produce as little water as possible. Water that was generated, was discharged through a temporary connection to the sewer. Once the final connection was complete, Glacier operated the system for 2 weeks and had a final punch-list walk through with Kennedy Jenks.

Site Restoration

In addition to the trench asphalt patching, Glacier restored 2 sidewalks, the landscaping strip on E. McGraw, and restriped the parking lot per the revised parking plan. Glacier subcontracted Salinas Construction of Mukilteo, WA to pour 3 new sidewalk panels in accordance with SDOT specifications. The landscape strip on E McGraw had existing asphalt that was impacted by the tree roots; at the request of Seatle Urban Forestry, the broken asphalt was removed and replaced with arborist wood chip mulch. Puget Sound Striping of Sumner, WA striped the parking lot with a new ADA space and 5 additional parking stalls in accordance with the permit approved plan set.

Appendix A- Permits

Appendix B-Preconstruction Plans

Appendix C- Disposal Records

Appendix D- Well Logs and Analytical Reports

Appendix E- Test & Inspection Reports

Appendix F- RFI’s and Work Change Directives

Appendix G- As-Built Plans

APPENDIX A- PERMITS

Seattle Department of Transportation

Issue Date: 1/31/2024
Original Issue Date: 1/31/2024
Application Received Date: 6/5/2023
Permit Expiration Date: 9/27/2024

Street Use Permit
Permit Number: SUUMP0000620

Address: 2350 24TH AVE E

Onsite Contact

(425)355-2826

Project Description: Remediation of the site located on the corner of 24th Ave E an E. McGraw. Includes directional drilling of 2 slant wells that originate in the sidewalk and extend approx. 5-8LF into 24th Ave E.
Project Name: 2350 24TH AVE E Circle K Site Remediation

Owner
Kuk-Jin Choung
2350 24TH AVE E
SEATTLE, WASHINGTON 98112

Applicant
Glacier Environmental Services Inc
7509 212th St SW
Edmonds, WA 98026

Financially Responsible Party
Glacier Environmental Services Inc

7509 212th St SW
Edmonds, WA 98026

Work Type	Install New
Utility Information	Other
Method of Installation	Directional drilling
Curb Ramp Required ?	No

Mobility Impacts Legend

C: Closed	**ALC:** All Lanes Closed
N: None	**IC:** Intermittent Closure
R: Rerouted	**RLC:** Reduced Lane Closure
SLC: Some Lanes Closed	**RW:** Reduced Width

Permitted Use(s)

Permitted Use Description: Major Utility Infrastructure
Space/Segment Description: B1/E MCGRAW ST BETWEEN 24TH AVE E AND 25TH AVE E
Street Category: Non-Arterial

Issue Date	Start Date	End Date	Days in ROW	Work Days	Sq Ft	Side of Street	Mobility Impacts: Side-walk	Bike	Travel	Transit	Parking
1/31/2024	04/01/2024	9/27/2024	3	ALL	750	South	C	N	N	N	C

Permitted Use Description: Major Utility Infrastructure
Space/Segment Description: A1/24TH AVE E BETWEEN E LYNN ST AND E MCGRAW ST
Street Category: Arterial

Issue Date	Start Date	End Date	Days in ROW	Work Days	Sq Ft	Side of Street	Mobility Impacts: Side-walk	Bike	Travel	Transit	Parking

Seattle Department of Transportation

Issue Date: 1/31/2024
Original Issue Date: 1/31/2024
Application Received Date: 6/5/2023
Permit Expiration Date: 9/27/2024

Street Use Permit
Permit Number: SUUMP0000620

1/31/2024	02/10/2024	8/7/2024	1	ALL	200	East	C	N	N	N	N

Conditions of Use:

C055: CONCRETE POURING, CONCRETE/ASPHALT CUTTING, AND ASPHALT APPLICATION - Sweep or shovel loose aggregate chunks and dust for recycling or proper disposal. Place storm drain covers or similarly effective containment devices over all storm drains located downslope or adjacent to the work area. Shovel or vacuum all slurry and remove from the site. Perform cleaning of concrete application and mixing equipment or concrete-delivery vehicles in a designated area where the rinse water is controlled.

C006: LANDSCAPING AND LAWN VEGETATION MANAGEMENT - Use proper fertilizer and herbicide application techniques to minimize nutrient pollution of stormwater. Implement proper landscaping and mulching techniques to prevent plant material and excess mulch from entering the separate storm drainage system. Do not dispose of collected vegetation in separate storm drainage systems, waterways, water bodies or greenbelt areas.

C056: OUTDOOR STORAGE OR TRANSFER OF SOLID RAW MATERIALS, BYPRODUCTS OR FINISHED PRODUCTS-Do not hose down the contained stockpile area if the discharge will flow into a storm drain or a drainage conveyance. Sweep paved storage areas daily or more often as necessary to collect and dispose of loose solid materials. For stockpiles containing more than 5 cubic yards of erodible or water-soluble materials: store in a building or a covered, paved area; place temporary plastic sheeting (polyethylene, polypropylene, hypalon, or equivalent material) over the material; or pave the area and install a stormwater drainage system.

C057: OUTDOOR PORTABLE CONTAINER STORAGE-Label and store containers on a paved surface under a roof or inside a building if possible. Place drip pans beneath all taps on mounted containers and at potential drip and spill locations during the filling and unloading of containers. Check containers daily for leaks and spills.

C007: SPILL PREVENTION AND CLEANUP-Keep a spill cleanup kit in a nearby vehicle or next to the work site so that it is easily accessible. Make sure the contents of the spill kit are appropriate for the types and quantities of materials used for this work task. Refill spill kit materials before beginning work.

C060: USE OF CHEMICALS DURING CONSTRUCTION - Use only the recommended amounts of chemical materials and apply them in a proper manner. Neutralize the pH of concrete wash water from concrete mixers, if necessary.

C061: SAWCUTTING AND PAVING POLLUTION PREVENTION - Vacuum slurry and cuttings during the activity to prevent migration offsite and do not leave slurry and cuttings on permanent concrete or asphalt paving overnight. Dispose of collected slurry and cuttings, waste material, and demolition debris in a manner that does not violate groundwater or surface water quality standards. Implement preventative measures such as berms, barriers, secondary containment, and vactor trucks if observations indicate that a violation of water quality standards could occur.

C062: SOLID WASTE HANDLING AND DISPOSAL - Remove and dispose of accumulated solid waste at authorized disposal areas. Label waste containers and place them in a covered area with closed lids. Salvage and recycle any useful materials.

C063: MULCHING AND MATTING - Apply mulch to protect exposed soils and promote plant establishment.

C009: PERMANENT SEEDING AND PLANTING - Install temporary surface runoff control measures prior to seeding or planting to protect the surface from erosion until the vegetation is established. Establish permanent vegetation (e.g., grasses, legumes, trees, and shrubs) as rapidly as possible to prevent soil erosion by wind or water, per City Of Seattle standards.

C010: SODDING - Establish permanent turf for immediate erosion protection or to stabilize drainage pathways where concentrated overland flow will occur, per City Of Seattle standards.

C065: STORM DRAIN INLET PROTECTION - Install storm drain covers on stormwater structures less than 12 inches deep during construction. Install catch basin filter socks in stormwater structures greater than 12 inches deep. Place the storm drain or catch basin grate on top of the catch basin filter sock to hold it in place.

Street Use Permit
Permit Number: SUUMP0000620

C066: STREET SWEEPING AND VACUUMING - Do not sweep or vacuum when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose). Do not sweep up any unknown substance or any object that may be potentially hazardous. Prevent sediment from entering storm drain system. Properly dispose of sweeper wastes at an approved dump site after sweeping is finished.

C068: A pre-construction meeting with the SDOT Street Use is required prior to the start of work.

C069: The Permittee shall contact the Office of Arts and Culture at 206-684-7171 at least 2 weeks prior to construction if the proposed work may impact a public art piece. If a public art piece is damaged during construction, the Permittee shall contact the Street Use inspector and the Office of Arts and Culture immediately.

C002: Contact SDOT Urban Forestry (684-TREE) 48 hours in advance of any work adjacent to (within the dripline) street trees that may impact the tree's canopy, stem, roots or soil.

Any construction activity within the dripline of a street tree must be pre-approved by SDOT Urban Forestry. When trenching near trees with trunks greater than twelve inches (12") in diameter, all trenching must be hand dug for a distance of twenty feet (20'), measured ten feet (10') radius from the tree trunk.

Do not cut roots greater than two inches (2") in diameter, without permission from SDOT Urban Forestry. If tree roots must be severed, cut off cleanly with sharp saw. Do not expose roots--cut or uncut-- to drying conditions. Do not paint ends of cut roots.

Failure to prevent injury to any street tree may result in fines and/or penalties as outlined in SMC. 15.43.

C095: The contractor must maintain Red-Line mark-ups at the Project Site per the requirements of the 2023 City of Seattle Standard Specifications 1-05.3(13)A. As-Built Drawings are completed Red-Line Drawings as reviewed and approved by the Engineer of Record per 1-05.3(13)B. Upon completion of final restoration, the applicant shall submit As-Built Drawings to SDOT via the Seattle Services Portal as a Revision Amendment to the permit for the purpose of adding them to The Engineering Records Vault. The SDOT Final Inspection will not be closed out until the As-Built Drawings have been submitted.

C094: No excavations shall be made in the street right-of-way without required protective systems that meet Occupational Safety Health Administration (OSHA) and Labor and Industry (L&I) standards. Further requirements may apply based on site conditions.

Seattle Department of Transportation

Issue Date: 1/31/2024
Original Issue Date: 1/31/2024
Application Received Date: 6/5/2023
Permit Expiration Date: 9/27/2024

Street Use Permit
Permit Number: SUUMP0000620

GENERAL REQUIREMENTS

1. ***Nature of permit.*** This permit is issued according to Seattle Municipal Code ("SMC") Chapter 15.04, for the use or occupancy of the public right-of-way in a manner consistent with the terms and conditions in this permit. This permit is temporary, vests no permanent rights, and is revocable according to SMC Section 15.04.070.
2. ***Acceptance of terms, conditions, and requirements***. The Permittee accepts the terms, conditions, and requirements of this permit and agrees to comply with them to the satisfaction of the Seattle Department of Transportation, Street Use Division ("Street Use"), or such other agency as may be designated by the City. The Permittee further agrees to comply with all applicable City ordinances, including but not limited to SMC Title 15, and all applicable City of Seattle ("City"), county, state, and federal laws.
3. ***Copy of permit***. A copy of the issued permit and current approved plans shall be on-site and available at all times (electronic or hardcopy).
4. ***Expiration of permit***. This permit shall remain valid until one of the following occurs: (1) the permit is revoked according to SMC Section 15.04.070; (2) the permit expiration date is reached; or (3) the authorized work does not begin within six months from the date the permit is issued. The Permittee is responsible for keeping the permit up to date including submitting updated plans for approval. The Permittee shall submit requests to update a permit via the Seattle Services Portal in a timely manner; otherwise, the Permittee may lose access to their requested schedule or use footprint for continued work in the right-of-way.
5. ***Superiority of Street Improvement Permits***. When a Street Improvement Permit ("SIP") exists, rights acquired under the SIP supersede those acquired under any other Street Use or Utility Permits. Work not approved under the SIP shall require separate Street Use or Utility Permits and the Permittee shall obtain these permits in advance of work.
6. ***Compliance with technical requirements and standards***. All work within the public right-of-way shall be performed and completed according to the following technical documents published by the City: Streets Illustrated (Right-of-Way Improvements Manual); Street Tree Manual; Standard Specifications for Road, Bridge, and Municipal Construction; Standard Plans for Municipal Construction; Right-of-way Opening and Restoration Rule; Traffic Control Manual for In-Street Work; and Pedestrian Mobility Rule 10-2015; unless otherwise shown on the approved plans.
7. ***Scope of work***. For permits authorizing construction, the Permittee shall stage equipment or materials and construct or install the improvements and infrastructure reflected in and in accordance with this permit and the City-approved construction plans. Any revisions, omissions, or additions to the scope of work shall be reviewed and approved by the City before implementation. The construction site shall remain in good repair, free of refuse and graffiti as defined in SMC Chapter 10.07.
8. ***Traffic Incidents***. If SDOT determines that a transportation incident or other event is likely to impact the part of the transportation network that includes the permitted site, the Permittee may be required to remove or minimize the permitted use footprint until the transportation network impact has ended.
9. ***Street Use notification***. Construction and utility work may be completed in several phases: site preparation (installing traffic control, saw-cutting, etc.); groundbreaking; restoration; and staging of equipment and materials. Before beginning any phase of work in the public right-of-way, the Permittee shall notify the assigned Street Use Inspector of each date as described below.
   - The Permittee shall submit a **Job Start Notification** in the **Seattle Services Portal** to notify Street Use when work will begin and to schedule or re-schedule the Initial Inspection.
     - If the **Job Start Notification** is not submitted, the **Initial Inspection** will automatically schedule for 5 business days after the first use start date on the issued permit.
     - If the **Job Start Notification** schedule or re-schedule open period has lapsed in the Seattle Services Portal, the Permittee shall provide the start date notification to the assigned inspector.
     - The Permittee shall pay the cost of any inspection fees resulting in the dispatch of an inspector to the site for a scheduled initial inspection unless that inspection was appropriately rescheduled through the Seattle Services Portal Job Start Notification or through direct contact with the Inspector.
   - Subsequent inspection notifications shall be scheduled on the **Seattle Services Portal**. Depending on the permit type, the following inspection notifications may also be available to schedule in the **Seattle Services Portal** after the Initial Inspection has been completed:
     - **Curb Ramp Inspection**: to confirm new curb ramps meet ADA requirements.
     - **Mark Out Inspection**: to establish layout of restoration dimensions.
     - **Restoration Inspection**: to ensure restoration complies with City standards and codes. The Restoration Inspection shall be scheduled a minimum of 2 business days before beginning the restoration work.
     - **Site Inspection**: to request an inspection prior to your next scheduled inspection.
   - Notifications not available on the **Seattle Services Portal**:
     - Pre-construction meeting: required for SIPs and Utility Major Permits before starting construction. To schedule a SIP preconstruction meeting, contact your assigned Street Use reviewer or SIP Project Manager. For Utility Major Permit ("UMP") preconstruction meetings contact your assigned Street Use Inspector at least 10 business days prior to mobilization.
     - Off-hours Inspection: for any inspection needed outside of normal working hours (8am-5pm, Monday-Friday) email request to DOT_StUse_OffHours_Inspection@seattle.gov a minimum of 3 business days in advance. The off-hour request SHALL include the following information:
       - Permit/record number
       - Address/location
       - Hours of work
       - Dates of work
       - Site Contact Name and phone number
       - Description of work
       - And (if applicable) stated confirmation of Hub coordination approval.
   - Please note that off-hours conditions also apply to the observed annual dates of the following holidays in the City of Seattle for inspection response scheduling:
     - New Year's Day, Martin Luther King Jr. Day, President's Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Indigenous People's Day, Veteran's Day, Thanksgiving Day and the Friday following it, and Christmas Day.
   - Failure to notify Street Use Job Start may result in a citation according to SMC Section 15.91.002 and the current Street Use Fee Schedule according to SMC Section 15.04.074.
10. ***Underground and overhead utility notification***. The Permittee shall notify the following entities, as applicable, 2 business days in advance:

- Utility Underground Locate Center (811 or 1-800-424-5555) before ground disturbance; and
- Seattle City Light (206-684-4911) if working within 10 feet of high-voltage lines.

11. ***Olympic Pipeline Company notification***. When work in the right-of-way occurs within 100 feet of an Olympic Pipeline Company ("OPLC") pipeline, the Permittee shall coordinate the work with OPLC, which may include submitting detailed construction plans to OPLC. The Permittee shall notify OPLC's field coordinator 10 business days in advance of the work (425-235-7736) and an OPLC representative may be required to be onsite during the work.
12. ***King County Metro notification***. The Permittee shall notify King County Metro Transit in advance of any construction or use that may disrupt transit service according to the following schedule:
- Five business days' notice (minimum) for any work requiring a short-term temporary bus stop or shelter move.
- Ten business days' notice (minimum) for reroute of bus service.
- 15 business days' notice (minimum) for deactivation of trolley bus overhead electrical system (overhead catenary system, OCS).
- If trolley wires are present, call 206-477-1150 or email trolley.impacts@kingcounty.gov.
- If trolley wires are not present, call 206-477-1140 or email construction.coord@kingcounty.gov.

13. ***Public notification***. Notification requirements shall comply with Client Assistance Memo (CAM) 2117.
14. ***Alley notification***. In addition to the requirements of CAM 2117, where this permit authorizes work in an alley, the Permittee shall notify all potentially impacted property owners and businesses prior to any activity occurring in the alley, including and especially those property owners and businesses with tenants using the alley to access parking or for building ingress/egress or deliveries. The Permittee shall schedule work around waste-management-collection days. If this is not possible, the Permittee shall coordinate with waste management services to either provide intermittent alley access during waste pickup, to actively facilitate waste pickup, or to temporarily establish waste pickup at an alternate location. If an alley is to remain open during permitted work, a minimum 11-foot clear width is required for vehicular access. If an alley is closed to through traffic, the Permittee shall notify Seattle Fire Department at sfd_opsadmin@seattle.gov and the Seattle Police Department at the non-emergency numbers prior to commencing work.
15. ***Coordination of work***. In performing work or occupying the right-of-way as authorized by this permit, the Permittee shall coordinate with other contractors, public agencies, and other permittees working in the public right-of-way to minimize mobility and other impacts to the public. Documented coordination agreements may be required prior to permit issuance and additional notification to the public may be required.
Coordination of work in a designated Construction Hub area:
Locations, dates, and times of work, or occupation in the right-of-way shall be approved by the Construction Hub coordinator through the permit review process. Schedule and time changes after the initial or amendment issuance of a permit shall be approved by the Construction Hub coordinator at least 10 business days prior to impacting the right-of-way. Schedule and time change requests can be emailed to SDOTConstructionHub@seattle.gov.
- Attendance at geo-based Construction Hub coordination meetings may be required to ensure desired dates are coordinated and scheduled and to minimize delays in the permit review and Construction Hub coordination processes. For meeting information and invitations and other information specific to Construction Hubs, email SDOTConstructionHub@Seattle.gov.
- The Construction Hub map can be found at this link: https://www.seattle.gov/transportation/projects-and-programs/programs/pedestrian-program/project-and-construction-coordination-office/construction-hub-coordination

16. ***Hours of work***. Work performed in the public right-of-way shall occur only during hours authorized under all applicable codes, regulations, rules, and permits.
17. ***Billing***. All fees and costs billed according to this permit shall be paid to the City of Seattle within 30 calendar days from the invoice date. Past due invoices may be subject to interest charges and may be sent to collections.
18. ***Deposits, charges, and future billings***. The Permittee or, if designated, Financially Responsible Party, is responsible and liable for all permit related charges.
19. ***Corrective work***. The Permittee is responsible for any additional costs incurred by the City resulting from temporary or corrective measures required to bring the work or occupation area into compliance with standards that apply, including but not limited to: temporary traffic control, requirements for temporary structures, temporary stabilization, and temporary restoration when the Permittee is not on site.
20. ***Indemnification***. The Permittee agrees to defend, indemnify, and hold harmless the City of Seattle, its officials, officers, employees, and agents; against any liability, claims, causes of action, judgments, or expenses, including reasonable attorney fees; resulting directly or indirectly from any act or omission of the Permittee, its contractors, subcontractors, anyone directly or indirectly employed by them, and anyone for whose acts or omissions they may be liable; arising out of the Permittee's use or occupancy of the public right-of-way; and all loss by the failure of the Permittee to fully or adequately perform, in any respect, all authorizations or obligations under this Permit and shall comply with SMC Section 15.04.060.
21. ***Insurance***. Except as exempted by SDOT Director's Rule 04-2023, the Permittee shall, at its own expense, obtain and maintain in full force and effect public liability insurance in an amount sufficient to protect the City from all potential claims and risks of loss from perils in connection with any activity that may arise from or be related to the Permittee's activity upon or the use or occupation of the public right-of-way allowed by the permit; and all claims and risks in connection with activities performed by the Permittee by virtue of the permission granted by the permit and shall meet all other insurance requirements in SMC 15.04.045.
22. ***Maintenance of long-term permitted use.*** The Permittee shall ensure long-term permitted uses remain structurally stable, in good repair, clear of refuse, and free from defacement or graffiti as defined in SMC Chapter 10.07.

EXISTING IMPROVEMENTS
1. ***Costs of damage to City property and improvements***. The Permittee shall be responsible for the costs of repairing any damage to City property or improvements resulting from work performed by or on behalf of the Permittee within the public right-of-way. Damage to street trees is assessed on the value of the tree according to SMC subsection 15.90.018.B.
2. ***Utility protection***. The Permittee shall be responsible for checking locations and providing adequate protection for all utilities in the work area.
3. ***Utility relocation***. The Permittee shall be responsible for notifying affected utilities and requesting any necessary relocation.
4. ***Survey monuments***. Before removing, destroying, disturbing, or covering a survey monument such that the survey point is no longer visible or readily accessible, the Permittee shall obtain a permit from the Department of Natural Resources according to Washington Administrative Code, Chapter 332-120.
5. ***Protecting, removing, and relocating existing improvements***. In addition to General Requirements, the Permittee, at their own cost and expense, shall be responsible for coordinating the removal and relocation of existing improvements within the public right-of-way that their

construction or permitted project may interfere with. These existing improvements include, but are not limited to trees, bike racks, newsstands, signs, benches, artwork, and waste receptacles.
• For existing assets, the Permittee shall contact the improvement owner at least 10 business days before starting work to coordinate the temporary removal of the improvement.
• The Permittee shall be responsible for reinstalling the improvements or coordinating the reinstallation in their original location or at a reasonable alternative location approved by the existing improvement owner and meeting all applicable City requirements. The Permittee is further responsible for protecting all trees within the construction project area and shall contact Urban Forestry to disclose and describe any construction impacts to trees.
• Failure to contact the improvement owners or Urban Forestry is cause for Street Use to revoke this permit.
6. ***Monorail system proximity requirements***. The Permittee shall be responsible for coordinating with the Seattle Center when any work, deliveries, or loading/unloading will occur within 14 feet of a Monorail structure or 20 feet of a Monorail foundation or below-ground installation. The Permittee shall contact the Seattle Center at review@seattlemonorail.com at least 10 business days before starting construction. Failure to do so is cause for permit revocation.
7. ***Monorail system proximity guidelines***. Below grade: The restricted digging area includes a 45-degree cone extending outward and downward from the ground level of all monorail piers. Nearby excavations shall be monitored to assure footing stability. At- or above-grade: The piers above ground level cannot be moved, nor can any item like lighting or signage be attached to the piers without prior written consent from the Seattle Center Director. Piers shall not be painted. Landscaping shall not occur adjacent to piers or within 10 feet of a Monorail structure without prior written consent of the Seattle Center Director. Any construction activity in the area of the power rails shall follow OSHA guidelines for working around high voltage. Construction equipment shall be located and operated in awareness of and taking account of beam height and the train's 14-foot-operational envelope from each side of the beam. Contractors shall string warning lines from pier to pier under the beams as a guide. Spotters shall be employed when any construction activity occurs within 25 feet of the beams.

ENVIRONMENTAL PROTECTION
1. ***Best management practices required***. The Permittee shall be responsible for protecting the public place, including but not limited to protecting existing street trees and green stormwater infrastructure, and controlling surface runoff, erosion and sediment at the construction site, as required by: the Stormwater Code and Manual, (SMC Title 22, Subtitle VIII); the Street and Sidewalk Use Code, (SMC Title 15); the Standard Specifications for Road, Bridge, and Municipal Construction; and the Regulations for Environmentally Critical Areas (SMC Chapter 25.09). The site and the surrounding area shall generally be kept clean and free of construction debris or other material, including but not limited to mud, dust, rock, asphalt, and concrete. Waste materials shall be collected and disposed of at an appropriate disposal site. These materials shall be prevented from entering any part of the public sewer and storm drain system, and any surface waters.

TRAFFIC CONTROL REQUIREMENTS
1. ***Compliance with the Traffic Control Manual for In-Street Work***. In order to provide safe and effective work areas and to ward, control, protect, and expedite vehicular and pedestrian traffic; signage for all construction within the public right-of-way shall comply with the City of Seattle Traffic Control Manual for In-Street Work, as amended. When required, the conditions on the traffic control plan shall supersede any conflicting provisions or requirements in the City of Seattle Traffic Control Manual for In-Street Work. A copy of the current City of Seattle Traffic Control Manual for In-Street Work and the approved traffic control plan shall be on site at all times.
2. ***Lanes to remain open during peak hours***. Traffic lanes shall not be closed during the following peak hours: 6:00 AM - 9:00 AM and 3:00 PM - 7:00 PM in the Central Business District and 7:00 AM - 9:00 AM and 4:00 PM - 6:00 PM for arterials elsewhere in the City, unless specifically noted on the approved traffic control plan.
3. ***Maintain access***. Access to adjoining properties and businesses shall be maintained or accommodated during construction. Pedestrian access around construction sites shall be implemented and maintained per SDOT Director's Rule 10-2015, or successor rule.
4. ***Width of temporary traffic lanes***. Temporary traffic lanes created during the permitted work shall be a minimum of 11 feet in width unless otherwise approved on the traffic control plan.
5. ***Working within restricted curb spaces***. When the project impacts a restricted curb space, such as meters, pay stations, and specific use and load zones; the Permittee shall obtain all necessary permits in the Seattle Services Portal.
6. ***Temporary No Parking signs and easels***. In areas without parking pay stations or parking meters, or when Traffic Operations allows reserved parking spaces to be controlled with Temporary No Parking signs, establishing a Temporary No Parking Zone requires placing type R7-T38 (T-38) or R7-T39 (T-39) easels and obtaining all necessary permits in the Seattle Services Portal in conformance with the Traffic Control Manual for In-Street Work. In high impact areas, the Central Business District, and in areas where construction projects are densely clustered (such as in City-designated Construction Hubs), additional requirements for establishing a Temporary No Parking Zone may apply. The Permittee shall clearly and legibly mark signs and easels indicating dates and times of traffic restriction and shall maintain signs and easels in good condition and free of graffiti.
7. ***Nighttime illumination***. For permits authorizing construction, the Permittee shall place and maintain at the points of obstruction or excavation of any right-of-way, four or more Type B warning lights of sufficient brilliance to be seen from 500 feet during the hours of darkness.
8. ***Work in alleys***. For work occurring in alleys that impedes vehicular access, including but not limited to egress, ingress, or through travel; the Permittee shall place "Street Closed" signs at each end of the alley.

ENFORCEMENT
1. ***Enforcement.*** Violations of any of the requirements set forth herein are subject to enforcement according to SMC Title 15 Section IV.

Permit Number:
6996584-CN

CITY OF SEATTLE
Construction Permit

Seattle Department of
Construction and Inspections
700 Fifth Ave, Suite 2000
PO Box 34019
Seattle, WA 98124-4019
(206) 684-8600

APN #:

Site Address: 2350 24TH AVE E SEATTLE, WA 98112
Building ID: none
Location: Work will be conducted in the parking lot on the west side of the store. The treatment
Legal Description: APN: 678820-1335 LTS 1 & 2, BLK 29, LESS ELY 6' THEREOF, PIKES 2ND ADDN TO
Records Filed At: 2350 24TH AVE E

OWNER
Kuk-Jin Choung
2350 24TH AVE E
SEATTLE, WASHINGTON 98112
Ph: (206) 683-5917

CONTRACTOR INFORMATION
Disclosed by the permit applicant
Work Performed By: Licensed Contractor
Contractor License: GLACIES108C7
Contractor Name: GLACIER ENVIRONMENTAL SRVC INC
Contractor Phone: (425) 355-2826
Link to Contractor Data

Application Date:	01/02/2024
Issue Date:	05/17/2024
Expiration Date:	11/17/2025
Fees Paid:	$5,622.99
As of Print Date:	05/17/2024

Description of Work: Construct remediation treatment facility in modified shipping container, occupy per plan.

Permit Remarks:

Curb Cut Size and Location: N/A - existing

Building Code: 2018 SBC
SDCI Valuation: $15,333
Occupancy Cert Required: Y
Special Inspections: Y
Land Use Conditions: N
Separated Use: N **Site Final Required: Y**

Building Info:

Basements:	0
Stories:	1
Mezzanines	0

Housing & Dwelling Unit(s) this Permit:

Unit Type	DU?	Units	Add	Remove
None	N	0	0	0

Zoning/Overlay:
NC1-40 (M)
Council District 3
FREQ_TRANSIT_SRVC_
MHA_ZONING Yes, (NC1

Occupancy per Building Code						Approved Use per Land Use Code	
Floors	Type	Occupancy Group	Occupancy Type	Asmbly Load	Fire	Use	Location
1st	Type VB	F-2 Factory - Low Hazard	Site Remediation		None	General Retail Sales &	N/A

A/P #	Related Cases/Permits
6996584-CN-003	Contractor Disclosure Form
6996584-CN-004	Upload Documents
6996584-CN-001	Construction Application Intake
6996584-CN-006	Upload Documents
6996584-CN-005	Special Inspection
6996584-CN-002	Developer Contributions
Additional Information on File	

Project Contacts	Name
Ordinance Reviewer	Brian Newson
Structural Reviewer	Roussi Roussev
Zoning Reviewer	Katrina Nygaard
Geo Soils Reviewer	Pao Huang
Addressing Reviewer	Sherri Brown
MHA Reviewer	Katrina Nygaard

Applicant Signature: **Date:**

Permitted work must not progress without prior inspection approval. When ready for inspection, make request with the Seattle Department of Construction and Inspections at (206) 684-8900 or on the internet at: https://cosaccela.seattle.gov/portal/. **Provide the permit number, site address, and contact phone.** Permission is given to do the above work at the site address shown, according to the conditions hereon and according to the specification pertaining thereto, subject to compliance with the Ordinances of the City of Seattle. Correct information is the responsibility of the applicant. Permits with incorrect information may be subject to additional fees.

You must have a paper copy of your approved and stamped plan set available at your job site for the City Inspector to review. If you do not have your plans printed and ready for review, you may fail your inspection.

PERMIT # 6996584-CN

City of Seattle
Seattle Department of Construction and Inspections
700 Fifth Ave, Suite 2000

POST THIS SIDE OUT

TO THE CONTRACTOR/OWNER:
Additional permits may be required for work occurring under this permit. This permit does not authorize Sewer, Public Right-of-Way Shoring, Drainage and Street Use, Fire Department, Boiler, Electrical, Elevator, Furnace, Gas Piping, Plumbing, or Sign permits. If other permits are required, they must be applied for separately from this permit. The requirements for all other permits related to this Permit, must be completed prior to the Final Inspection of this permit. The premises must not be occupied until the Final Inspection is completed and occupancy is authorized by the Seattle Department of Construction and Inspections. If your project is in a pre-1978 built residence, or pre-1978 built child-occupied facility, Washington's Lead Renovation Rule WAC 365-230-360 requires certification to perform your work. Call to ask for compliance details at (360) 586-5323, or email to: lbpinfo@commerce.wa.gov

PROPERTY LINES MUST BE ESTABLISHED BY SURVEY STAKES PRIOR TO SETBACK/FOUNDATION INSPECTION.

BEFORE BEGINNING CONSTRUCTION:
A) Before **First Ground Disturbance**, request an inspection of installed **Erosion Control Measures**.
B) When there is **Special Inspections**, Land Use conditions, and/or unusual design elements, a **Pre Construction Conference** is required **prior** to construction. Call 684-8860 to request a Pre Construction conference.
C) If this permit requires a **Soil Bearing Capacity** special inspection by a Geotechnical Engineer, that approval is required **before** the foundation pour.
D) When **Special Inspections** are required, notify the Special Inspection Agency at least 24 hours in advance.

INSPECTION REQUESTS: Please clarify which inspections your project requires **before** proceeding with your project.
You may request an inspection on the internet or by phone. Inspection requests received **before 7:00 AM** are scheduled for the same working day. Inspection requests received **after 7:00 AM** are scheduled for the next working day. Inspectors are available between the hours of 7:30 AM and 8:30 AM.
A) **Internet:** https://cosaccela.seattle.gov/portal/ Search for your record and click on the **Inspections & Appointments** link to schedule your inspection.
B) **24 hour inspection request line at (206) 684-8900**, **cell phones are discouraged** due to frequent connection problems.
C) **Customer Service at (206) 684-8950** between the hours of 7:30 AM and 4:30 PM.

DURING CONSTRUCTION:
SDCI inspectors will provide an electronic copy of each inspection report through the Seattle Services Portal. Go to the portal, print a copy of the inspection reports, and keep them together or with this Permit, where they can be conveniently referenced,

a.	**FIRST GROUND** (non distrubance areas, erosion control, tree protection)	f.	**INSULATION** (Slab, Walls, Ceiling)
b.	**SETBACK** (Location)	g.	**MECHANICAL COVER** (If HVAC is authorized by this permit)
c.	**FOUNDATION** (Footings, Walls) [Soil bearing, Reinforcing steel, Foundation drainage]	h.	**MECHANICAL FINAL** (If HVAC is authorized by this permit)
d.	**STRUCTURAL** (Shear Wall, HD's/Straps, Diaphragms)	i.	**SITE FINAL** (If required by this permit)
e.	**FRAMING** (Sub floor prior to sheathing, Walls, Ceiling)	j.	**FINAL INSPECTION** (After all other related permit requirements are completed)

PRIOR TO FINAL BUILDING APPROVAL:
Other permit approval sign-offs may be required prior to the Final Inspection of this permit. To speed-up Final approval of this permit, we recommend you acquire other permit final approvals in the signature boxes provided below.

SOIL BEARING Approved By Engineer Date	**BOILER** Approved By Date	**SEATTLE FIRE DEPARTMENT** Approved By Date
ELECTRICAL Approved By Date	**ELEVATOR** Approved By Date	**LAND USE/DESIGN REVIEW** Approved By Date
PLUMBING / GASPIPING / BACKFLOW Approved By Date	**SITE / SIDE SEWER** Approved By Date	**SDOT - PRVT CONTRACT/ST. USE** Approved By Date
MECHANICAL / REFRIGERATION Approved By Date	**OTHER** Approved By Date	**STREET TREES / ARBORIST** Approved By Date

City of Seattle

DEPARTMENT OF CONSTRUCTION AND INSPECTIONS

CERTIFICATE OF OCCUPANCY

A/P No.: 6996584-CN **Address:** 2350 24TH AVE E SEATTLE, WA 98112

Bldg ID: none **Records Filed At:** 2350 24TH AVE E

Bldg Description:

Total Units for Building: 0

Occupancy Group	Occupancy	Floors/ Area	Assembly Load	Construction Type	Sprinkler Standard
F-2 Factory - Low Hazard	Site Remediation	1st		Type VB	None

Construct remediation treatment facility in modified shipping container, occupy per plan.

The work noted above has been inspected and approved as complying with provisions of the Seattle Building Code

Issued this 8th day of April, 2025 **for Director by** Patrick Beaulieu

Patrick Beaulieu, Chief Building Inspector

This certificate shall be posted in a conspicuous public area, shall not be removed, mutilated or obscured and shall be maintained in legible condition at all times. Any change of occupancy requires a new certificate.

APPENDIX B-PRECONSTRUCTION PLANS

Well Installation Plan

Project: Circle K Site 1461

Prepared for:

WA Department of Ecology

The purpose of this Well Installation Plan is to provide detail of the means and methods Glacier intends to use to install slant and vertical wells on the Circle K Remediation Site 1461 Remediation Project. This Plan has been prepared based on the Specifications 01 33 00 and 33 11 53.13.

1.0 Well Installation

Glacier Environmental Services, Inc. will subcontract Cascade Drilling of Bothell, Washington to install the wells. Cascade employs multiple licensed drillers and will provide a copy of the license for the selected driller prior to construction. Cascade is planning one mobilization for their TSi 150cc sonic rig to complete all of the wells. A copy of the equipment specification is attached.

Well SW-1 is located in close proximity to the bus trolley line and therefore will be completed on a weekend during a coordinated de-energization of the trolley lines. All other wells are greater than 10 feet from power lines and therefore can be completed during normal working hours.

Cascade will file the Notice of Intent and Well Logs directly with the Department of Ecology.

2.0 Sampling & Screening During Drilling

Glacier will subcontract Krazan & Associates of Lynnwood to perform the well logging, field screening and soil sampling as described in specification 33 11 53.13. Samples collected for chemical analysis will be transported to ALS Laboratory in Everett, Washington.

Well Logs

Krazan will keep a log of the material found during drilling and show the elevations at which the material was encountered, with particular care being taken to locate all water bearing strata.

A complete report of the log will be submitted to the Engineer and Ecology Representative at the end of each day's drilling operation.

During drilling and well construction the Drilling Log will include the following:

1. Reference point for all depth measurements.
2. The depth at which each change of formation occurs.

3. Record of bits used.
4. Drilling times for each 5-foot increment.
5. The thickness of each stratum.
6. The identification of the material of which each stratum is composed (clay, sand or silt, gravel, cemented formations, hard rock, etc.).
7. The depth interval from which each formation sample was taken and, if the sampler is driven a hammer, the number of blows per foot during sampling.
8. The depth to the static water level (SWL).
9. Total depth of the completed well.
10. Any and all other pertinent information for a complete and accurate log; i.e. temperature, pH and appearance (color) of any water samples taken.
11. Depth or location of any lost drilling fluids, drilling materials, or tools.
12. The nominal hole diameter of the well bore above and below casing seal.
13. The depth and description of the well casing.

Field Screening

Krazan will perform field screen tests on drill cuttings every 2 feet, or at significant changes in lithology. Field screening will include headspace screening using a PID, sheen testing, visual and olfactory observations in accordance with specification **33 11 53.13.**

Soil Sampling

At least two soil samples will be collected at each soil boring location and submitted for initial laboratory analysis of gasoline-range hydrocarbons (TPH by method NWTPH-Gx) and BTEX constituents (by EPA method 8260B) :

1. One sample from the unsaturated zone (above 5 feet below ground surface)
2. One sample from the presumed smear zone (5 to 10 feet below ground surface)

Each soil sample will be designated on the Chain of Custody with the boring designation and the depth interval; type of analysis; time and date of sample collection; collector's name, name of preservative. Soil sample intervals will be recorded on the Drilling Log.

Additional soil samples may be collected if potential petroleum hydrocarbon impacts in soil are identified based on field screening observations and the depth interval is not represented by other samples.

3.0 IDW Management

All water and drill cuttings will be stored separately in 55-gallon drums and sampled in accordance with the Soil & Waste Management Plan for the project.

Laboratory analysis for all soil samples will include testing for gasoline-range hydrocarbons by method NWTPH-Gx and BTEX constituents by EPA method 8260B. In addition, at least 5 of these samples will also

be analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8260B, RCRA 8 Metals by EPA Method 6010 (arsenic, barium, cadmium, chromium, lead, selenium, and silver) and by EPA Method 7471 (mercury), and TPH by NWTPH-Dx (without Silica Gel Cleanup) (number of samples is based on *Guidance for Remediation of Petroleum Contaminated Sites, Washington State Department of Ecology Pub. No. 10-09-057*).

Water generated during well drilling, development and testing will be collected separately in 55 gallons drums. A composite sample of water will be collected for profiling. The water will be sampled and analyzed for VOCs by EPA Method 8260B, RCRA 8 Metals by EPA Method 6010 (arsenic, barium, cadmium, chromium, lead, selenium, and silver) and by EPA Method 7470 (mercury), TPH by NWTPH-Dx (without Silica Gel Cleanup), NWTPH-Gx and Polychlorinated Biphenyls (PCBs) by EPA Method 8082.

Soil drums will remain onsite until trenching activities begin. Drummed soil will be comingled with trench spoils scheduled for offsite disposal and transported to a Subtitle D Landfill via dump truck.

TERRA SONIC INTERNATIONAL

TSi 150CC COMPACT CRAWLER-MOUNTED SONIC DRILL RIG

- COMPACT CRAWLER-MOUNTED UNIT
- 225 HP DIESEL ENGINE TO POWER ALL DRIVING, DRILLING AND ACCESSORY HYDRAULIC FUNCTIONS
- EXCLUSIVE TSi 150 SERIES SONIC OSCILLATOR USES 150 HP TO GENERATE RESONANT SONIC ENERGY
- STANDARD 19 FT 1 IN. (5.8 M) LONG MAST; AVAILABLE 14 FT 6.5 IN. (4.4 M) SHORT MAST
- MAST ACCOMMODATES 10 FT (3 M) SECTIONS OF TOOLING OR 5 FT (1.5 M) WITH OPTIONAL SHORT MAST
- ANGLE DRILLS BETWEEN VERTICAL AND NEARLY HORIZONTAL
- RATED DRILLING DEPTH OF UP TO 1,000 FT (304.8 M) DEPENDING ON THE LITHOLOGY AND CASING DESIGN

27825 STATE ROUTE 7, MARIETTA, OHIO 45750 USA
TELEPHONE: 740.374.6608 • WWW.TERRASONICINTERNATIONAL.COM

TERRA SONIC INTERNATIONAL

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MARIETTA, OHIO 45750 USA
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www.terrasonicinternational.com

TSi 150CC COMPACT CRAWLER-MOUNTED SONIC DRILL RIG

SONIC HEAD SPECIFICATIONS

- SONIC Head Model TSi 150
- Oscillator Frequency of 0–150 Hz
- Oscillator Force of 50,000 lbf (222 kN)
- Max Torque (high torque/low speed) of 4,677 ft-lb (6,341 N-m)
- Rotation Speed (low speed/high torque) of 0 to 80 rpm

DIMENSIONS AND WEIGHT

- Width (Folded) is 7 ft 3 in. (2.2 m)
- Width (Unfolded) is 7 ft 11.5 in. (2.4 m)
- Length (Folded) is 19 ft 2.25 in. (5.85 m)
- Length (Unfolded) is 19 ft 3.25 in. (5.87 m)
- Height (Folded) is 7 ft 1.38 in. (2.2 m)
- Height (Unfolded) with Jib Stored and Mast Fully Raised is 20 ft 2.5 in. (6.16 m)
- Weight is 22,400 lbs (10,161 kg)
- Ground Clearance is 10.5 in. (267 mm)

MAST SPECIFICATIONS

- Head Tilts 87 Degrees and Hinges Away from Driller to Enable Jib Over the Hole
- Head Travel of 14 ft 1 in. (4.3 m)
- Head Travel Speed of 0 to 155 fpm (0 to 47.3 m/min)
- Overall Length is 19 ft 1 in. (5.8 m)
- Drilling Angle of Vertical to Nearly Horizontal
- Upper Jib Hoist of 2,000 lb (907 kg) Capacity, 150 fpm (46 m/min) Bare Drum Speed
- Feed System is a Hydraulic Operated Feed Frame Using Half the Leaf Chain Length and Rollers as Conventional Hydraulic Cylinder/Chain Method
- Mast Lock—Manual Mast Lock in Vertical Position
- Hose Carrier is a Mast Integrated Hose Management System with Accessible Bulkheads
- Optional Low Clearance (Short) Mast Available—14 ft 6.5 in. (4.4 m)

DECK SPECIFICATIONS

- Driller Platform is 3 ft (914 mm) L x 2 ft 6 in. (762 mm) W, with a Hinge for Folding it Up
- Four Jacklegs 3½ in. (89 mm) x 24 in. (618 mm); Located at Deck Corners with Built-in Lock Valves

RIG PERFORMANCE SPECIFICATIONS

- Rated Drill Depth of Up to 1,000 ft (304.8 m) Depending on the Lithology and Casing Design
- Max Drilling Diameter of 12 in. (305 mm) Casing
- Drill Feed Rate of 0 to 135 fpm (0 to 41 m/min)
- Pull Back Force of 16,800 lbf (74.7 kN)
- Down Force of 11,300 lbf (50.3 kN)
- Max Casing Length of 10 ft (3 m)

HYDRAULIC SYSTEM SPECIFICATIONS

- Hydraulic Oil Capacity is 120 gal (454 L)
- Hydraulic Cooling System of 240,000 Btu/hr @ 100 gpm (70.3 kW @ 379 Lpm) and 50,000 Btu/hr @ 20 gpm (14.7 kW @ 76 Lpm) for Sonic Head Lubrication
- Variable Displacement Pumps—Load Sense Piston Pumps with Pilot Controlled Valves
- Hydraulic Control is Hydraulic Over Hydraulic for All Functions
- Manual Setup Functions

ENGINE SPECIFICATIONS

- Engine is a John Deere, Model 6068, Diesel, Tier 3 with Stage IIIA Emission Certification Standards
- Engine Power of 225 hp (168 kW) @ 2,000 rpm
- Murphy PowerView is Used to Monitor Engine and Transmission Parameters
- Fuel Capacity of 42 gal (159 L)
- Auxiliary Air Compressor of 13.2 CFM @ 120 psi (22.4 m^3/hr @ 8.3 bar)

BREAKOUT WRENCH SPECIFICATIONS

- Wrench Has Dual Cylinders on Both Top and Bottom Wrench
- Bottom Wrench Clamping Cylinders Have Integral Lock Valves
- Wrench Clamp Force has Adjustable Pressure Control Preset at 34,500 lbf (153.4 kN)
- Breakout Torque of 30,365 ft-lb (41,157 N-m) with Dual Cylinders
- Wrench Size Range of 3 in. (76 mm) to 12 in. (305 mm)
- Wrench Travel is 19-Degree Swing
- Hardened Inserts are Standard
- Optional Casing Clamp with Integral Lock Valves in Clamping Cylinders

WATER SYSTEM

- Deck Mounted Triplex Pump—Standard for Water Soluble Fluids (40 gpm) (151.42 Lpm)
- Water Meter with LED Readout
- Optional FMC Bean Mud Pump (44 to 53 gpm) (166.56 to 200.63 Lpm)
- Optional 300-Gallon Detachable Water Tank (1,136 L)
- Optional Progressive Cavity Grout Pump

SECTION 33 11 53.13

REMEDIATION WELLS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. This Section includes furnishing all labor, supervision, material, transportation, tools, supplies, equipment, and appurtenances necessary for the drilling, sampling, logging, and testing of three vertical remediation wells, three slant remediation wells, and three sub-slab depressurization wells as described herein.

B. For the purposes of this Section, the following definitions shall apply:

1. Vertical Remediation Well: A vertical well to be used in the in-situ treatment of petroleum hydrocarbons-impacted soil and groundwater to:
   a. extract groundwater and soil vapor, and
   b. inject groundwater amended with surfactants and nutrients.
2. Slant Remediation Well: A well installed at a 30-degree angle from the vertical that will be used in the in-situ treatment of petroleum hydrocarbons-impacted soil and groundwater to:
   a. extract groundwater and soil vapor, and
   b. inject groundwater amended with surfactants and nutrients.
3. Sub-Slab Depressurization Well: A shallow, horizontal well installed below ground surface (bgs) outside the existing buildings on site to extract soil vapor to remove hydrocarbon vapors can create a vacuum beneath the building slab.

1.02 SCOPE OF WORK

A. The work shall be accomplished in the following sequence. At the end of each item of work, the Engineer will evaluate the progress and results of the work. The Engineer shall have the sole authority to determine if the work will continue or may terminate the work sequence without penalty.

B. Coordination with King County Metro Transit: Drilling of slant wells shall require coordination with Metro County Transit for shutdown of the overhead bus power lines due to the small distance between the well locations and the electric wires on 24th Street. A minimum of 15 business days is necessary in advance of well drilling. Shutdown of the overhead bus power lines is only possible on weekends; therefore, drilling of slant wells of the electric wires must be completed on weekends.

C. Vertical Remediation Well Installation: The work includes the complete construction of three vertical remediation wells including well casing, drilling, and testing. The work includes:

1. Drill a minimum 8-inch diameter hole to a depth of 22 feet below ground surface (ft bgs) (~~NRW-1 and NRW-2~~ RW-8 and RW-9) or to a depth of 30 ft bgs (~~NRW-3~~ RW-10), or as directed by the Engineer.
2. Install a 4-inch-diameter casing, and backfill the annular space between the casing with filter pack and sealant material as described in Section 2.
3. The screen interval will be 5 to 20 ft bgs ~~NRW-1 and NRW-2~~ (RW-8 and RW-9) and 23 to 28 ft bgs (~~NRW-3~~ RW-10).
4. Perform all specified operations incidental to well construction such as permits, logs, filing of records, temporary capping, and cleanup.

D. Slant Well Installation: The work includes the complete construction of three slant remediation wells including well surface casing, drilling, and testing. The work includes:

1. Drill a minimum 8-inch diameter hole to an angled depth of 20 ft bgs (approximately 23 feet along the angled boring) at an angle of 30 degrees, or as directed by the Engineer.
2. Install a 4-inch-diameter surface casing and backfill the annular space between the casing and the bore hole with filter pack and sealant material as described in Section 2.
3. The screen interval will be ~~5 to 18 ft bgs~~ 15 feet long, from 6 to 21 feet measured along the angled boring.

E. Soil Sample Collection: The work includes borehole logging, soil classification, and soil sampling for laboratory analysis.

F. Field Screening: The work includes screening by photoionization detector, testing for sheen, and screening for visual and odor indicators of petroleum impact.

G. Sub-Slab Depressurization Well Installation: The work includes the installation of three horizontal sub-slab depressurization wells including saw cutting existing concrete or asphalt pavement as needed. The work shall be performed in accordance with the details shown on the Drawings.

1. The well shall be installed at least 1 ft below the depth of any perimeter footing for the building where it is located.

H. Well Testing: The work includes testing of the vertical and slant wells. This includes:

1. Test pump well and conduct water level monitoring. Record extraction flow rate.
2. Draw water quality samples for analysis by Engineer.

I. Wellhead Inspection: The work includes inspection of each wellhead prior to covering once piping to the treatment system is installed to check for air leakage at the piping-well connection.

1.03 RELATED SECTIONS

A. **Section 01 33 00 – Submittal Procedures**

B. **Section 01 99 00– Environmental Protection**

C. **Section 01 74 19 – Construction Waste Management**

D. **Section 02 40 00 – Demolition**

1.04 REFERENCES

A. ASTM International (ASTM)

1. D2488-06 Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)
2. D2487-00 Standard Practice for Classification of Soils for Engineering Purposes

B. State of Washington Administrative Code (WAC), Chapter 173-160.

C. AWWA Standard A100.

D. Department of Ecology Publication No. 10-09-057: Guidance for Remediation of Petroleum Contaminated Sites.

E. Environmental Protection Agency (EPA)

1. Method 5035 Test Methods for Evaluating Solid Waste

1.05 SUBMITTALS

A. Product Data: Fully describe every product proposed for use and demonstrate that they conform to these Specifications.

B. Material Data: Show that all materials to be used in the construction of the well conform to the Specifications.

C. Well Installation Plan: Contractor shall submit a Well Installation Plan with Ecology prior to starting work. The Well Installation Plan shall include, at a minimum, the following:

1. Plan of Operations: The Plan of Operation shall include identification of any subcontractors, a description of the firm, a copy of all required permits, listing of

proposed drilling equipment, and a description of the procedures and outputs from the procedure.

2. Water Disposal Plan: The Water Disposal Plan shall describe all methods proposed for handling, filtering, and discharging water developed during drilling, development and test pumping from the production and observation wells and piezometers.

3. Cutting Disposal Plan: The Cutting Disposal Plan shall describe all methods proposed for handling, water separation, and consolidation for hauling by others all soil and rock cuttings developed during construction of the observation and production wells and piezometers.

D. Drilling Log: The Contractor shall keep an accurate log of the material found during the drilling of both wells and show the elevations at which the material was encountered, with particular care being taken to locate all water bearing strata. A complete report of the log shall be submitted to the Contracting Officer via fax at the end of each day's drilling operation. During drilling and well construction the Drilling Log shall include the following:

1. Reference point for all depth measurements.
2. The depth at which each change of formation occurs.
3. Record of bits used.
4. Drilling times for each 5-foot increment.
5. The thickness of each stratum.
6. The identification of the material of which each stratum is composed (clay, sand or silt, gravel, cemented formations, hard rock, etc.).
7. The depth interval from which each formation sample was taken and, if the sampler is driven a hammer, the number of blows per foot during sampling.
8. The depth to the static water level (SWL).
9. Total depth of the completed well.
10. Any and all other pertinent information for a complete and accurate log; i.e. temperature, pH and appearance (color) of any water samples taken.
11. Depth or location of any lost drilling fluids, drilling materials, or tools.
12. The nominal hole diameter of the well bore above and below casing seal.
13. The depth and description of the well casing.
14. Construction drawings indicating the as-constructed details of the finished wells.

E. Records Required: The Contractor shall keep development and test records maintained showing all pertinent information concerning method of development.

1. Contractor shall submit parameters reded during well development to the Engineer for each well (see Section 3.04 below).

F. Report Required: The Contractor shall file with the State of Washington Department of Ecology, and other required Agencies, such reports and logs which may be required, including the Well Report, and supplemental reports as may be required.

G. Samples: Furnish, without additional cost to the Contracting Officer, such quantities of construction materials as may be required by the Contracting Officer for test purposes. The Contractor shall cooperate with the Contracting Officer and furnish necessary facilities for sampling and testing of all materials and workmanship. All materials furnished and all work performed shall be subject to rigid inspection, and no material shall be used in the construction work until it has been submitted and favorably reviewed by the Contracting Officer.

1.06 QUALITY ASSURANCE

A. The Contractor, or their hired subcontractor, shall, at his own expense, procure all permits, certificates, and licenses required of him by law for the execution of this work. He shall comply with all federal, state, and local laws, ordinances or rules and regulations relating to the performance of the work, including the requirements of the Washington Administrative Code, Chapter 173-160. The cost of all permits, certificates and licenses required by law for the completion of the described work shall be considered as included in the bid.

1.07 NOTIFICATION

A. The Contractor shall be responsible to give notice to Ecology in writing prior to performance of specific operations as follows:

1. At least seventy-two (72) hours advance notice of intent to start drilling operations of the vertical and slant remediation wells.

At least seventy-two (72) hours advance notice of intent to start operations for installation of the sub-slab depressurization wells.

PART 2 – PRODUCTS

2.01 CASING

A. Well Casing: Well casing shall be new rigid polyvinyl chloride (PVC) with a wall thickness at least equal to Schedule 40 well casing pipe. PVC Material shall comply with ASTM D1784 with a cell classification of 12454C or 14333 C or D.

B. Casing Guides: During slant well installation, centering guides shall be attached in a favorably reviewed manner to the outside of well casing sections to center the elements in the bore hole. Centering guides shall, at a minimum, consist of “vane”

type worm gear style centralizers made from stainless steel SAE HD clamps assembled to four stainless steel strap bow springs. The steel collar rings shall have hinges placed within the channel to eliminate hinge damage. Bow springs shall be made of 1-1/4-inch by 3/16-inch #1095 spring steel. Three guides shall be placed: at the bottom of the well screen, the approximate middle of the well casing and in the cement interval between approximately 2 and 3 feet bgs measured along the angle.

C. Centering guides shall be sized to create a uniform annular space around the casing in the borehole.

D. Finished Grade and Surface Restoration: Finished grade around the well shall be a flush with the existing ground. The ground surface shall be raked clean of all construction materials and cement debris. Final grading shall slope away from the wellhead and if necessary, divert surface flow around the wellhead.

E. Monument: Well monument shall be flush with the ground, at least 12 inches in diameter, and traffic rated.

F. Well cap: 4-inch PVC compression cap with passthrough fittings for sampling.

2.02 SCREEN

A. Screen shall be made of PVC with a wall thickness at least equal to Schedule 40. PVC material shall comply with ASTM D 1784 with a cell classification of 12454C or 14333 C or D.

B. The screen shall be of the machine-slotted type, 0.010-inch slot, or as directed by the Engineer.

2.03 BACKFILL MATERIAL

A. Sand backfill material shall be clean, washed 10/20 Colorado Silica Sand, free from flat or elongated particles. The backfill material shall be free from organic matter and other deleterious material. Sand backfill shall extend from the bottom of the borehole to 1-foot above the top of the well screen.

B. Bentonite shall be installed above the sand backfill to 3 ft bgs.

C. Wellhead Seal – The wells shall have a continuous seal that seals the annular space between the bore hole and the permanent casing. The seal shall extend from the ground surface to the top of the filter pack. The filter pack shall be no less than one foot above the screen interval. The cement sealant shall consist of a neat cement (2.07.C).

2.04 EXTRACTION/INJECTION LINE AND CONNECTION TO TREATMENT SYSTEM

A. 1-inch Schedule 40 PVC pipe shall be installed in the center of each well.

B. Connection to the 1-inch HDPE pipe that connects to the treatment system shall be in accordance with the details shown on Drawing C-03.

C. Pitless adapter shall be 1-inch bronze, lead-free.

2.05 WATER

A. Potable water from a standard water hose spigot will be provided by Owner at typical flow rates and pressures. The hose access for water may be used for each day of drilling operations for construction at no charge. The Contractor shall supply the materials, labor, and equipment to deliver the water to the well site.

2.06 HYDRATED BENTONITE TRANSITIONAL SEAL

A. Bentonite shall be new material, clean of any contamination, and shall be a manufactured product specifically for use as a well sealing material. Hydration shall be as per the manufacturer's recommendations for installation in a dry well hole environment.

B. Bentonite slurries shall be prepared and installed according to the manufacturer's instructions.

C. Active solids content (bentonite) shall be greater than or equal to 20% by weight in all bentonite slurries. The active solids shall be checked using the following formula:

$$\%\ solids = \frac{Weight\ of\ bentonite\ (lbs)}{Weight\ of\ bentonite\ (lbs) + (gallons\ of\ water\ x\ 8.33\frac{lbs}{gal})}\ x\ 100$$

D. Unhydrated bentonite-pelletized, granulated, powder, or chip bentonite may be used in the construction of seals. The bentonite material shall be specifically designed for sealing and be within the industry tolerances for dry western sodium bentonite. Placement of bentonite shall conform to the manufacturer's specifications and result in a seal free of voids or bridges.

2.07 NEAT CEMENT SEAL

A. Neat cement shall be new material, clean of any contamination, and shall be a manufactured product specifically for use as a well sealing material.

B. Neat cement consists of either Portland cement types I, II, III, or high-alumina cement mixed with less than or equal to 6 gallons of potable water per sack of cement (94 pounds per sack).

C. Neat cement grout consists of neat cement with up to 5% bentonite clay added, by dry weight of the bentonite. Bentonite is to be added to improve flow qualities and compensate for shrinkage.

D. Expanding agents, such as aluminum powder, may be used at a rate less than or equal to 0.075 ounce (1 level teaspoon) per sack (94 pounds per sack) of dry cement. The powder may not contain polishing agents. High-alumina cement and Portland cement of any types must not be mixed together.

PART 3 – EXECUTION

3.01 EQUIPMENT

A. The Contractor must provide equipment which is in first class working order. No unnecessary delays or work stoppages will be tolerated due to inadequate or faulty equipment. The Contractor shall be held responsible, and payment may be withheld for damages to the well due to any cause of negligence or faulty operation.

B. Job Supervision: The Contractor shall have a competent and responsible supervisor in attendance at the well site at all times during the construction, development, and test pumping of the well.

C. Hole Protection: The Contractor shall take all measures necessary to protect the well bores from caving and raveling. If a temporary conductor pipe is used to prevent caving in during placement of the seal or during drilling, it shall be removed as the seal is placed.

D. Well Location: The wells shall be located as shown on the Drawings. Coordinate with the Engineer to field confirm well locations. Locate and stake each well prior to starting well drilling construction.

E. Cuttings Disposal: The Contractor shall place all cuttings in DOT-approved 55-gallon drums for characterization. The Contractor shall provide a means of moving the drums to a location designated by Engineer. The Contractor shall characterize and dispose of all cuttings and drillings at an appropriate Facility in accordance with **Section 01 74 19 – Construction Waste Management**. Other debris and unused materials from the site shall be disposed of at no additional cost to the Owner.

3.02 BOREHOLE LOGGING AND SOIL SAMPLE COLLECTION

A. Borehole logging and screening will be performed in accordance with the ASTM Visual-Manual Procedure (ASTM D2488-06) and in conjunction with the Unified Soil Classification System (USCS) (ASTM D2487-00).

A. Soil classification and borehole logging shall be conducted by qualified geologist, engineer, or other personnel trained and experienced in the classification of soils.

B. At least two soil samples shall be collected at each soil boring location:

1. One sample from the unsaturated zone (above 5 feet below ground surface)
2. One sample from the presumed smear zone (5 to 10 feet below ground surface)

C. Each soil sample name shall include the boring designation and the depth interval; type of analysis; time and date of sample collection; collector's name, name of preservative. Soil sample intervals shall be recorded on the Drilling Log.

D. Soil samples for volatile organic compound analyses shall be collected using EPA sampling methodology 5035. Collect soil samples using a coring device, such as an EnCore™ or US Analyticals Eazydraw Syringe™ sampler, or other approved coring device, and put the "cored" soil directly into containers provided by the analytical laboratory. Additional soil volume for each sample will be collected into a 4- or 8-ounce glass jar and provided to the laboratory for moisture content analysis.

E. Additional soil samples shall be collected if potential petroleum hydrocarbon impacts in soil are identified based on field screening observations and the depth interval is not represented by other samples.

F. Two soil samples per soil boring shall be submitted for initial laboratory analysis of gasoline-range hydrocarbons (TPH by method NWTPH-Gx) and BTEX constituents (by EPA method 8260B).

G. Soil samples shall be entered on a Chain of Custody form, and containers will be labeled, sealed, and kept in a cooler chilled with ice until transfer to an accredited laboratory under chain-of-custody procedures and documentation. Samples shall be maintained at a stable temperature of 4 ± 2 degrees Celsius. and a container of water for sample temperature verification (temperature blank) shall be included.

H. Soil samples submitted to the analytical laboratory but not marked for initial analysis shall be archived by the analytical laboratory for possible follow-up analyses. Archived samples shall be frozen to extend hold times, if needed.

3.03 FIELD SCREENING

A. Every 2 feet, or at significant changes in lithology, screen soil for headspace reading. Continuously screen soil for sheen, and visual and odor indications as described below. Record results on the Drilling Log.

B. Headspace screening with Photoionization Detector (PID): Use the polyethylene bag headspace method described below to characterize soil.

1. Use PIDs with a 10.2 eV (+/-) or greater lamp source. Perform PID instrument calibration on site and at least daily to yield "total organic vapors" in parts per million. Follow the manufacturer's instructions for operation, maintenance, and calibration of the instrument. Keep calibration records in a bound book.

2. Use a resealable one-quart polyethylene freezer bag. Half-fill the bag with sample so the volume ratio of soil to air is equal, then immediately seal it. Manually break up the soil clumps within the bag. Soil shall be transferred to the field screening bags immediately after opening the split spoon sampler or soil sample liner.

3. Allow headspace development for at least 10 minutes at approximately room temperature. Vigorously shake bags for 15 seconds at the beginning and end of the headspace development period. Headspace development decreases with temperature. When temperatures are below the operating range of the instrument, perform headspace development and screening in a heated vehicle or building. Record the ambient temperature during headspace screening. Complete headspace screening within approximately 20 minutes of sample collection.
4. After headspace development, introduce the instrument sampling probe through a small opening in the bag to a point about one-half of the headspace depth. Keep the probe free of water droplets and soil particles.
5. Record the highest meter response on a sampling form. Maximum response usually occurs within about two seconds. Erratic meter response may occur if high organic vapor concentrations or moisture is present. Note any erratic headspace data on the sampling form. Do not collect analytical samples from the polyethylene bag.

C. Petroleum Sheen Test: Sheen test shall be conducted in conformance with DOE Publication No. 10-09-057 and as follows:

1. Place a small quantity of petroleum-contaminated soil in a jar, on a large spoon, or in a pan of water.
2. Add enough water to break apart and submerge the soil particles. Let the sample rest for a minimum of 10 minutes prior to examining for sheen or droplets of product.
3. If droplets of product or sheen are present on the water surface, the test result is positive, and the soil is considered petroleum saturated.
4. Use the following descriptors when recording the presence of sheen in the Drilling Log (from DOE Pub 10-09-057):

Descriptor	Observations
NS (no sheen)	No visible sheen on the water surface
SS (slight sheen)	Light, colorless, dull sheen; spread is irregular, not rapid. Natural organic oils or iron bacteria in the soil may produce a slight sheen.
MS (moderate sheen)	Pronounced sheen over limited area; probably has some color/iridescence; spread is irregular, may be rapid; sheen does not spread over entire water surface.
HS (heavy sheen)	Heavy sheen with pronounced color/iridescence; spread is rapid; the entire water surface is covered with sheen.

Note: False positive results may be generated by the presence of decaying organic matter and iron bacteria, which can produce a rainbow-like sheen similar to an oil sheen. These sheens, unlike oil sheens, can typically be broken up when agitated or disturbed

D. Visual Staining and Odor:

1. Not observations of additional liquid. If a separate phase liquid appears to be present, it may be described as “dark brown viscous fluid or liquid observed in the soil matrix.” This remark should follow the lithologic description in the borehole log.
2. Note observations of color. Observations of color shall be made such as “black streaks” or “mottled gray” to “olive brown”, however it should not be inferred or remarked that the color is a necessary consequence of petroleum staining.
3. Note observations of odor. Screening for odor consists of noting where soil has an unnatural odor that may be associated with petroleum chemicals. If the soil smells like petroleum, it may be remarked that it has a “petroleum like” or “solvent like” odor.

3.04 DRILLING

A. The vertical wells shall be drilled using hollow-stem auger method, unless otherwise approved by the Engineer.

B. The slant wells shall be drilled using sonic core method, unless otherwise approved by the Engineer.

C. Contractor shall install well casing, screen, backfill, and filter pack using methods favorably reviewed by the Engineer.

3.05 GROUT PLACEMENT

A. Grout shall be placed in a manner that will fill the annular space around the well casing completely. Grout placement shall be from the bottom upward, using a tremie pipe or tube method and by a positive displacement method using a pump. The minimum size tremie pipe used shall be 2 inches inside diameter. When making a tremie pour, the tremie pipe shall be lowered to the bottom of the zone being grouted and raised slowly as the grout material is introduced. The tremie pipe shall be kept full continuously from start to finish of the grouting procedure with the discharge end of the tremie pipe being continuously submerged in the grout until the zone to be grouted is completely filled.

B. The Contractor shall keep accurate records of the amount of grout used to fill the annular space. The grout volume shall not be less than the calculated volume of the annular space between the conductor casing or the reamed borehole and the well casing.

C. After grout placement is complete, the grout shall be allowed to set for a period of not less than 24 hours. No standby time will be paid while the grout seal is setting. Drilling fluid shall be circulated to eliminate all cement contamination prior to beginning any other drilling operations.

3.06 DEVELOPMENT OF VERTICAL AND SLANT WELLS

A. General: Development of the wells is an operation separate and apart from the test pumping. All vertical and slant wells shall be developed.

I. Equipment: The Contractor shall furnish all necessary swab, pumps, compressors, plungers or other needed equipment and shall develop the wells by swabbing, airlifting, surging, jetting or other such methods, approved by the Engineer, that shall give the maximum yield of water per foot of drawdown, and shall extract from the water-bearing formation the maximum practical quantity of such sands as may, during the life of the well, be drawn through the screen when the well is pumped under maximum conditions of drawdown. Well development shall be accomplished through a combination of swabbing, pumping, and surging. All equipment shall be steam cleaned prior to being introduced to the well.

J. Development with Test Pump (Surging and Pumping):

1. After completion of well development as detailed above, the Contractor shall commence well development using a test pump. The test pump shall be capable of pumping up to 5 gpm and be equipped to throttle flow between 0 and 5 gpm.

The quantity of water being pumped from the well at commencement of development pumping shall be limited and gradually increased as the water clears. From time to time, the pump shall be stopped and the water in the pump column allowed to flow back through the pump. This procedure, with increasing pumping rates, shall be repeated as development of the well continues and shall be done in a manner satisfactory to the Engineer. This procedure shall be repeated at approximately 1 gpm increments up to 5 gpm.

The Contractor shall provide accurate dual reading flow meters, in gpm for instantaneous rate dial meter and total gallons pumped for the totalizing odometer, or other approved devices to accurately monitor both instantaneous flow rates and total flow volumes during the work. The meter used shall have been recently calibrated and a record showing the calibration shall be provided to the Engineer prior to installation and use.

The Contractor shall provide to the Engineer a report of flow and water quality parameters, recorded during the development of each well. An example well development field form is included in Appendix E05. The parameters recorded shall include:

Flow rate (gpm)

Temperature (± .1 degrees Fahrenheit)

pH (± .01 standard units)

Dissolved Oxygen (DO) (± .01 milligrams per Liter)

Oxidation-Reduction Potential (ORP) (± .1 millivolts)

Specific Conductance (EC) (± 1 micro Siemens)

Turbidity (± 1 NTU)

General Observations: Color, odor, sheen, and other observations of note.

3.07 INSTALLATION OF CONNECTION TO PIPE TO TREATMENT SYSTEM

A. Contractor shall cut the well after installation in order to install the connection of the extraction/injection line to the 1-inch HDPE pipe in the trench. The connection shall be at approximately 3 ft bgs and installed in accordance with the details shown in the Drawings.

B. After connection to the HDPE piping, Contractor shall backfill the area with a minimum of 3-inch bentonite and compact per Specifications. The Contractor shall then backfill and compact using backfill material to the finished grade.

3.08 PROTECTION OF THE SITE

A. Contractor shall protect and repair any damage to existing features and improvements to the satisfaction of Ecology.

K. The Contractor shall be responsible for all temporary construction fencing, site security, and protection.

L. Wastewater from drilling, developing, and test pumping shall be disposed of in accordance with **Section 01 74 19 – Construction Waste Management**. Water shall be placed in 55-gallon drums on site. A composite sample shall be collected from the water for profile prior to disposal. Water shall be disposed of at an appropriate location based on sample results.

3.09 CLEANUP

A. Upon completion of the new well, the Contractor shall remove all equipment and drilling spoil from the site and restore the site to a condition similar to that existing prior to construction of the wells. Cleanup shall include restoration of any area disturbed by disposal of water during development and test pumping.

END OF SECTION 33 11 53

Soil & Waste Management Plan

Project: Circle K Site 1461

Prepared for:

WA Department of Ecology

Prepared by:

Glacier Environmental Services, Inc.
7509 212th Street SW
Edmonds, WA 98026

November 2023

1.0 Purpose

The purpose of this Soil and Waste Management Plan is to provide detail of the means and methods Glacier intends to use to manage wastes on the Circle K Remediation Site 1461 Remediation Project. This Plan has been prepared based on the Specifications 01 33 00 and 01 99 00.

2.0 Scope of Work

Construction of a multi-phase extraction and groundwater recirculation system for the Circle K 1461 Site. The system is being constructed to treat petroleum hydrocarbons present in soil and groundwater at the site. Construction includes installation of new remediation wells, sub slab depressurization wells, vapor monitoring points, underground piping, liquid and vapor phase treatment trains, and a bioremediation and reinjection system.

The site is located in the Montlake neighborhood of Seattle at 2350 24th Ave E, Seattle, WA. The current site use is a convenience store and dry cleaner.

3.0 Sampling & Characterization

Soil cuttings generated during well installation will be collected in 55 gallon drums. At least 2 soil samples will be collected from each boring, field screened (PID, sheen, visual and odor), and submitted for laboratory analysis. Additional details on soil sample collection from borings will be provided under separate cover in the Well Installation Plan.

Laboratory analysis for all soil samples will include testing for gasoline-range hydrocarbons by method NWTPH-Gx and BTEX constituents by EPA method 8260B. In addition, at least 5 of these samples will also be analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8260B, RCRA 8 Metals by EPA Method 6010 (arsenic, barium, cadmium, chromium, lead, selenium, and silver) and by EPA Method 7471 (mercury), and TPH by NWTPH-Dx (without Silica Gel Cleanup) (number of samples is based on *Guidance for Remediation of Petroleum Contaminated Sites, Washington State Department of Ecology Pub. No. 10-09-057*).

Water generated during well drilling, development and testing will be collected separately in 55 gallons drums. A composite sample of water will be collected for profiling. The water will be sampled and analyzed for VOCs by EPA Method 8260B, RCRA 8 Metals by EPA Method 6010 (arsenic, barium, cadmium, chromium, lead, selenium, and silver) and by EPA Method 7470 (mercury), TPH by NWTPH-Dx (without Silica Gel Cleanup), NWTPH-Gx and Polychlorinated Biphenyls (PCBs) by EPA Method 8082.

Soil & groundwater sampling during well drilling will be performed by Krazan & Associates and soil and water samples transported to ALS Global in Everett for laboratory analysis.

4.0 Recyclable Materials

Asphalt and concrete will be sawcut and demolished in accordance with the Plans. All asphalt and concrete generated will be recycled at Renton Concrete Recyclers located at 500 Monster Rd SW, Renton, WA 98057.

5.0 Stockpiling and Soil Management

It is anticipated that less than 100 CY of soil will be generated from trenching activities, of that about half will be displaced with bedding material and paving base course. Soil will be temporarily stockpiled on 6 mil plastic and covered, straw wattles will be used to create a containment berm under the bottom liner. Due to the small site and access constraints, soil generated from trenching activities will be hauled and disposed as contaminated soil under the same profile for the drilling spoils; as such, sampling of trench spoils will not be conducted.

6.0 Soil Transportation and Disposal

Surplus soil and soil generated during drilling activities will be transported by solo truck to a Seattle Subtitle D Transfer Station. Soil in drums will be dumped into trucks for disposal and the drums recycled.

The 2 disposal facilities for non-hazardous soil disposal are:

Waste Management-Columbia Ridge Landfill by way of the Alaska Street Reload Facility located at 70 Alaska Street or the Duwamish Reload Facility located at 7400 8th Ave. South.

Republic Services-Roosevelt Landfill by way of the 3rd & Lander Transfer Station.

It is anticipated that trucks will enter the site from 24th Ave, load on the southern end of the site and then exit on the East McGraw driveway. This may change depending on where the current work area is located and if trenching prohibits that route.

Landfills selected for disposal will be permitted for acceptance of Subtitle D Waste. A Soil Profile signed by the Generator will be approved by the waste facility prior to acceptance of materials.

7.0 Recordkeeping

Analytical results will be summarized table format; tables and copies of lab reports will be submitted to Kennedy Jenks and Ecology as a Submittal. This data will be used to profile soil and water for disposal. Glacier will complete all waste profiling applications for the selected disposal facility with WA Dept of Ecology signing as the Generator. Each load of soil will be weighed at the transfer station and tonnage recorded on a scale ticket. Records of all soil disposal (tickets) will be submitted to Ecology and Kennedy Jenks at the completion of the project.

8.0 Water Disposal

It is not anticipated that we will generate any water during trenching activities. Water generated during well drilling will be stored in drums (separate from soil) until characterized. A composite sample will be

collected and analyzed for the contaminates of concern in Paragraph 3.0 above. It is presumed that the water will be suitable for treatment and discharge to the sewer system by Marine Vacuum Services located at 1516 S. Graham Street in Seattle under their King County Discharge Authorization.

9.0 Decontamination Waste

Any water and soil accumulated during decontamination of equipment or personnel will be collected and disposed as contaminated media following the methods above. PPE and debris generated during decontamination will be collected as solid waste and disposed in accordance with paragraph 11.

10.0 Dust & Street Sweeping

Dust is not anticipated to be an issue as the trench excavations are shallow and narrow. It addition, this work will be completed during the winter months. Trucks leaving the site will be covered to prevent dust during transport.

All trucks entering and leaving the site will remain on paved surfaces, minimizing track out concerns. The construction exit will be swept by hand regularly during offsite hauling. In the event that mechanical sweeping is needed, Glacier will either use a ride-on Laymor sweeper for small frequent maintenance or subcontract a vacuum broom sweeping company to clean the haul route.

11.0 Solid Waste Disposal

Solid waste will not be allowed to accumulate onsite. PPE, pipe debris, and crew refuse will be transported offsite for disposal as municipal waste. A combination of commercial waste service at our Lynnwood location as well as county landfills will be used for disposal of solid waste construction debris.

Spill Prevention, Control and Countermeasures Plan

Project: Circle K Site 1461

Prepared for:

WA Department of Ecology

Prepared by:

Glacier Environmental Services, Inc.

7509 212th Street SW

Edmonds, WA 98026

November 2023

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SPCC Plan Implementation Requirements

The purpose of an SPCC Plan is to protect human health and the environment from spills and releases of "hazardous materials," a generic term WSDOT uses in Chapter 447 of its Environmental Procedures Manual (M 31-11) to mean dangerous waste, problem waste, petroleum products, and hazardous substances. The SPCC Plan shall also address conditions that may be required by Section 3406 of the current International Fire Code, or as approved by the local Fire Marshal.

Glacier is committed to preventing discharges of oil to navigable waters and the environment, and to maintaining the highest standards for spill prevention, control and countermeasures through the implementation of, and regular review and amendment to this Plan. Glacier shall update this SPCC Plan throughout the Project so that the written Plan reflects actual site conditions and practices.

Glacier shall fully implement this SPCC Plan, as accepted and updated, at all times and maintain a copy of the updated SPCC plan on the project site. All project employees will be trained in spill prevention and containment, know where the SPCC Plan and spill response kits are located and have immediate access to them.

SPCC Plan Elements

1. Responsible Personnel

Table 1.1 identifies the name(s), title(s), and contact information for the personnel responsible for implementing and updating the SPCC Plan, and for responding to spills. If spill response Subcontractor(s) will be used for spill response (as described in Section 8, Spill Response, below), the Subcontractor(s) company name(s) and contact information are also included in Table 1.1.

Table 1 Responsible Personnel

Responsibility	Name and Title	Contact Information
Implementing and Updating SPCC Plan (primary contact person)	**Lauren Golembiewski – Project Manager**	Company: **Glacier Environmental** Office Phone: **(425) 355-2826** Cell Phone: **(425) 268-9775**
Implementing and Updating SPCC Plan (secondary contact person)	**Thayne Wastman - Superintendent**	Company: **Glacier Environmental** Office Phone: **(425) 355-2826** Cell Phone: **(206) 793-3713**
On-Site Spill Responder	**GES- Laborer**	Company: **Glacier Environmental** Office Phone: **(425) 355-2826**

2. Spill Reporting

The uncontrolled discharge of oil to groundwater, surface water, or soil is prohibited by state and federal laws. In the event of a discharge, immediate action will be taken to control, contain, and recover the discharged product.

In the event of a spill, Glacier shall notify the WA Dept of Ecology Project Manager, Kennedy Jenks, and shall notify the Federal, State, and Local Agencies listed in Table 2 if appropriate.

Table 2 Project-Specific Federal, State, and Local Agencies to be Notified in the Event of a Spill

Agency Name	Agency Notification Telephone Number	When Agency Shall be Notified	Agency Region
Ecology Site Manager: Dale Myers •	(425) 649-4446	Any Spill or Release	Project Specific
Ecology's Representative: Ryan Hultgren-Kennedy Jenks	(253) 835-6432	Any Spill or Release	Project Specific
Department of Ecology (in addition to Project Contact)	206-594-0000	spill or release to soil that is an immediate threat to human health or the environment or a spill or release to water or a	Northwest Regional Office

Agency Name	Agency Notification Telephone Number	When Agency Shall be Notified	Agency Region
		confirmed release or spill from a UST	
National Response Center	1-800-424-8802	spill or release to water	Not applicable
Washington State Division of Emergency Management	1-800-258-5990	spill or release to water	Not applicable
Seattle Public Utilities	(206) 684-7587. After Hours: (206) 386-1800	Spills that could impact surface water pollution and could carry pollutants along streets and into Seattle's creeks, lakes, and Puget Sound.	

3. Project and Site Information

A. **The Project work:** Construction of a multi-phase extraction and groundwater recirculation system for the Circle K 1461 Site. The system is being constructed to treat petroleum hydrocarbons present in soil and groundwater at the site. Construction includes installation of new remediation wells, sub slab depressurization wells, vapor monitoring points, underground piping, liquid and vapor phase treatment trains, and a bioremediation and reinjection system.

B. **The site location and boundaries:** The site is located in the Montlake neighborhood of Seattle at 2350 24th Ave E, Seattle, WA. It is on the southeast corner of the intersection of 24th Ave E and W. McGraw Street. The current site use is a convenience store and dry cleaner.

C. **The drainage pathways from the site:** The site is generally flat and paved; surface water drains to existing onsite drains that connect to City Combined Storm and Sanitary Sewer.

D. **Nearby waterways and sensitive areas and their distances from the site:** None.

4. Potential Spill Sources

A description of each potential fuel, petroleum product and other hazardous material brought or generated on-site is set forth in Table 4. The potential fuel, petroleum product and other hazardous

materials listed on Table 4 include materials used for operating, refueling, maintaining, and cleaning equipment.

Table 4 Fuel, Petroleum Product and other Hazardous Materials Brought or Generated On-Site

Hazardous Material Name	Intended Use of Material	Est. Max. Amount of Material On-Site at Any One Time	Material Staging, Use, and Storage Location(s), & Material Storage and Secondary Containment Practices and Structures[1]	Distance of Material Staging, Use, and Storage Locations from Nearby Waterways[2] and Sensitive Areas[3]	Cleaning location and disposal procedure for equipment that comes into contact with material
gasoline, diesel, motor oil, hydraulic oil,	Equipment fueling and maintenance	Less than 500 gal	150-gallon service vehicle mounted tanks,	N/A	Sorbent pads used to clean spilled fuel will be bagged and disposed as solid waste or comingled with contaminated soil for offsite disposal. Any contaminated soil that is the result of a spill will be drummed or stockpiled for offsite disposal per the Soil & Waste Management Plan.

Notes:

1 See also Section 7.D (Spill Prevention, secondary containment and structures may be described in Table 4 or under Section 7D.

2 Waterways include streams, creeks, sloughs, rivers, Puget Sound, etc.

3 Sensitive areas are areas that typically contain populations that could be particularly sensitive to a hazardous materials spill or release. Such areas include wetlands, areas that provide habitat for threatened or endangered species, nursing homes, hospitals, childcare centers, etc. Sensitive areas also include areas where groundwater is used for drinking water, such as wellhead protection zones and sole source aquifer recharge areas.

5. Pre-Existing Contamination

This project includes remediation of residual petroleum hydrocarbons including excavation and disposal of soil and groundwater during well drilling and trenching.

6. Spill Prevention and Response Training

Glacier shall ensure all employees and subcontractors have attended and are current in the appropriate training, spill kit locations, spill response and containment during the project orientation. The date, names of attendees, and the topics covered will be documented on the Employee Orientation Checklist, provided.

Additionally, all onsite personnel are required to attend daily safety meetings at the work site. These meetings discuss potential problems, including storm water control, and a review of the response actions that will occur in the event of any situation.

Apart from fuel and lubrication for construction equipment Glacier does not anticipate that it will bring any hazardous or toxic substances to the site. Materials stored on-site will be stored in their appropriate containers on a level site and covered. Petroleum products will be stored in tightly sealed safety containers that are clearly labeled.

Materials and equipment needed for cleanup will be kept readily available on-site, both at the Contractor Lay-down Area and in Glacier service vehicles. Equipment available on-site will include but not be limited to; shovels, granular absorbent, absorbent pads, adsorbent booms, gloves, goggles, and plastic disposal bags. Glacier and subcontracted personnel will be made aware of SPCC requirements, cleanup procedures, the location of spill equipment, and spill reporting procedures. Spills will be contained and cleaned up immediately upon discovery and reported to the Site Manager.

7. Spill Prevention

A. Spill response kit contents and location(s) (see Table 7). Appropriately stocked spill response kits shall be maintained in close proximity to hazardous materials and equipment and shall be immediately accessible to all Project personnel.

Table 7 Spill Response Kit Contents and Locations

Type of Spill Kit	Spill Kit Contents	Spill Kit Location(s)
Spill kit and supplies	50-foot absorbent sock 50-foot floating booms "Oil-dry" loose absorbent material 2-foot by 2-foot absorbent pads Nitrile gloves Sand bags	Glacier trucks and in staging area
Truck refueling kits	at a minimum will include oil absorbent pads and rags, oily soil bucket(s) to contain impacted soils, and trash bags to contain oily waste from the cleanup effort.	all Glacier company pickups and service trucks

B. Security measures for potential spill sources. All fuel will be in truck mounted tanks and removed from the site each night. Any stored lubricants will be removed from the site nightly or locked in a storage container.

C. Methods used to prevent <u>stormwater</u> from contacting fuel, petroleum products and hazardous materials. Should the unlikely occur, the area of the spill will be isolated with sandbags and boom as needed to isolate stormwater run-off and run-on from contacting the area. Loose sorbent and pads will be deployed as necessary. Catch basins will be blocked.

D. Secondary containment for each potential spill source listed in Section 4, above. A reasonable potential for an accidental discharge exists during refueling operations; as such, all refueling activities require the constant presence of the operator.

E. **Best Management Practices (BMP) Methods used to prevent discharge to ground or water during mixing and transfers of hazardous materials, petroleum product and fuel.** Prior to fueling, refueling personnel will ensure that spill equipment is available, dispensing nozzles will have automatic shut offs and ensure operators are attentive to fueling operations.

F. **Refueling procedures for equipment that cannot be moved from below the ordinary high-water line.** Not applicable.

G. **Daily inspection and cleanup procedures that ensure all equipment used below the ordinary high-water line is free of all external petroleum-based products.** Not applicable.

H. **Routine equipment, storage area, and structure inspection and maintenance practices to prevent drips, leaks or failures of hoses, valves, fittings, containers, pumps, or other systems that contain or transfer hazardous materials.** Heavy construction equipment will be parked and stored at the site each night, during weekends and other non-working days. The heavy equipment will be stored in the designated laydown area when not in use. Heavy construction equipment is equipped with hydraulic systems with hoses and seals that can leak oils.

I. Site inspection procedures and frequency. Each morning prior to equipment startup, the areas under the equipment will be inspected for evidence of spills or leaks. Any leaks will be remediated with the use of spill kit materials that will kept in work trucks. Equipment that is leaking will require repair to eliminate the spreading of leaking oils.

8. Spill Response

The uncontrolled discharge of oil to groundwater, surface water, or soil is prohibited by state and federal laws. In the event of a discharge, immediate action will be taken to control, contain, and recover the discharged product. The following response actions will be taken:

1. Mitigate fire explosion and vapor hazards. Eliminate potential spark sources.
2. If possible and safe to do so, identify and shut down the source of the discharge to stop the flow.
    - o If it is not safe, phone emergency responders (911) for help .
    - o If necessary, begin evacuating the area.
3. To prevent further release to the environment:
    - o Contain the discharge with sorbents, berms, fences, trenches, sandbags, or other material.
    - o Remove the material from leaking tank and/or remove the tank from the site if it is safe to do so.
4. Contact the Site Manager/Engineer or his/her alternate. Ryan Hultgren-Kennedy Jenks (253) 835-6432.
5. Contact regulatory authorities and the response organizations. Dale Myers WADOE (425-649-4446)
6. Collect and dispose of recovered products in accordance with local regulations;
    - o Collect all wastes generated during the incident;
    - o Properly dispose of all wastes generated during the incident; and
    - o Clean and/or recharge all emergency equipment.
7. Restock all spill response supplies.

9. Project Site Map

A Project site map, clearly showing each of the following required or recommended items, is attached

A. Site location and boundaries;

B. Site access roads;

C. Drainage pathways from the site;

D. Nearby waterways and sensitive areas (Waterways include streams, creeks, sloughs, rivers, Puget Sound, etc. Sensitive areas are areas that typically contain populations that could be particularly sensitive to a hazardous materials spill or release. Such areas include wetlands, areas that provide habitat for threatened or endangered species, nursing homes, hospitals, child care centers, etc. Sensitive areas also include areas where groundwater is used for drinking water, such as wellhead protection zones and sole source aquifer recharge areas.);

E. Hazardous materials, equipment, and decontamination areas identified in Section 4 (Potential Spill Sources), above;

F. Pre-existing contamination or contaminant sources described in Section 5 (Pre-Existing Contamination), above;

G. Spill prevention and response equipment described in Section 7 (Spill Prevention) and Section 8 (Spill Response), above.

10. Spill Report Form(s)

A copy of the spill report form that Glacier will use in the event of a release or spill is attached in Appendix A

SPCC Plan Acknowledgement Form (to be signed by all Project personnel)

This is to certify that I have read this Project SPCC Plan and understand its contents. I have attended a Project orientation meeting discussing the elements of this SPCC Plan and the safety and health hazards associated with SPCC operations to be performed at this Project. Failure to comply with the requirements contained in this SPCC Plan may result in my removal from the Project.

PRINT NAME	SIGNATURE	DATE

Appendix A

Spill Report Form

Spill Report Form

Name of Facility:					
Date and time of incident:		**Date and time discovered:**		**Date and time spill stopped:**	
Location:					
Cause:					
Equipment Involved:	□ Refueling Equip. □ Hydraulic Hose □ Leaking Fuel Tank/Vehicle □ Other _____				
Names of Person(s) responding:		**Material spilled:**			
Estimate Gallons spilled:	□ <25 □ 25 to 50 □ 50 to 100 □ 100-150 □ >150				
Did any spillage enter any water body? Y/N? **(including storm drain)**	If so, which one:		Estimate Gallons that reached water body:		
Describe extent of affected area:	(ex. Radius of spill? Confined to site? Confined within containment wall? Distance/direction travelled?)				
Damages caused by spill:					
Was an evacuation necessary?		**Injuries/fatalities caused by spill:**			
Action taken to stop discharge:		**Action taken to confine spill:**			
Suggested preventative measures:					
Assessment of root cause of spill:					
Other and/or additional information:					

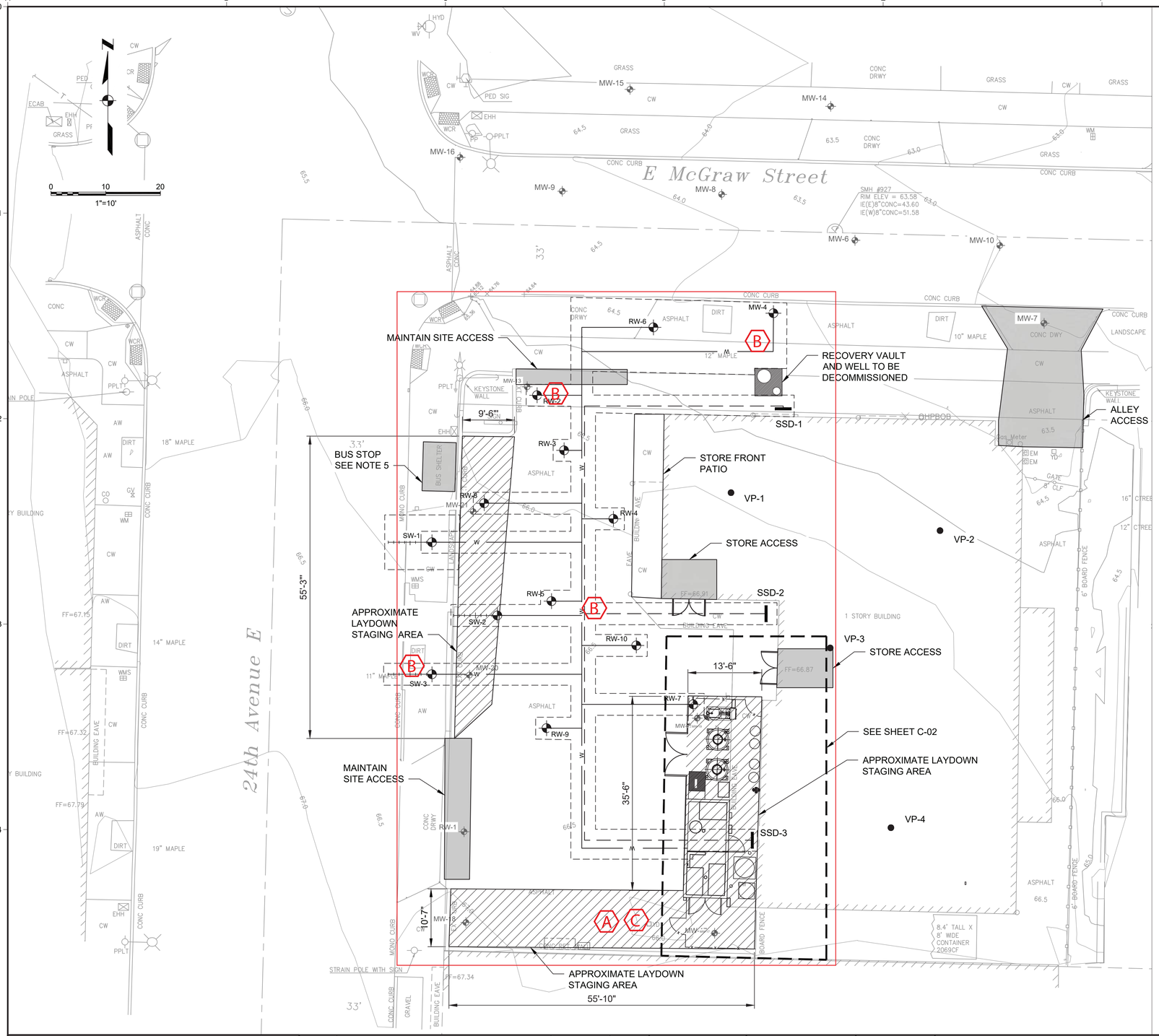
Notifications that were made:

Name of Individual or Organization	Phone Number	Date Contacted	Comments
Washington Emergency Management Division	1-800-OILS-911		
National Response Center	1-800-424-8802		
WA DOE NW Regional Office	425-649-7000		
Mid Sound Fisheries	206-226-2548		

Date of Report:		**Name (print) :**	
Signature:			

Appendix B

Project Site Map



GENERAL SHEET NOTES

1. DIMENSIONS SHOWN ARE THE MAXIMUM ALLOWABLE FOR LAYDOWN STAGING AREAS. AREAS MAY NEED TO BE REDUCED TO ALIGN WITH EXISTING FEATURES SUCH AS CURBS OR ALLOW FOR VEHICLE AND PEDESTRIAN TRAFFIC AND SHALL BE SECURED BY TEMPORARY FENCING.
2. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL USING CONTRACTOR MEANS AND METHODS SUCH AS PHASED CONSTRUCTION, TRAFFIC RATED TRENCH LIDS, SIGNAGE, TEMPORARY FENCING, AND OTHER, AS NEEDED TO MAINTAIN VEHICLE AND PEDESTRIAN ACCESS TO THE STORES.
3. CONTRACTOR WORK AREA SHALL BE CLEARLY DELINEATED AND FENCED OFF TO PREVENT PUBLIC ENTRANCE, WHILE STILL MAINTAINING STORE ACCESS AT ALL TIMES DURING CONSTRUCTION.
4. CONTRACTOR SHALL SECURE ANY CITY PERMITTING RELATED TO TRAFFIC CONTROL INCLUDING PROVIDING TRAFFIC CONTROL PLANS, CITY RIGHT OF WAY WORK, AND KING METRO FOR WORK NEAR THE BUS STOP WHICH MAY REQUIRE WEEKEND WORK.
5. CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY FOR CONSTRUCTION WITHIN THE RIGHT-OF-WAY AND MAINTAIN FULL ACCESS TO THE BUS STOP AT ALL TIMES DURING CONSTRUCTION.
6. PIPE ROUTING IS APPROXIMATE. CONTRACTOR SHALL PROVIDE INDIVIDUAL LINES TO EACH WELL PER P&ID DRAWINGS.
7. CONTRACTOR SHALL SUBMIT A WORK SEQUENCING PLAN DESCRIBING THE METHOD IN WHICH ALL REQUIRED ACCESS POINTS SHALL BE PROPERLY MAINTAINED. DETAILS ON THE WORK SEQUENCING PLAN REQUIREMENTS ARE INCLUDED IN SPECIFICATION SECTION 01 33 00.

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-01)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 2)
- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION PIPING
- SUB-SLAB DEPRESSURIZATION WELL
- APPROXIMATE EXTENT OF TRENCH
- CHAIN LINK FENCE
- VAPOR MONITORING PIN (SEE NOTE 3)
- SITE AND STORE ACCESS AREAS
- APPROXIMATE LOCATION OF STAGING AREA

SPILL CONTAINMENT & CONTROL PLAN

GLACIER ENVIRONMENTAL SERVICES

7509 212th Street SW
Edmonds, WA 98020

November 2023

- (A) Storage & Fueling Areas
- (B) Pre-existing Contamination-Petroleum
- (C) Spill Kit Location

ISSUED FOR BID

ANY PRINTS NOT BEARING THIS STAMP MAY HAVE BEEN PRINTED PRIOR TO ADVERTISING AND CANNOT BE CONSIDERED AS BID DOCUMENTS. USERS OF THIS DOCUMENT IN EDITABLE ELECTRONIC FORMATS ARE CAUTIONED AGAINST USE WITHOUT FIRST DETERMINING WHETHER CHANGES MAY HAVE BEEN MADE SUBSEQUENT TO ITS PREPARATION.

NO	REVISION	DATE	BY

SCALES
0 — 1"
0 — 25mm
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

BENJAMIN EDWARD FUENTES — STATE OF WASHINGTON — 98495 — REGISTERED PROFESSIONAL ENGINEER

DESIGNED CMW
DRAWN CMW
CHECKED BEF

DEPARTMENT OF ECOLOGY State of Washington

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

SITE PLAN STAGING AREAS

SCALE 1" = 10'
JOB NO 2196008.00
DATE OCTOBER 2022
SHEET 7 OF 19
C-02

Plot Date: 10/11/2022 7:30 AM
User: RICHARD HILLS
File: C:\bms\kjce-pwd\0181574\219600800-C-02.dwg

Construction Quality Assurance & Quality Control Plan (QAQCP)

Project: Circle K Site 1461

Prepared for:
WA Department of Ecology

Prepared by:
Glacier Environmental Services, Inc.
7509 212th Street SW
Edmonds, WA 98026

December 2023

1.0 Quality Objectives & Policies

This document establishes the Quality Control Plan to be instituted by Glacier Environmental Services, Inc. (Glacier) during construction of the multi-phase extraction and groundwater recirculation system for the Circle K 1461 Site. It is intended to comply with the requirement Specification in Section 01 33 00 1.04.A.1 of the Project Manual.

1.1 Quality Objectives

This plan is the Glacier project team's documentation of the organizational structure, functional responsibility, levels of authority, and lines of communication for the activities that affect quality. Quality is everyone's responsibility. All team members who perform quality functions have sufficient authority, access to work areas, and organizational freedom to:

1. Verify that all provisions have been made to provide required control testing.

2. Monitor the design, and contractors daily work progress.

3. Check dimensional requirements.

4. Visually inspect materials received on site for proper documentation, completeness, and condition.

5. Observe all required test such as mechanical and electrical to verify that they are in compliance with the specifications.

6. Ensure the completion of all deficiencies in materials and workmanship in a timely manner.

7. Maintain a document control file.

8. Work closely with all testing agencies to verify that all required test are able to be preformed.

1.2 Quality Polices

Glacier's Quality Control Plan will ensure a uniform high-quality level of workmanship through all phases of construction, including planning, construction, and turnover. To meet this goal the following principles will be observed:

1. Ensure the highest level of quality by maintaining supervised controls and written instructions governing Quality Control procedures and practices.

2. Establish clearly defined responsibility and authority for compliance.

3. Meet contractual requirements by conformance to Contract Document and applicable standards.

4. Complete and maintain accurate records of inspections and tests.

5. Identify and advise Glacier and Engineer of quality related non-conformance for timely corrective action. Ensure that corrective action is properly implemented and documented.

6. Maintain procedures to ensure that quality requirements are communicated to all levels of the field organization, including subcontractors.

It is the intent of the plan that the function of quality control be one of cooperation. It is not the responsibly of the quality control staff to police the job, but to provide review and assistance to the operations staff (including subcontractors) to enable those involved to achieve a quality end product.

2.0 Quality Control Organizational Structure

Project QC Coordinator	Thayne Wastman	Glacier Environmental Services, Inc.	TWastman@glacierenviro.com 206.793.3713
Company QC Manager/ Owner	Lauren Golembiewski	Glacier Environmental Services, Inc.	LMiles@glacierenviro.com 425.268.9775
Client Representative	Dale Myers	WA Dept. of Ecology	DAMY461@ECY.WA.GOV 425-389-2521
Engineer Representative	Ryan Hultgren	Kennedy Jenks	RyanHultgren@KennedyJenks.com 253-835-6432

3.0 Quality Control Team Responsibilities

Quality Control Coordinator

- The Quality Control Coordinator reports to the Client & Engineer for coordination of all quality control activities.
- Establish and maintain documented procedures to control documents and data that relate to quality assurance for the construction work.
- Administer and implement, as required, the written procedures and instruction contained in this manual.
- Coordinate with inspectors and all testing and field personnel to assure compliance with all quality control requirements of the contract documents.
- Attend coordination meeting with subcontractors and suppliers to ensure quality requirements are followed.
- Verify that quality control efforts of subcontractors and suppliers correspond with the overall quality control plan.
- Monitor the activities of the independent testing laboratories (if any).
- Perform monthly audits of subcontractor as built drawings.

Project Superintendent (for this project QC Coordinator/Superintendent)

- The Project Superintendent is responsible for all field activities, and ensures that all construction is performed in accordance with the contract requirements.

- The Project Superintendent will develop schedules as required, maintain daily work records, oversee and coordinate subcontractors, field testing, inspections, and enforce project safety procedures.

4.0 Design Development Quality Control

Glacier will review the drawings during each stage of construction to ensure constructability and functionality. These reviews will also be used to ensure that schedule and budget remain in compliance with the original contact.

Glacier will coordinate and facilitate meetings with Design Team and System Manufacturer, Product Recovery Management, Inc., to ensure that system functionality meets the intent of the design. Glacier will maintain and update a set of drawings Drawings and Specifications with actual construction for the Project Record, in accordance with Section 00 72 00, 4.02.

5.0 Site Access and Control

Access to the onsite businesses will be maintained during construction. Work will be staged and secured for pedestrian and visitor safety. Store access for fire and police departments will be maintained at all times.

During drilling activities the parking lot will remain mostly open to vehicular and pedestrian traffic. The work area immediately surrounding the drilling will be cordoned off with delineators and caution tape.

Trenching and excavation for underground pipe installation will be completed in phases to limit impacts to the parking lot. Use of delineators, caution tape, signage and temporary fencing as needed will be used to designate vehicular and pedestrian pathways. Whenever possible trenches will be backfilled each day to limit open excavations, in the event a trench must remain open it will be covered with non-skid steel plates.

At minimum, Glacier will provide 4 parking spaces for store patrons. If possible, those spaces will be in the existing parking lot, however during restoration of asphalt and placement of the treatment system equipment it may be necessary to provide those spaces as offsite street parking; in which case Glacier will obtain a Street Use Permit for the designated parking spaces of East McGraw Street.

6.0 Primary Elements of Work

6.1 Well Drilling

Cascade Drilling will perform vertical and angled well drilling using hollow stem auger and a limited access sonic rig. Angled wells installed in the Right-of-Way will be performed on the weekend.

6.2 Excavation & Trenching

Excavation is limited to trenching for treatment system conveyance piping and possibly to establish footings for the treatment building. Trenches will vary from 1-2 feet wide and approximately 3 feet deep. Trench spoils will be temporarily stockpiled for offsite disposal or reuse. Imported materials will be used to bed pipes and backfill the excavation.

6.3 Treatment System Installation

Product Recovery Management Inc of North Carolina will provide the Dual Phase Extraction System. A majority of the system components will be contained within an 8x20 foot shipping container, modified for use as a treatment building. A crane will be used to offload and set the system building. Additional components of system including tanks and carbon vessels will be offloaded and placed using a reach forklift.

6.4 Electrical

SHJ Electric of Lakewood will be subcontracted to perform the electrical scope. This includes coordination with Seattle City Light (SCL) for a new service connection.

6.5 Site Restoration

All trenches will be backfilled, and surface restored in accordance with the plans and specifications. Any areas of landscaping disturbed will be restored to pre-construction conditions.

7.0 Construction Inspection and Testing

Inspection of materials and work in progress will be the responsibility of the Glacier Superintendent/QC Coordinator and special inspectors to ensure that the work conforms to the contract documents.

Glacier will use the following three-point inspection plan for field inspections:

- Prior to starting work a pre-work coordination meeting will be held. Attendees will include Supervisory, Quality Control and safety personnel from both Glacier and our proposed subcontractors. At a minimum the meeting will cover contract, submittal, quality control, training and safety requirements of the contract documents.

- During construction the Glacier Supervisor will monitor the work on a daily basis to assure the continuing conformance of the work.

- Once the work is complete the Glacier Quality Control Coordinator and Project Engineer will conduct a completion inspection, and any deficiencies will be noted and corrected.

7,1 Pipe Testing

All underground piping will be tested for leakage after backfill, prior to paving in accordance with Specification 33 14 16.13 and following schedule:

Piping Test Schedule				
Legend	System	Test Pressure	Test Medium	Allowable Leakage
Biovent Vacuum	HDPE PVC	20 in HG	Air	No more than 3 psi due to temperature drop. 2-hour duration.
Biovent Pressure	PVC Flex Hose	10 PSI	Air	No more than 3 psi due to temperature drop. 2-hour duration.
Vapor Liquid separator	PVC	1.5x transfer pump rated shut-off head or min 30 psi	Water	None
Groundwater Treatment	HDPE PVC	1.5x transfer pump rated shut-off head or min 30 psi	Water	None

7.2 Well Development Testing

After completion of initial well development, well development will continue in accordance with specification 33 11 53.13 using a test pump capable of pumping up to 5 gpm and equipped to throttle flow between 0 and 5 gpm. A totalizing flow meter will be utilized to record the instantaneous flow rate and total volume during development.

Quality Parameters will be recorded on the Well Development Report Form, including:

1. Flow rate (gpm)
2. Temperature (± .1 degrees Fahrenheit)
3. pH (± .01 standard units)
4. Dissolved Oxygen (DO) (± .01 milligrams per Liter (mg/L))
5. Oxidation-Reduction Potential (ORP) (± .1 millivolts (mV))
6. Specific Conductance (EC) (± 1 micro Siemens (µS/cm))
7. Turbidity (± 1 NTU)
8. General Observations: Color, odor, sheen, and other observations of note.

7.3 Well Performance Testing

Performance testing of the extraction/injection wells will be conducted upon startup of the system. The objective of the performance testing is to determine the vacuum/flow relationship for each well screen. The performance testing will follow the procedures of Specification Section 01 77 00 Paragraph 3.02.

Final System sampling will include collection of vapor VOC readings from SSD wells and vapor monitoring pins using a low-detection PID and Four Gas Monitor.

7.4 Concrete & Anchor Testing & Inspection

Subcontracted Structural Engineer, Swenson Say & Faget, will provide an anchoring plan for securing the system and exterior components. This plan will likely include concrete footings and anchor bolts. They will provide a specification for concrete strength tests and tension testing the anchors as necessary.

7.5 Factory Testing

PRM will test all components of the Treatment System prior to shipment to the site. Factory performance test reports will be provided to the Engineer for approval prior to shipment. This equipment is manufactured out of state, PRM will make arrangements for the Engineer to visit

their shop prior to shipment, or will make arrangements to provide photo or video documentation as requested. In addition to performance testing, PRM will also measure the operating sound level of the system to determine if additional noise suppression will be required.

8.0 Material Inspections

All materials, equipment etc. to be incorporated into the work will be subject to periodic inspection by the Quality Control Staff.

8.1 Import & Native Backfill Soils Testing

Trenches and decommissioned vaults will be backfilled using import and native materials (if suitable). Gradation analyses will be provided for each type of import in accordance with ASTM D1241. The independent materials testing laboratory, Krazan & Associates, Inc., will collect proctor samples of all materials to be compacted in accordance with ASTM D1557 and submit optimum moisture content, and maximum dry density information.

Import materials will also be tested for contaminates by a third party chemical testing laboratory for: Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270; Volatile Organic Compounds (VOCs) by EPA Method 8260B; Polychlorinated Biphenyls (PCBs) by EPA Method 8082; Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8270 in selected ion monitoring (SIM) mode; Organochlorine Pesticides by EPA Method 8081A; RCRA 8 Metals by EPA 6010 and by EPA 7471; and Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx (without Silica Gel Cleanup) and NWTPH-Gx.

Soil that is structurally suitable for use as backfill will be field screened; if field screening indicates the soil is clean, laboratory analysis will be performed for: VOCs by EPA Method 8260B; RCRA 8 Metals by EPA 6010 and by EPA 7471; and TPH by NWTPH-Dx (without Silica Gel Cleanup) and NWTPH-Gx. Only soils that meet the standard for Unrestricted Land Use per Ecology Table 740-1 will be considered for reuse. It is very likely that the amount of soil generated will not be enough to justify the effort of chemical testing for reuse, in which case all backfill material would be imported.

8.2 Testing of Soil & Water for Disposal Profiling

Soil cuttings generated during well installation will be collected in 55 gallon drums. At least 2 soil samples will be collected from each boring, field screened (PID, sheen, visual and odor), and submitted for laboratory analysis. Additional details on soil sample collection from borings will be provided under separate cover in the Well Installation Plan. Laboratory analysis for all soil samples will include testing for gasoline-range hydrocarbons by method NWTPH-Gx and BTEX constituents by EPA method 8260B. In addition, at least 5 of these samples will also be analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8260B, RCRA 8 Metals by EPA Method 6010 (arsenic, barium, cadmium, chromium, lead, selenium, and silver) and by EPA Method 7471 (mercury), and TPH by NWTPH-Dx (without Silica Gel Cleanup) (number of samples is based on *Guidance for Remediation of Petroleum Contaminated Sites, Washington State Department of Ecology Pub. No. 10-09-057*).

Water generated during well drilling, development and testing will be collected in 55 gallons drums. A composite sample of water will be collected for profiling. The water will be sampled and analyzed for VOCs by EPA Method 8260B, RCRA 8 Metals by EPA Method 6010 (arsenic, barium, cadmium, chromium, lead, selenium, and silver) and by EPA Method 7470 (mercury),

TPH by NWTPH-Dx (without Silica Gel Cleanup), NWTPH-Gx and Polychlorinated Biphenyls (PCBs) by EPA Method 8082.

8.3 Asphalt and Concrete Testing

Krazan will also perform in-place compaction testing in accordance with ASTM D1556 or ASTM D2922 for every 100LF of trench and 100SF of asphalt replacement. Structural Concrete will be tested for compressive strength in accordance with ASTM C39.

9.0 Documentation for Non-Conformities

Quality Control inspections will be conducted during the work and deficiencies noted and reported to the Client and Engineer. Once the deficient item has been corrected and reinspected, the inspector will sign off the deficient item. The intent of this pro-active approach towards quality is to identify problems at the earliest stage possible so that timely and cost-effective actions can be taken.

10.0 Documentation Records

Quality Control Records will be maintained by the Glacier Quality Control Coordinator. Daily field reports in accordance with Section 01 45 00, 2.01 will be completed. The quality control records will be protected from deterioration or damage throughout the period of the contract. During construction as built drawings will be maintained onsite, and updated as changes occur. Upon completion of the work Glacier will provide the owner with as built drawings in accordance with the project specifications.

Glacier will document all inspections and tests performed and provide Client with records of such inspections and tests. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, proposed corrective action; and corrective actions taken.

Third party testing and specialty inspection reports will be submitted to the Client and Engineer.

ENVIRONMENTAL PROTECTION PLAN

CIRCLE K SITE 1461
SEATTLE, WASHINGTON

Prepared by:

Glacier Environmental Services, Inc.
7509 212TH St SW
Edmonds, WA 98026

Prepared for:

DEPARTMENT OF
ECOLOGY
State of Washington

February 2024

ENVIRONMENTAL PROTECTION PLAN

CIRCLE K SITE 1461
SEATTLE, WASHINGTON

1 Purpose

As part of its dedication to environmental responsibility, Glacier Environmental Services, Inc. (Glacier) is committed to using construction methods and practices that reduce or eliminate environmental pollution. The purpose of this Environmental Protection Plan (EPP) is to present a comprehensive overview of known or potential environmental issues that will be addressed by Glacier during the Circle K Site 1461 Environmental Cleanup in Seattle, Washington.

The EPP is a working document that will be continually reviewed by management to ensure its continuing suitability, adequacy and effectiveness. This review will include an evaluation of policies and procedures, which ensure ongoing identification, evaluation, and implementation of pollution prevention opportunities.

This plan is intended to meet the submittal requirements of Sections 01 99 00 (Environmental Protection), 01 57 19.13 (Noise Control), and 01 35 43.10 (Green Construction Practices) of the project specifications.

All operations will comply with all federal, state, and local regulations pertaining to water, air, solid waste, and noise pollution. The following rules and regulations that apply to this work include, but are not limited to:

1. Chapter 173-303 WAC Washington State Dangerous Waste Regulations
2. Chapter 173-340 WAC Model Toxics Control Act Cleanup Regulations.

2. Responsibilities

Project Manager – Lauren Golembiewski, Glacier's Project Manager will have overall responsibility for preparation, and implementation of the EPP. Working with on-site personnel, she will continually identify and submit for approval any additional requirements to be included in the EPP.

Superintendent – Thayne Wastman, the Glacier Site Superintendent will be responsible for ensuring day-to-day compliance to the EPP. Thayne will be physically present at the site during all work and will be ultimately responsible for inspecting control measures and correcting deficiencies. He will ensure training sessions are conducted so that Glacier and subcontract employees are familiar with the provisions of the EPP, the use of specialized equipment and materials, and the pollution countermeasures contained herein.

Craft Labor Personnel – All site personnel will be responsible for being knowledgeable of the provisions of this EPP and will report any noted deficiency, spill or event that could adversely affect human health or the environment.

3. Training

Glacier site personnel have been instructed by management in the operation and maintenance of pollution control equipment and pollution control laws and regulations. The training course outline includes:

- Understanding the regulatory and legal structure;
- understanding the responsibilities to report and respond;
- consequences on not properly reporting or responding;
- elements of a Spill Prevention, Control and Countermeasures (SPCC) Plan;
- recognition of potential spill problems;
- spill planning for construction sites;
- recognition of spill pathways; spill prevention measures and techniques;
- required actions for spill reporting.

During safety briefings, spill prevention will be discussed. Any near misses or incidents will be discussed to prevent them from reoccurring. Employee feedback and recommendations are encouraged in spill prevention and operation. Sign-in sheets, which included the topics of discussion at each meeting, are maintained for documentation.

4. Permits and Notifications

Glacier has obtained a Utility Major Permit from the Seattle Department of Transportation for the well drilling and trenching in the Right of Way. Notification procedures are outlined in the Permit Conditions.

Glacier is currently in the process of obtaining a Construction Building Permit from the Seattle Department of Construction, which will be required for trenching and the treatment building.

5. Protection of Existing Features

5.1 General

Field activities will be limited to the areas defined by the project specifications and drawings. Areas that are not to be disturbed will be clearly marked or delineated by fence by or other barrier.

Except as specified, Glacier will not remove, cut, deface, or destroy land resources including trees, shrubs, vines, etc. These features will be clearly marked, wrapped, or otherwise protected.

Monuments and markers will be protected at all times and marked with high visibility tape. Site workers will be advised as to the purpose of the markings and/or protecting particular objects.

Upon completion, Glacier will obliterate all signs of temporary construction such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by Ecology. Haul roads will be kept clear at all times of any object that creates an unsafe condition. Any contaminants or construction material dropped from construction vehicles will be promptly cleaned up. Streets adjacent the site will be swept clean as necessary.

5.2 Preconstruction Survey

Prior to the start of on-site activities, the Glacier Superintendent will conduct a survey of existing site conditions. Photographs will be taken as part of the survey. Glacier will prepare a brief report indicating the condition of trees, shrubs, sidewalks, pavement and buildings onsite and adjacent to the work site.

5.3 Trees, Shrubs

Glacier will not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits, or remove, deface, injure or destroy trees within the work area. Landscaped areas will be restored per the plans and specifications.

Glacier will protect street trees that are located in the Right of Way using temporary barricades per Seattle Standard Detail 132B.

5.4 Cultural Resources

The project does not pass through any known archaeological sites. However, it is always possible that unrecorded archaeological sites could be discovered during the construction. In the event that artifacts, human remains, or other cultural resources are discovered during excavations at locations of the Work, Glacier will protect the discovered items, notify Ecology, and comply with applicable law.

Glacier has notified the Snoqualmie Indian Tribes Department of Archaeology and Historic Preservation of the drilling activities and will provide a secondary notification before trench excavation begins. Employees will review the Inadvertent Discovery Plan (**Appendix A-03 of the Bid Specification**).

Glacier will immediately stop work and notify the Engineer if any artifacts or other archaeological resources are unearthed during excavation or otherwise discovered on the construction site. Work stoppage will remain in effect until permission to proceed has been granted by Ecology.

If human remains are discovered, work will cease in the area of discovery and notification made to Ecology, local law enforcement, and coroner (Reference: RCW 27.44.055).

a. City of Seattle Police, Non-Emergency No.:**(206) 625-5011**

b. King County Sheriff, Non-Emergency No.: **(206) 296-3311**

c. King County Medical Examiner No.: **(206) 731-3232x4**

d. Police Emergency No. **911**

6. Sedimentation and Erosion Control

The worksite is generally paved and is less than 1 acre; therefore, the is no requirement for an NPDES Permit or of full Stormwater Pollution Prevention Plan. Glacier has developed a Construction Stormwater Control Plan Per City of Seattle Standards, attached as Appendix A. Glacier will use BMPs including inlet protection (catch basin socks) and wattles to control stormwater runoff.

7. Air Quality

With the exception of nuisance dust, it is not anticipated that the project will be the source of air emissions affecting human health or the environment**.**

Dust may be produced on site as a result of construction activities and as a result of the wind. Dust suppression techniques will be employed, including the used of water sprays, as needed. No significant concentration of acutely toxic solids, that could become airborne, is anticipated.

8. Noise Pollution

Potential sources of noise pollution include:

- Concrete/asphalt slab sawing and breaking;
- Well Drilling
- Truck Traffic;
- Slamming Truck Gates;
- Service Vehicles and Heavy Equipment (backup alarms);
- Drilling, sawing, hammering, etc.

All reasonable measures will be employed for the suppression of noise resulting from the work. Construction equipment will be fitted with exhaust silencers (mufflers) and shut off when not being used.

Noise limitations shall be in compliance with the City of Seattle's noise ordinance (City of Seattle Municipal Code, Chapter 25.08).

Construction activities are generally permitted:

- 7:00 a.m. - 7:00 p.m., weekdays
- 9:00 a.m. - 7:00 p.m., weekends and legal holidays*

Impact activities (pile driving, jackhammers, etc.) is limited to:

- 8:00 a.m. - 5:00 p.m., weekdays
- 9:00 a.m. - 5:00 p.m., weekends and legal holidays*

Noise related to Treatment System Operation

The treatment system contains multiple motors and pumps that will produce noise pollution. The treatment system installed will meet the Leq noise level limitation of 60 dBA specified for commercial properties. The only equipment that will exceed that level is the Liquid Ring Pump located inside the container. The LRP has an integral silencer package and will be placed on a 3/4" rubber pad to prevent vibration transfer. The treatment building has been insulated with R-10 2-inch foam board and plywood sheathing which will provide some level of noise insulation. All vents in the room with LRP will be fitted with sound hoods.

PRM will measure the sound level of the system during their testing operation and report to Glacier. Once onsite, Glacier will measure sound levels using a decibel meter. Additional modifications to the container or system will be addressed if the Leq exceeds 60 dBA.

9. Site Security & Temporary Facilities

Glacier recognizes the need to keep the businesses on the site in operation and provide safe access for patrons. The work will be phased so that only portions of the site are inaccessible at any one time. Four parking spaces will be provided for employees and customers at all times. If adequate parking is not available onsite during a particular phase of work, Glacier will establish "No Parking" spaces on E. McGraw to designate for employee parking.

During drilling operations the restricted areas will be limited to the immediate vicinity of the well being drilled; support vehicles (trailers) will be stored offsite.

Glacier plans to begin trenching activities on the north end and work south. Glacier will limit the access to the south driveway on 24th Ave E while trenching is taking place on the north end. Trench sections will be completed and backfilled up to grade so that areas of the parking lot can be reopened and utilized after hours. The additional backfill will be removed prior to final paving. Non-

skid steel plates will be used if needed to cover any trenches that cannot be backfilled to grade temporarily. When the treatment system is being delivered and additional equipment installed, access will be limited to the north driveway off E. McGraw.
Glacier will utilize delineators, caution tape, and fencing as necessary to protect the work area and provide a clear and safe path for customers/patrons. Equipment will be staged in one centralized location when not in use, all small tools will be removed from the site each day or stored in a locked toolbox. Glacier will keep piping materials neatly stockpiled and secured in the designated laydown area under the building eaves.

10. Spill Prevention and Control

Properly managing hazardous and toxic substances and petroleum products at the project site will greatly reduce the potential for spills or pollution. Good housekeeping practices, along with proper use and storage of these substances form the basis of proper management. Following is a list of good housekeeping practices to be implemented during construction:

- Storage of hazardous materials, chemicals fuels and oils and fueling of construction equipment will not take place within 100 feet of any drainage, wetland, spring or other water feature.
- An effort will be made to store only enough fuel and lubricants as necessary to complete the job.
- Materials stored on-site will be stored in their appropriate containers on a level site and covered.
- Products will be stored in tightly sealed containers with the original manufacturer's label.
- Substances will not be mixed with on another unless recommended by the manufacturer.
- Whenever possible, the entire product will be used before it's container is discarded
- Manufacturer's recommendation for proper use and disposal of a product will be followed.
- If surplus product must be disposed of, the manufacturers or local and state recommended methods for proper disposal will be followed.

Additional spill prevention and control measures are detailed in the Spill Prevention Control and Containment Plan for the Project.

11. Green Remediation

Glacier is committed to leading the industry in minimizing the impact of our activities on the environment. Key strategies that aid in this effort include utilizing diesel-powered equipment that meets EPA Tier 4 standards, fueled with Ultra Low Sulfur (ULS) diesel. To reduce emissions, our company policy is to not allow equipment and vehicles to sit idle for more than 3 minutes. Our general practice is to segregate demolition debris including asphalt and concrete for recycling.

In addition to our field operations, our business practices include increased communications and reporting via email and electronic recordkeeping, use of EnergyStar office equipment, and recycling policies. We will make an effort to reduce onsite waste by composting food waste, recycling, and using refillable water bottles.

Glacier will utilize the BMPS in Table 01 35 32-1, attached, whenever possible.

CONSTRUCTION STORMWATER CONTROL (CSC) GENERAL NOTES

1. A FIRST GROUND DISTURBANCE INSPECTION IS REQUIRED PRIOR TO START OF WORK ON ALL SITES WITH LAND DISTURBING ACTIVITY.
2. SCHEDULE A FIRST GROUND DISTURBANCE INSPECTION FOR AN ISSUED BUILDING PERMIT AT 206-684-8900 OR ONLINE AT WWW.SEATTLE.GOV/DPD/PERMITS/INSPECTIONS/
3. THE APPLICANT SHALL DESIGNATE AN EROSION AND SEDIMENT CONTROL (ESC) SUPERVISOR WHO SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPS). FOR LARGE CONSTRUCTION PROJECTS, THE ESC SUPERVISOR SHOULD BE A CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL). PROVIDE THE NAME AND PHONE NUMBER OF THE ESC SUPERVISOR TO THE SITE INSPECTOR AT THE FIRST GROUND DISTURBANCE INSPECTION.
4. BMPS SHALL BE INSTALLED PRIOR TO STARTING CONSTRUCTION TO ENSURE SEDIMENT-LADEN WATER DOES NOT LEAVE THE PROJECT SITE OR ENTER ROADSIDE DITCHES, STORM DRAINS, SURFACE WATERS, OR WETLANDS.
5. THE BMPS INCLUDED IN THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. THE APPLICANT IS RESPONSIBLE FOR ENSURING THAT BMPS ARE MODIFIED AS NEEDED FOR UNEXPECTED STORM EVENTS OR OTHER UNFORESEEN CIRCUMSTANCES, AND TO ACCOUNT FOR CHANGING SITE CONDITIONS.
6. ANY AREAS OF DISTURBED SOIL THAT WILL NOT BE WORKED FOR TWO CONSECUTIVE DAYS DURING THE WET SEASON (OCT 1 TO APRIL 30) OR SEVEN DAYS DURING THE DRY SEASON (MAY 1 TO SEPT 30) SHALL BE IMMEDIATELY STABILIZED WITH APPROVED BMPS METHODS (E.G. STRAW, MULCH, PLASTIC COVERING, COLD MIX, ETC.)
7. GRADING AND/OR SOIL DISTURBING ACTIVITIES MAY BE LIMITED OR PROHIBITED FOR CERTAIN SITES SUBJECT TO ECA STANDARDS (I.E. ECA STEEP SLOPES, LANDSLIDE PRONE AREAS, ETC.) BETWEEN OCTOBER 31ST AND APRIL 1ST. IF NOTED IN THE GEOTECHNICAL SPECIAL INSPECTIONS REQUIREMENTS, A GRADING SEASON EXTENSION LETTER (GSEL) ISSUED BY SDCI IS REQUIRED FOR ALL GRADING AND/OR SOIL DISTURBING ACTIVITIES DURING THIS PERIOD. THE GEOTECHNICAL SPECIAL INSPECTOR MUST SUBMIT ELECTRONIC APPLICATIONS FOR A GSEL USING THE SDCI PROJECT PORTAL. ALLOW FOUR TO SIX WEEKS FOR PROCESSING. FAILURE TO OBTAIN THE GSEL PRIOR TO OCTOBER 31 MAY RESULT IN A WORK STOPPAGE.
8. CITY STREETS AND SIDEWALKS SHALL BE KEPT CLEAN AT ALL TIMES. NO MATERIAL SHALL BE STORED ON CITY STREETS OR SIDEWALKS WITHOUT A STREET USE PERMIT FROM THE SEATTLE DEPARTMENT OF TRANSPORTATION (SDOT).
9. POLLUTION CONTROL MEASURES SHALL BE FOLLOWED TO ENSURE THAT NO LIQUID PRODUCTS OR CONTAMINATED WATER ENTERS ANY STORM DRAINAGE FACILITIES OR OTHERWISE LEAVES THE PROJECT SITE. ANY HAZARDOUS MATERIALS OR LIQUID PRODUCTS THAT HAVE THE POTENTIAL TO POLLUTE RUNOFF SHALL BE STORED AND DISPOSED OF PROPERLY.
10. ENSURE THAT WASHOUT FROM CONCRETE TRUCKS IS PERFORMED OFF-SITE OR IN DESIGNATED CONCRETE WASHOUT AREAS ONLY. DO NOT WASH OUT CONCRETE TRUCKS ONTO THE GROUND, OR TO STORM DRAINS OR OPEN DITCHES. DO NOT DUMP EXCESS CONCRETE ONSITE, EXCEPT IN DESIGNATED CONCRETE WASHOUT AREAS.
11. ALL AREAS OF DISTURBED SOIL SHALL BE FULLY STABILIZED WITH THE APPROPRIATE SOIL AMENDMENT AND COVER MEASURES AT COMPLETION OF THE PROJECT. TYPICAL COVER MEASURES INCLUDE LANDSCAPING OR HYDROSEED WITH MULCH.

CONSTRUCTION STORMWATER CONTROL (CSC) PLAN REQUIREMENTS / NARRATIVE

THIS PLAN IS REQUIRED FOR ALL PROJECTS WITH GREATER THAN 750 SQUARE FEET OF LAND DISTURBING ACTIVITIES.

SHOW TEMPORARY AND PERMANENT BEST MANAGEMENT PRACTICES (BMPS) IN THE PLAN VIEW OF THIS SHEET THAT WILL ACCOMPLISH THE MINIMUM REQUIREMENTS DESCRIBED IN THE NARRATIVE BELOW.

THE BMPS SHOWN IN THE PLAN VIEW OF THIS PLAN ARE THE MINIMUM REQUIRED. ADDITIONAL BMPS ARE REQUIRED WHEN MINIMUM CONTROLS ARE NOT SUFFICIENT TO PREVENT EROSION OR TRANSPORT OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE.

- MARK CLEARING LIMITS
- DELINEATE ENVIRONMENTALLY CRITICAL AREAS
- RETAIN TOP LAYER AND NATIVE VEGETATION
- ESTABLISH CONSTRUCTION ACCESS
- PROTECT DOWNSTREAM PROPERTIES AND RECEIVING WATERS
- PREVENT EROSION AND SEDIMENT TRANSPORT FROM THE SITE
- STABILIZE SOILS
- PROTECT SLOPES
- PROTECT STORM DRAINS
- STABILIZE CHANNEL AND OUTLETS
- CONTROL POLLUTANTS
- CONTROL DEWATERING
- MAINTAIN AND INSPECT BMPs
- EXECUTE CONSTRUCTION STORMWATER CONTROL PLAN
- MINIMIZE OPEN TRENCHES
- PHASE THE PROJECT
- INSTALL PERMANENT FLOW CONTROL AND WATER QUALITY FACILITIES
- PROTECT STORMWATER BMPs PRIOR TO, DURING, AND AFTER CONSTRUCTION

COMPLETE CONSTRUCTION STORMWATER CONTROL BMP DETAILS AND REQUIREMENTS ARE LOCATED IN DIRECTOR'S RULE DPD DR 21-2015, CHAPTER 4, VOLUME 2: CONSTRUCTION STORMWATER CONTROL, OF THE SEATTLE STORMWATER MANUAL. SHOW ALL BMPS ON THIS PLAN SHEET THAT WILL BE USED TO ACHIEVE THE REQUIREMENTS ABOVE.

POST CONSTRUCTION SOIL MANAGEMENT PLAN

AT THE END OF PROJECT, ALL AREAS DISTURBED AND NOT COVERED WITH A HARD SURFACE MUST BE AMENDED PER THE SOIL AMENDMENT DETAIL BELOW AND PROBE TO 12-INCHES AT THE SITE FINAL INSPECTION.

- LABEL ALL AREAS DISTURBED AND NOT COVERED WITH A HARD SURFACE WITHIN THE SITE AS ONE OF THE FOLLOWING: SA (SOIL AMENDMENT AREA) or ND (NON-DISTURBED AREA). SEE DEFINITIONS BELOW. DO NOT REFERENCE AN ALTERNATE PLAN SHEET.
- AN ESTIMATE OF THE VOLUME OF COMPOST REQUIRED IS AUTOMATICALLY CALCULATED ON THE SITE AND DRAINAGE CONTROL SUMMARY SHEET REQUIRED ON THE DRAINAGE AND WASTEWATER CONTROL PLAN (DWC PLAN). THE ACTUAL VOLUME OF COMPOST REQUIRED WILL BE DETERMINED IN THE FIELD.

DEFINITIONS:

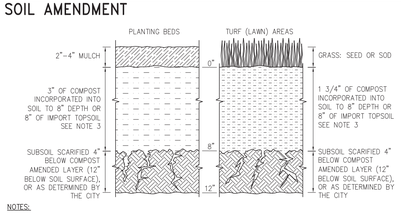
- NON-DISTURBED AREA (ND): VEGETATED AREAS THAT WILL NOT BE SUBJECT TO LAND DISTURBING ACTIVITY (SEE D) DO NOT REQUIRE SOIL AMENDMENT IF THEY ARE FENCED AND CONTINUOUSLY PROTECTED THROUGHOUT CONSTRUCTION. THE FENCING MUST BE IN PLACE AT THE FIRST GROUND DISTURBANCE INSPECTION. THIS WILL BE MONITORED BY THE DPD SITE INSPECTOR. NO DISTURBANCE, INCLUDING VEHICLE TRAFFIC OR MATERIAL STORAGE, IS ALLOWED IN THESE AREAS UNTIL FINAL INSPECTION. LABEL THESE AREAS AS (ND) IN THE PLAN VIEW.
- SOIL AMENDMENT AREA (SA): VEGETATED OR COMPOST AREAS (TURF AND LANDSCAPE) MUST BE AMENDED PER THE SOIL AMENDMENT DETAIL AND THE SUBSOIL MUST BE LOOSENED SO IT WILL PROBE TO A DEPTH OF 12 INCHES PRIOR TO SITE FINAL INSPECTION. THIS INCLUDES AREAS IMPACTED BY CLEARING AND GRADING, STOCKPILING, SITE ACCESS, PATHWAYS AND MATERIALS OR EQUIPMENT STORAGE. LABEL THESE AREAS AS (SA) IN THE PLAN VIEW.

ESTIMATED COMPOST REQUIRED FOR SOIL AMENDMENT

ONLY COMPLETE THE FOLLOWING CALCULATION IF A DRAINAGE AND WASTEWATER CONTROL PLAN (DWC PLAN) IS NOT REQUIRED (E.G. SUBJECT TO FIELD INSPECTION (STFI) DEMOLITION PERMITS)

[ ] (SQUARE FEET) X 0.0062 = [ ] (CUBIC YARDS)
AREA REQUIRING AMENDMENT (SA) — REQUIRED COMPOST

SOIL AMENDMENT

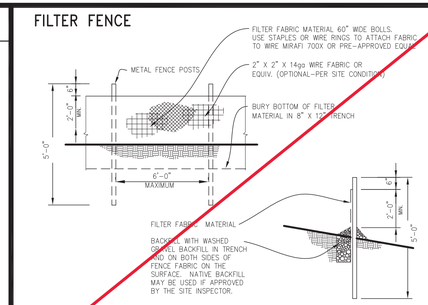


NOTES:

1. POST CONSTRUCTION SOIL AMENDMENT IS REQUIRED ON ALL AREAS NOT COVERED BY IMPERVIOUS SURFACE WHERE SOIL IS DISTURBED DURING CONSTRUCTION.
2. SOIL AMENDMENT MUST PASS A 12 INCH MINIMUM PROBE TEST.
3. IMPORT TOPSOIL, IF USED, MUST MEET THE REQUIREMENTS OF THE 2016 SEATTLE STORMWATER MANUAL, VOL. 1, SECTIONS 5.1.5.1 AND 5.1.5.3.

SYMBOL: (SA) AREA REQUIRING SOIL AMENDMENT (ND) NON-DISTURBED AREA (SOIL AMENDMENT NOT REQUIRED)

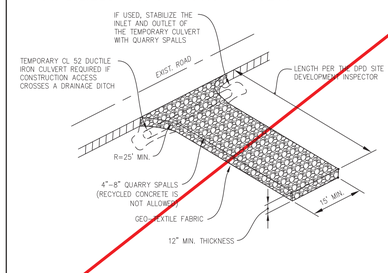
FILTER FENCE



NOTE: ANGLE SILT FENCE BACK UP THE SLOPE AT THE END OF RUN.

SYMBOL: (FF)

STABILIZED CONSTRUCTION ACCESS



STABILIZED ACCESS SHALL BE USED IN ALL AREAS OF THE SITE WITH VEHICLE TRAFFIC AND PARKING, INCLUDING PLANTING STRIPS. RECYCLED CONCRETE IS NOT ALLOWED.

SYMBOL: (CE)

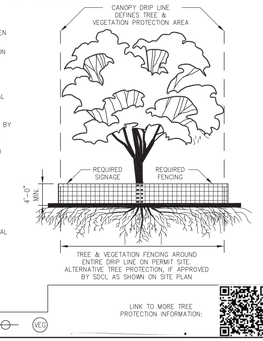
TREE & VEGETATION PROTECTION

TREE PROTECTION FENCING AND SIGN

1. CHAIN LINK, WIRE MESH, OR SIMILAR OPEN RIGID MATERIAL (NO PLYWOOD)
2. MUST BE INSTALLED PRIOR TO DEMOLITION OR GROUND DISTURBANCE
3. KEPT IN PLACE FOR THE DURATION OF CONSTRUCTION
4. NO SOIL DISTURBANCE OR ACTIVITY ALLOWED WITHIN FENCED AREA: MATERIAL STORAGE/STOCKPILING, PARKING, EXCAVATION, DUMPING, OR WASHING
5. MODIFICATIONS OF THESE REQUIREMENTS BY APPROVAL OF SDCI PLANNER ONLY
6. IF ROOTS GREATER THAN 2 INCH FOUND OUTSIDE OF FENCING, PROTECT BY HAND EXCAVATION AND, IF NECESSARY, CUT CLEANLY AND KEEP MOIST
7. USE 3 INCHES OR DEEPER WOOD CHIP MULCH OUTSIDE FENCED AREAS TO PROTECT FEEDER ROOTS

VEGETATION PROTECTION

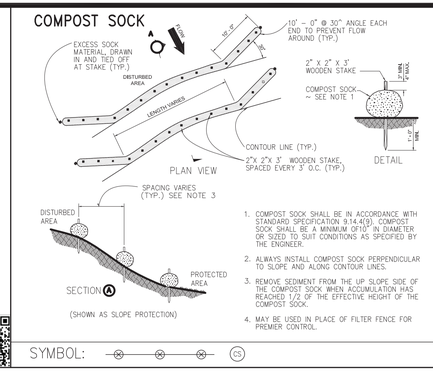
1. ORANGE MESH OR SIMILAR OPEN MATERIAL
2. MINIMIZE CONSTRUCTION ZONE
3. PROTECT VEGETATION OUTSIDE CONSTRUCTION ZONE WITH FENCING AS SHOWN
4. USE 3 INCHES OR DEEPER WOOD CHIP MULCH OUTSIDE FENCED AREAS TO PROTECT FEEDER ROOTS



LINK TO MORE TREE PROTECTION INFORMATION:

SYMBOL: (TPF)

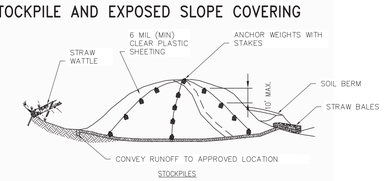
COMPOST SOCK

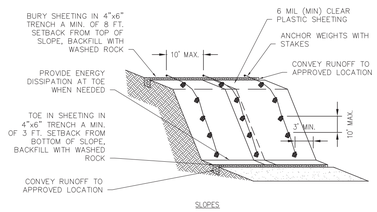


1. COMPOST SOCK SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATION 9.14.4(9). COMPOST SOCK SHALL BE A MINIMUM OF10" IN DIAMETER OR SIZED TO SUIT CONDITIONS AS SPECIFIED BY THE ENGINEER.
2. ALWAYS INSTALL COMPOST SOCK PERPENDICULAR TO SLOPE AND ALONG CONTOUR LINES.
3. REMOVE SEDIMENT FROM THE UP SLOPE SIDE OF THE COMPOST SOCK WHEN ACCUMULATION HAS REACHED 1/2 OF THE EFFECTIVE HEIGHT OF THE COMPOST SOCK.
4. MAY BE USED IN PLACE OF FILTER FENCE FOR PREMIER CONTROL.

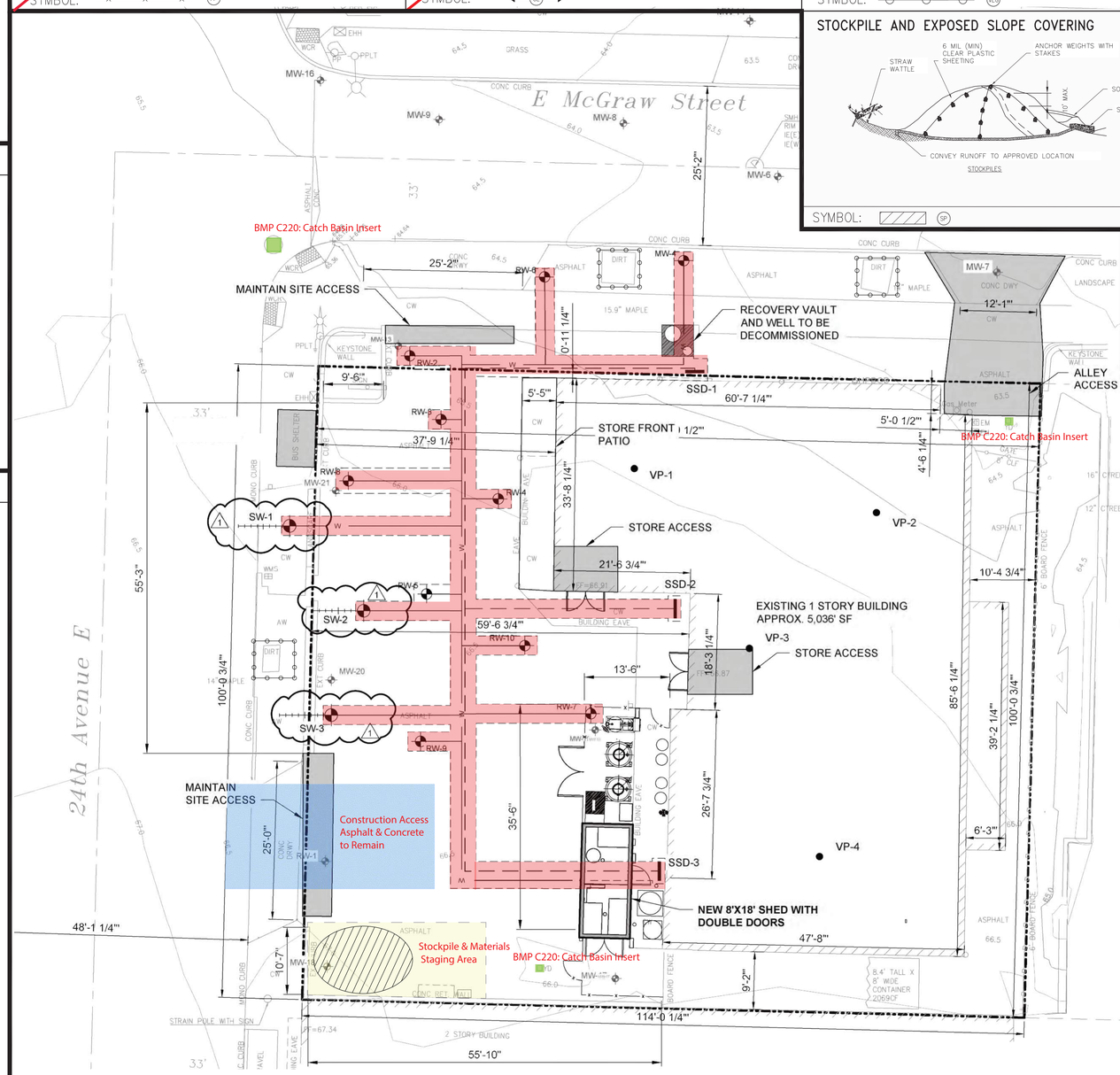
SYMBOL: (CS)

STOCKPILE AND EXPOSED SLOPE COVERING





SYMBOL: (SP)



NOTES:

1. Stormwater drains to combined storm/sanitary system
2. Existing driveways to remain paved, all trucks entering and leaving the Site will remain on paved roads
3. Trench excavations will be backfilled as soon as possible
4. Any water accumulations in trenches will be collected for disposal offsite.
5. Trench excavations will be covered with plastic sheeting to prevent contact of stormwater with soil until excavation has been backfilled.
6. Any sediment or soil tracked onto the site will be swept up within 30 minutes of occurrence.
7. Any stockpiles used will be underlain, and covered, with plastic sheeting of a size substantially larger than the pile, secured as required prior to leaving job site on a daily basis. Stockpile covers will be secured against movement by wind.

Prepared By:

GLACIER ENVIRONMENTAL SERVICES

7509 212th Street SW
Edmonds, WA 98026

CONSTRUCTION STORMWATER CONTROL & POST CONSTRUCTION SOIL MANAGEMENT PLAN

NOTE: THIS PLAN IDENTIFIES THE MINIMUM MEASURES REQUIRED; ADDITIONAL MEASURES MAY BE REQUIRED BASED ON CONSTRUCTION METHODS AND ACTUAL AREA OF DISTURBANCE.

SCALE: 1" = 10' NORTH ARROW

DPD APPROVAL STAMP

TEMPLATE VERSION: 2017-06-02

STANDARD CONSTRUCTION STORMWATER CONTROL (CSC) AND POST CONSTRUCTION SOIL MANAGEMENT (SOIL) PLAN

APPLICANT PLAN SET

CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS

Project Number: 6996584-CN

Address: 2350 24th AVE E SEATTLE, WA 98112

DATE: 00/00/0000

STANDARD CSC/SOIL PLAN

SHEET CSC

Table 01 35 32-1: Green Remediation and Sustainable Best Management Practices

Action	Potentially Applicable to Site?	Potential Benefits			
		Air	Energy	Water	Land
Use alternate fuels such as biodiesel, ultra-low sulfur diesel, and E85.	YES	Reduces air emissions from on-site construction equipment and from trucking waste materials.	Reduces use of petroleum products in on-site construction equipment and in trucking waste materials.	This action is not applicable to the above category.	Less toxic to the environment should a leak occur.
Require vehicles and construction equipment to use idle reduction technologies	YES	Reduces direct and indirect green-house gas and other emissions, e.g., CO, CO_2, VOC_S, NO_X, SO_X.	Reduces fuel use in on-site construction equipment and vehicles.	This action is not applicable to the above category.	Reduces noise impacts.
Sequence work to minimize double-handling of materials.	YES	Reduces air emissions from on-site construction equipment. Reduces nuisance dust.	Reduces fuel use in on-site construction equipment.	Reduces water quality impacts from erosion	Restores land sooner.
Use on-site renewable energy to power elements of the remedy, e.g., wind and solar power for treatment system.	NO	This action is not applicable to the above category.	Reduces purchased energy.	This action is not applicable to the above category.	May be an asset to redevelopment if left on site after cleanup.
Purchase green energy to power elements of the remedy	NO	Reduces air impacts of cleanup.	This action is not applicable to the above category.	This action is not applicable to the above category.	This action is not applicable to the above category.
Use permeable surface soil barriers, e.g., vegetated topsoil or gravel	NO	This action is not applicable to the above category.	This action is not applicable to the above category.	Reduces stormwater runoff	Increases post cleanup marketability of developable sites.

Action	Potentially Applicable to Site?	Potential Benefits			
		Air	Energy	Water	Land
Reclaim grey water for reuse.	NO	This action is not applicable to the above category.	This action is not applicable to the above category.	Reduces water use.	This action is not applicable to the above category.
Use engineered surface soil barriers, e.g., pavement, cover system.	YES	Reduces air emissions from on-site construction equipment and from trucking.	Reduces fuel use in on-site construction equipment and in trucking waste materials.	This action is not applicable to the above category.	Reduces waste material requiring off-site disposal.
Use in-situ remediation technologies (e.g. monitored natural attenuation; chemical oxidation).	YES	May reduce air emissions by reducing excavation and materials handling.	Reduces fuel use in on-site construction equipment and in trucking waste materials.	This action is not applicable to the above category.	Less intrusive, especially if structures present like roads, utilities and valuable buildings.
Use cleanup technologies that permanently destroy contaminants (incineration, treatment).	YES	This action is not applicable to the above category.	May be more energy intensive.	This action is not applicable to the above category.	Reduces future contaminant migration concerns; eliminates need for long term maintenance and monitoring.
Use treated soils to backfill excavation.	NO	Reduces emissions from trucking in clean fill.	This action is not applicable to the above category.	This action is not applicable to the above category.	Reduces clean fill material requirements.
Retain existing structures on site.	YES	Reduces air emissions from demolition activities.	Reduces fuel used for demolition and in trucking wastes off site.	This action is not applicable to the above category.	Preserves structures for future redevelopment; provides link to the past.

Action	Potentially Applicable to Site?	Potential Benefits			
		Air	Energy	Water	Land
Recycle waste materials generated during cleanup	YES	This action is not applicable to the above category.	This action is not applicable to the above category.	This action is not applicable to the above category.	Reduces material requiring off-site disposal
Collect rainwater for on-site use e.g., dust control.	YES	This action is not applicable to the above category.	This action is not applicable to the above category.	Reduces water use; stormwater impacts.	This action is not applicable to the above category.
Install temporary dewatering systems to lower groundwater.	NO	This action is not applicable to the above category.	This action is not applicable to the above category.	Reduces potential ground and surface water impacts.	Better control of limits of excavation.

END OF SECTION 01 35 43.10

APPENDIX C- DISPOSAL RECORDS

DatRun	Ticket Number	Dirt	Haul & dispose	Invoice #	Product	Tons
06/06/24	1023636	5.44			Soil Disposal-Contaminated w/fuel	5.44
06/06/24	1023639	4.90			Soil Disposal-Contaminated w/fuel	4.90
06/06/24	1023646	4.13			Soil Disposal-Contaminated w/fuel	4.13
06/10/24	1023729	5.64			Soil Disposal-Contaminated w/fuel	5.64
06/11/24	1023752	3.33			Soil Disposal-Contaminated w/fuel	3.33
06/11/24	1023779	4.49			Soil Disposal-Contaminated w/fuel	4.49
06/12/24	1023842	3.56			Soil Disposal-Contaminated w/fuel	3.56
06/12/24	1023864	4.74			Soil Disposal-Contaminated w/fuel	4.74
06/12/24	1023918	3.88			Soil Disposal-Contaminated w/fuel	3.88
06/12/24	1023943	5.90		58048	Soil Disposal-Contaminated w/fuel	5.90
06/17/24	1023957	4.62			Soil Disposal-Contaminated w/fuel	4.62
06/17/24	1023966	4.47			Soil Disposal-Contaminated w/fuel	4.47
06/25/24	1024187	5.73			Soil Disposal-Contaminated w/fuel	5.73
06/26/24	1024234	4.57			Soil Disposal-Contaminated w/fuel	4.57
06/26/24	1024251	5.77			Soil Disposal-Contaminated w/fuel	5.77
06/27/24	1024312	3.85			Soil Disposal-Contaminated w/fuel	3.85
06/28/24	1024338	5.96			Soil Disposal-Contaminated w/fuel	5.96
06/28/24	1024345	5.46			Soil Disposal-Contaminated w/fuel	5.46
06/28/24	1024364	5.54		58094	Soil Disposal-Contaminated w/fuel	5.54
07/02/24	1024385	4.32			Soil Disposal-Contaminated w/fuel	4.32
07/10/24	1024511	1.75		58147	Soil Disposal-Contaminated w/fuel	1.75
07/29/24	1024978	1.87		58187	Soil Disposal-Contaminated w/fuel	1.87
	Totals	99.92	0.00			99.92

SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

23-008

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023636	

WEIGHMASTER: IN - Dale H. OUT - Stephanie A.
DATE/TIME IN: 6/6/24 7:23 am
DATE/TIME OUT: 6/6/24 7:38 am
VEHICLE: GLACIER ENVIRO
CONTAINER:
REFERENCE: JAMES
BILL OF LADING:

SCALE IN GROSS WEIGHT 21,700 NET TONS 5.44 INBOUND
SCALE OUT TARE WEIGHT 10,820 NET WEIGHT 10,880 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.44	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

Cont Soil Disposal

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NET AMOUNT
TENDERED
CHANGE
CHECK#

RS-F042UPR (04/19)

SIGNATURE

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REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023636	

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DATE/TIME IN: 6/6/24 7:23 am
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Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023639	

WEIGHMASTER: IN - Dale H. OUT - Stephanie A.
DATE/TIME IN: 6/6/24 10:34 am
DATE/TIME OUT: 6/6/24 10:46 am
VEHICLE: GLACIER ENVIRO
CONTAINER:
REFERENCE: JAMES
BILL OF LADING:

SCALE IN GROSS WEIGHT 20,600 NET TONS 4.90 INBOUND
SCALE OUT TARE WEIGHT 10,800 NET WEIGHT 9,800 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
4.90	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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Contract:TB-8333

23-008

SITE	TICKET #	CELL
01	1023646	

WEIGHMASTER: Zackeia J.

DATE/TIME IN	DATE/TIME OUT
6/6/24 2:48 pm	6/6/24 2:55 pm

VEHICLE: GLACIER ENVIRO
CONTAINER:
REFERENCE: RAYMOND
BILL OF LADING:

SCALE IN GROSS WEIGHT 18,760 NET TONS 4.13 INBOUND
SCALE OUT TARE WEIGHT 10,500 NET WEIGHT 8,260 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
4.13	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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OUTBOUND – SCALE INDICATOR 1955300033 = E-Seal 2006 Zackeia Jones-tutwiler

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SITE	TICKET #	CELL
01	1023646	

WEIGHMASTER: Zackeia J.

DATE/TIME IN	DATE/TIME OUT
6/6/24 2:48 pm	6/6/24 2:55 pm

VEHICLE: GLACIER ENVIRO
CONTAINER:
REFERENCE: RAYMOND
BILL OF LADING:

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Mukilteo, WA 98275
Contract:TB-8333

23-008

SITE	TICKET #	CELL
01	1023729	
WEIGHMASTER	Dale H.	
DATE/TIME IN	6/10/24 11:43 am	DATE/TIME OUT 6/10/24 12:12 pm
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	JAMES	
BILL OF LADING		

SCALE IN GROSS WEIGHT 25,400 NET TONS 5.64
SCALE OUT TARE WEIGHT 14,120 NET WEIGHT 11,280

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.64	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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SITE	TICKET #	CELL
01	1023729	
WEIGHMASTER	Dale H.	
DATE/TIME IN	6/10/24 11:43 am	DATE/TIME OUT 6/10/24 12:12 pm
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	JAMES	
BILL OF LADING		

SCALE IN GROSS WEIGHT 25,400 NET TONS 5.64
SCALE OUT TARE WEIGHT 14,120 NET WEIGHT 11,280

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
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PO Box 1097
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Contract:TB-8333

SITE	TICKET #	CELL
01	1023752	
WEIGHMASTER	Stephanie A.	
DATE/TIME IN	6/11/24 6:46 am	DATE/TIME OUT 6/11/24 6:53 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND#1 GLACIER	
BILL OF LADING		

SCALE IN GROSS WEIGHT 17,220 NET TONS 3.33
SCALE OUT TARE WEIGHT 10,560 NET WEIGHT 6,660

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
3.33	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

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CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023752	
WEIGHMASTER	Stephanie A.	
DATE/TIME IN	6/11/24 6:46 am	DATE/TIME OUT 6/11/24 6:53 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND#1 GLACIER	
BILL OF LADING		

SCALE IN GROSS WEIGHT 17,220 NET TONS 3.33
SCALE OUT TARE WEIGHT 10,560 NET WEIGHT 6,660

INBOUND
INVOICE

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CUSTOMER
010249
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Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023779	
WEIGHMASTER	Dale H.	
DATE/TIME IN	6/11/24 10:30 am	DATE/TIME OUT 6/11/24 10:41 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND	
BILL OF LADING		

SCALE IN GROSS WEIGHT 19,520 NET TONS 4.49 INBOUND
SCALE OUT TARE WEIGHT 10,540 NET WEIGHT 8,980 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
4.49	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

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SITE	TICKET #	CELL
01	1023779	
WEIGHMASTER	Dale H.	
DATE/TIME IN	6/11/24 10:30 am	DATE/TIME OUT 6/11/24 10:41 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND	
BILL OF LADING		

SCALE IN GROSS WEIGHT 19,520 NET TONS 4.49 INBOUND
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010249
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PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023842	
WEIGHMASTER	IN - Dale H.	OUT - Stephanie A.
DATE/TIME IN	6/12/24 9:56 am	DATE/TIME OUT 6/12/24 10:06 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND	
BILL OF LADING		

SCALE IN GROSS WEIGHT 17,620 NET TONS 3.56 INBOUND
SCALE OUT TARE WEIGHT 10,500 NET WEIGHT 7,120 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
3.56	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023842	
WEIGHMASTER	IN - Dale H.	OUT - Stephanie A.
DATE/TIME IN	6/12/24 9:56 am	DATE/TIME OUT 6/12/24 10:06 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND	
BILL OF LADING		

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NET AMOUNT
TENDERED
CHANGE
CHECK#

RS-F042UPR (04/19)

SIGNATURE

SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023864	

WEIGHMASTER: IN - Zackeia J. OUT - Michael A.

DATE/TIME IN: 6/12/24 1:13 pm
DATE/TIME OUT: 6/12/24 1:21 pm

VEHICLE: GLACIER ENVIRO
CONTAINER:

REFERENCE: RAYMOND

BILL OF LADING:

SCALE IN GROSS WEIGHT 19,980 NET TONS 4.74
SCALE OUT TARE WEIGHT 10,500 NET WEIGHT 9,480

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
4.74	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

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SIGNATURE

SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
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SITE	TICKET #	CELL
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INVOICE

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0.00	YD	Tracking QTY				
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REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01	TICKET # 1023918	CELL
WEIGHMASTER	IN - Zackeia J.	OUT - Michael A.
DATE/TIME IN	6/13/24 1:31 pm	DATE/TIME OUT 6/13/24 1:37 pm
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND	
BILL OF LADING		

SCALE IN GROSS WEIGHT 18,180 NET TONS 3.88 INBOUND
SCALE OUT TARE WEIGHT 10,420 NET WEIGHT 7,760 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
3.88	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01	TICKET # 1023918	CELL
WEIGHMASTER	IN - Zackeia J.	OUT - Michael A.
DATE/TIME IN	6/13/24 1:31 pm	DATE/TIME OUT 6/13/24 1:37 pm
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND	
BILL OF LADING		

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SCALE OUT TARE WEIGHT 10,420 NET WEIGHT 7,760 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
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CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023943	

WEIGHMASTER: IN - Zackeia J. OUT - Michael A.
DATE/TIME IN: 6/14/24 12:43 pm
DATE/TIME OUT: 6/14/24 12:53 pm
VEHICLE: GLACIER ENVIRO
CONTAINER:
REFERENCE: RAYMOND
BILL OF LADING:

SCALE IN GROSS WEIGHT 22,180 NET TONS 5.90 INBOUND
SCALE OUT TARE WEIGHT 10,380 NET WEIGHT 11,800 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.90	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01 TICKET # 1023943 CELL
WEIGHMASTER IN - Zackeia J. OUT - Michael A.
DATE/TIME IN 6/14/24 12:43 pm DATE/TIME OUT 6/14/24 12:53 pm
VEHICLE GLACIER ENVIRO CONTAINER
REFERENCE RAYMOND
BILL OF LADING

SCALE IN GROSS WEIGHT 22,180 NET TONS 5.90 INBOUND
SCALE OUT TARE WEIGHT 10,380 NET WEIGHT 11,800 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.90	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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3rd and lander Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01	TICKET # 1023957	CELL
WEIGHMASTER	Dale H.	
DATE/TIME IN	6/17/24 8:55 am	DATE/TIME OUT 6/17/24 9:03 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND	
BILL OF LADING		

SCALE IN GROSS WEIGHT 20,020 NET TONS 4.62
SCALE OUT TARE WEIGHT 10,780 NET WEIGHT 9,240

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
4.62	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

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3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01	TICKET # 1023957	CELL
WEIGHMASTER	Dale H.	
DATE/TIME IN	6/17/24 8:55 am	DATE/TIME OUT 6/17/24 9:03 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	RAYMOND	
BILL OF LADING		

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3rd and lander Seattle, WA

CUSTOMER

010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023966	

WEIGHMASTER: IN - Zackeia J. OUT - Dale H.

DATE/TIME IN: 6/17/24 12:34 pm
DATE/TIME OUT: 6/17/24 12:40 pm

VEHICLE: GLACIER ENVIRO
CONTAINER:

REFERENCE: RAYMOND

BILL OF LADING:

SCALE IN GROSS WEIGHT 19,720 NET TONS 4.47
SCALE OUT TARE WEIGHT 10,780 NET WEIGHT 8,940

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
4.47	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

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SITE

REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1023966	

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DATE/TIME IN: 6/17/24 12:34 pm
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3rd and lander Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01	TICKET # 1024187	CELL
WEIGHMASTER	Dale H.	
DATE/TIME IN	6/25/24 9:41 am	DATE/TIME OUT 6/25/24 9:50 am
VEHICLE	GLACIER ENVIRO	CONTAINER
REFERENCE	JAMES	
BILL OF LADING		

SCALE IN GROSS WEIGHT 25,700 NET TONS 5.73
SCALE OUT TARE WEIGHT 14,240 NET WEIGHT 11,460

23-008

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.73	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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3rd and lander -Seattle, WA

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Glacier Environmental Services, Inc
PO Box 1097
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Contract:TB-8333

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WEIGHMASTER	Dale H.	
DATE/TIME IN	6/25/24 9:41 am	DATE/TIME OUT 6/25/24 9:50 am
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REFERENCE	JAMES	
BILL OF LADING		

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CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

23-008

SITE	TICKET #	CELL
01	1024234	

WEIGHMASTER: IN - Dale H. OUT - Stephanie A.
DATE/TIME IN: 6/26/24 7:30 am
DATE/TIME OUT: 6/26/24 8:00 am
VEHICLE: GLACIER ENVIRO
CONTAINER:
REFERENCE: JAMES
BILL OF LADING:

SCALE IN GROSS WEIGHT 23,220 NET TONS 4.57
SCALE OUT TARE WEIGHT 14,080 NET WEIGHT 9,140

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
4.57	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01 TICKET # 1024234 CELL
WEIGHMASTER IN - Dale H. OUT - Stephanie A.
DATE/TIME IN 6/26/24 7:30 am
DATE/TIME OUT 6/26/24 8:00 am
VEHICLE GLACIER ENVIRO
CONTAINER
REFERENCE JAMES
BILL OF LADING

SCALE IN GROSS WEIGHT 23,220 NET TONS 4.57
SCALE OUT TARE WEIGHT 14,080 NET WEIGHT 9,140

INBOUND
INVOICE

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CUSTOMER
010249
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Mukilteo, WA 98275
Contract:TB-8333

23-008

SITE	TICKET #	CELL
01	1024251	

WEIGHMASTER: IN - Michael A. OUT - Dale H.
DATE/TIME IN: 6/26/24 11:06 am
DATE/TIME OUT: 6/26/24 11:15 am
VEHICLE: SUNSTATE
CONTAINER:
REFERENCE: JAMES
BILL OF LADING:

SCALE IN GROSS WEIGHT 25,620 NET TONS 5.77
SCALE OUT TARE WEIGHT 14,080 NET WEIGHT 11,540

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.77	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01 TICKET # 1024251 CELL
WEIGHMASTER IN - Michael A. OUT - Dale H.
DATE/TIME IN 6/26/24 11:06 am
DATE/TIME OUT 6/26/24 11:15 am
VEHICLE SUNSTATE
CONTAINER
REFERENCE JAMES
BILL OF LADING

SCALE IN GROSS WEIGHT 25,620 NET TONS 5.77
SCALE OUT TARE WEIGHT 14,080 NET WEIGHT 11,540

INBOUND
INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.77	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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SIGNATURE

SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024312	

WEIGHMASTER: Dale H.

DATE/TIME IN	DATE/TIME OUT
6/27/24 12:12 pm	6/27/24 12:22 pm

VEHICLE	CONTAINER
GLACIER ENVIRO	

REFERENCE: JAMES

BILL OF LADING:

SCALE IN GROSS WEIGHT 21,480 NET TONS 3.85 INBOUND
SCALE OUT TARE WEIGHT 13,780 NET WEIGHT 7,700 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
3.85	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

THINK CHOOSE SAFETY LIVE It's the Right Thing!

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SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024312	

WEIGHMASTER: Dale H.

DATE/TIME IN	DATE/TIME OUT
6/27/24 12:12 pm	6/27/24 12:22 pm

VEHICLE	CONTAINER
GLACIER ENVIRO	

REFERENCE: JAMES

BILL OF LADING:

SCALE IN GROSS WEIGHT 21,480 NET TONS 3.85 INBOUND
SCALE OUT TARE WEIGHT 13,780 NET WEIGHT 7,700 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
3.85	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

THINK CHOOSE SAFETY LIVE It's the Right Thing!

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by chapter 15.80 RCW administered by the Washington State Department of Agriculture.
INBOUND - SCALE INDICATOR 96135341 = E-Seal 2000
OUTBOUND – SCALE INDICATOR 1955300033 = E-Seal 2006 Dale Haijuano

The undersigned individual signing this document on behalf of Customer acknowledges that he or she has read and understands the terms and conditions on the reverse side and that he or she has the authority to sign this document on behalf of the customer.

NET AMOUNT
TENDERED
CHANGE
CHECK#

RS-F042UPR (04/19)

SIGNATURE _____

SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

23-008

SITE	TICKET #	CELL
01	1024338	

WEIGHMASTER: IN - Robert C. OUT - Dale H.

DATE/TIME IN	DATE/TIME OUT
6/28/24 8:36 am	6/28/24 8:43 am

VEHICLE	CONTAINER
GLACIER ENVIRO	

REFERENCE: JAMES

BILL OF LADING

SCALE IN GROSS WEIGHT 25,980 NET TONS 5.96 INBOUND
SCALE OUT TARE WEIGHT 14,060 NET WEIGHT 11,920 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.96	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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TENDERED
CHANGE
CHECK#

RS-F042UPR (04/19)

SIGNATURE

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REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024338	

WEIGHMASTER: IN - Robert C. OUT - Dale H.

DATE/TIME IN	DATE/TIME OUT
6/28/24 8:36 am	6/28/24 8:43 am

VEHICLE	CONTAINER
GLACIER ENVIRO	

REFERENCE: JAMES

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QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.96	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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RS-F042UPR (04/19)

SIGNATURE

SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024345	

WEIGHMASTER: IN - Michael A. OUT - Dale H.

DATE/TIME IN	DATE/TIME OUT
6/28/24 10:53 am	6/28/24 11:02 am

VEHICLE	CONTAINER
SUNSTATE	

REFERENCE: JAMES

BILL OF LADING

SCALE IN GROSS WEIGHT 24,960 NET TONS 5.46 INBOUND
SCALE OUT TARE WEIGHT 14,040 NET WEIGHT 10,920 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.46	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

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TENDERED
CHANGE
CHECK#

RS-F042UPR (04/19)

SIGNATURE

SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01 TICKET # 1024345 CELL
WEIGHMASTER IN - Michael A. OUT - Dale H.
DATE/TIME IN 6/28/24 10:53 am DATE/TIME OUT 6/28/24 11:02 am
VEHICLE SUNSTATE CONTAINER
REFERENCE JAMES
BILL OF LADING

SCALE IN GROSS WEIGHT 24,960 NET TONS 5.46 INBOUND
SCALE OUT TARE WEIGHT 14,040 NET WEIGHT 10,920 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.46	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024364	

WEIGHMASTER: Michael A.
DATE/TIME IN: 6/28/24 1:40 pm
DATE/TIME OUT: 6/28/24 1:40 pm
VEHICLE: SUNSTATE
CONTAINER:
REFERENCE: JAMES
BILL OF LADING:

SCALE IN GROSS WEIGHT 25,120 NET TONS 5.54 INBOUND
TARE OUT TARE WEIGHT 14,040 NET WEIGHT 11,080 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.54	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-088

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by chapter 15.80 RCW administered by the Washington State Department of Agriculture.
INBOUND - SCALE INDICATOR 96135341 = E-Seal 2000
OUTBOUND – SCALE INDICATOR 1955300033 = E-Seal 2006 Michael Anderson

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NET AMOUNT
TENDERED
CHANGE
CHECK#

RS-F042UPR (04/19)

SIGNATURE

SITE
REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01 TICKET # 1024364 CELL
WEIGHMASTER Michael A.
DATE/TIME IN 6/28/24 1:40 pm
DATE/TIME OUT 6/28/24 1:40 pm
VEHICLE SUNSTATE
CONTAINER
REFERENCE JAMES
BILL OF LADING

SCALE IN GROSS WEIGHT 25,120 NET TONS 5.54 INBOUND
TARE OUT TARE WEIGHT 14,040 NET WEIGHT 11,080 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
5.54	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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SIGNATURE

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REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024385	

WEIGHMASTER: Stephanie A.

DATE/TIME IN	DATE/TIME OUT
7/2/24 6:57 am	7/2/24 7:20 am

VEHICLE	CONTAINER
GLACIER ENVIRO	

REFERENCE: JAMES

BILL OF LADING

SCALE IN GROSS WEIGHT 23,040 NET TONS 4.32 INBOUND
SCALE OUT TARE WEIGHT 14,400 NET WEIGHT 8,640 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
4.32	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

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OUTBOUND – SCALE INDICATOR 1955300033 = E-Seal 2006 Stephanie Anderson

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CHANGE
CHECK#

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SIGNATURE

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3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024385	

WEIGHMASTER: Stephanie A.

DATE/TIME IN	DATE/TIME OUT
7/2/24 6:57 am	7/2/24 7:20 am

VEHICLE	CONTAINER
GLACIER ENVIRO	

REFERENCE: JAMES

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0.00	YD	Tracking QTY				
4.32	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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RS-F042UPR (04/19)

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REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024511	

WEIGHMASTER: IN - Michael A. OUT - Dale H.
DATE/TIME IN: 7/10/24 11:37 am
DATE/TIME OUT: 7/10/24 11:50 am
VEHICLE: SUNSTATE
CONTAINER:
REFERENCE: JAMES
BILL OF LADING:

SCALE IN GROSS WEIGHT 17,860 NET TONS 1.75 INBOUND
SCALE OUT TARE WEIGHT 14,360 NET WEIGHT 3,500 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
1.75	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01 TICKET # 1024511 CELL
WEIGHMASTER IN - Michael A. OUT - Dale H.
DATE/TIME IN 7/10/24 11:37 am DATE/TIME OUT 7/10/24 11:50 am
VEHICLE SUNSTATE CONTAINER
REFERENCE JAMES
BILL OF LADING

SCALE IN GROSS WEIGHT 17,860 NET TONS 1.75 INBOUND
SCALE OUT TARE WEIGHT 14,360 NET WEIGHT 3,500 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
1.75	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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REGIONAL DISPOSAL INTERMODAL 425-977-4127
3rd and lander Seattle, WA

CUSTOMER
010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE	TICKET #	CELL
01	1024978	

WEIGHMASTER: IN - Zackeia J. OUT - Dale H.

DATE/TIME IN	DATE/TIME OUT
7/29/24 1:00 pm	7/29/24 1:11 pm

VEHICLE: GLACIER ENVIRO
CONTAINER:
REFERENCE: JAMES
BILL OF LADING:

SCALE IN GROSS WEIGHT 14,460 NET TONS 1.87 INBOUND
SCALE OUT TARE WEIGHT 10,720 NET WEIGHT 3,740 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
1.87	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

23-008

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3rd and lander -Seattle, WA

CUSTOMER 010249
Glacier Environmental Services, Inc
PO Box 1097
Mukilteo, WA 98275
Contract:TB-8333

SITE 01 TICKET # 1024978 CELL
WEIGHMASTER IN - Zackeia J. OUT - Dale H.
DATE/TIME IN 7/29/24 1:00 pm DATE/TIME OUT 7/29/24 1:11 pm
VEHICLE GLACIER ENVIRO CONTAINER
REFERENCE JAMES
BILL OF LADING

SCALE IN GROSS WEIGHT 14,460 NET TONS 1.87 INBOUND
SCALE OUT TARE WEIGHT 10,720 NET WEIGHT 3,740 INVOICE

QTY.	UNIT	DESCRIPTION	RATE	EXTENSION	TAX	TOTAL
0.00	YD	Tracking QTY				
1.87	tn	SW-CONT W/FUEL Origin:SEATTLE/KING 100%				

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CHANGE
CHECK#

RS-F042UPR (04/19)

SIGNATURE

STRAIGHT BILL OF LADING

ORIGINAL — NOT NEGOTIABLE

Shipper No. 23490

23-008

Carrier No.

Page 1 of 4

Marine Vacuum Service Inc.

(Name of carrier) (SCAC)

Date 6/26/24

On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec.1.

TO:

Consignee Marine Vacuum Service Inc.

Street 1516 South Graham Street

City Seattle State WA Zip Code 98108

FROM:

Shipper Glacier Environmental

Street 2350 24TH Ave E

City Seattle State WA Zip Code

24 hr. Emergency Contact Tel. No. ChemTel 1-800-255-3924 Contract MIS3627926

Route

Vehicle Number

No. of Units & Container Type	HM	BASIC DESCRIPTION UN or NA Number, Proper Shipping Name, Hazard Class, Packing Group	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)	WEIGHT (Subject to Correction)	RATE	CHARGES (For Carrier Use Only)
1 TT	X	(DOT Spec Tank Required) UN1863 Fuel, Aviation, Turbin Engine, Class 3, PG I				
1 TT	X	(DOT Spec Tank Required) UN1203 Gasoline, Mixture Class 3, PG II				
1 TT	X	(DOT Spec Tank Required) UN1203 Gasoline, Class 3, PG II				
1 TT	X	NA1993 Diesel Mixture, Class 3, PG III				
1 TT	X	NA1993 Diesel, Class 3, PG III				
1 TT	X	NA1270 Petroleum Oil, Class 3, PG I				
1 TT	X	NA1270 Petroleum Oil, Mixture, Class 3, PG I				
1 TT		Oily Waste Water Non Reg by DOT				
1 TT		Waste Water Non Reg by DOT	300	Gallon		
1 TT		Used Oil Non Reg by DOT				
1 TT		Used Coolant Non Reg by DOT				

PLACARDS TENDERED: YES ☐ NO ☑

Note — (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property, as follows: "The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding _____ per _____."
(2) Where the applicable tariff provisions specify a limitation of the carrier's liability absent a release or a value declaration by the shipper and the shipper does not release the carrier's liability or declare a value, the carrier's liability shall be limited to the extent provided by such provisions. See NMFC Item 172.
(3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation. See Section 2(e) of Item 360, Bills of Lading, Freight Bills and Statements of Charges and Section 1(a) of the Contract Terms and Conditions for a list of such articles.

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 labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

_____ Signature

REMIT C.O.D. TO: ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

_____ (Signature of Consignor)

TOTAL CHARGES $

FREIGHT CHARGES

FREIGHT PREPAID except when box at right is checked ☐ Check box if charges are to be collect

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER Glacier

PER

6/26/24

CARRIER MAR-VAC

PER

DATE 6/26/24

Permanent post-office address of shipper.

APPENDIX D- WELL LOGS AND ANALYTICAL REPORTS

DEPARTMENT OF ECOLOGY
State of Washington

Notice of Intent to

Decommission a Well

This form and required fees **MUST BE RECEIVED** by the Department of Ecology **72 HOURS BEFORE** you decommission a well.

Notice Number
AE81436

1. Property Owner			
Name: Kuk-Jin Choung			
Mailing Address: 2350 24th Ave E	City: Seattle	State: WA	Zip Code: 98112
2. Consulting Firm (if applicable)			
Business Name: Glacier Enviro			
Mailing Address: 7509 212th St SW	City: Edmonds	State: WA	Zip Code: 98026
Email Address:	Phone Number: (425) 355-2826		
3. Well Site Location			
County Name: King	Tax Parcel Number: 6788201335		
Street Address: 2350 24th Ave East	City: Seattle	State: WA	Zip Code:
Township: 25N	Range: 4E	Section: 21	¼ (within 160 acres): NE	¼ - ¼ (within 40 acres): SW
Latitude Degrees:	Longitude Degrees:		
4. Project Details			
Estimated Start Date: 2/13/2024	Project Name: 110.24.1003	Well Count: 1	
Well Type: Water	Origional NOI No.:	Decommisioned Well Tag:	
5. Driller Details			
Professional Name [Architect | Engineer | Surveyor] (if applicable):	License Number:		
Drilling Company Name: CASCADE DRILLING OREGON - CLACKAMAS	Phone Number: (503) 775-4118		
Licensed Driller Name: JON CASTNER	Driller License Number: 2245		
Comments:			
6. Fee Summary			
Total amount due: $50.00			
Remit payment to: Department of Ecology Cashiering Unit, P.O. Box 47611, Olympia WA 98504-7611 OR Pay online at https://appswr.ecology.wa.gov/wellconstruction/Wells/NoticeOfIntentPaymentRequest.aspx			
Notice Status: Pending	Date: 2/12/2024 3:39:35 PM	Confirmation | Cash Journal Number:	

DEPARTMENT OF ECOLOGY
State of Washington

Notice of Intent to Construct a

Resource Protection Well

This form and required fees **MUST BE RECEIVED** by the Department of Ecology **72 HOURS BEFORE** you construct a well.

Notice Number
RE25734

1. Property Owner			
Name: Kuk-Jin Choung			
Mailing Address: 2350 24th Ave E	City: Seattle	State: WA	Zip Code: 98112

2. Consulting Firm (if applicable)			
Business Name: Glacier Enviro			
Mailing Address: 7509 212th St SW	City: Edmonds	State: WA	Zip Code: 98026
Email Address:	Phone Number: (425) 355-2826		

3. Well Site Location				
County Name: King			Tax Parcel Number: 6788201335	
Street Address: 2350 24th Ave E			City: Seattle	State: WA / Zip Code: 98112
Township: 25N	Range: 4E	Section: 21	¼ (within 160 acres): NE	¼ - ¼ (within 40 acres): SW
Latitude Degrees:			Longitude Degrees:	

4. Project Details		
Estimated Start Date: 2/7/2024	Project Name: 110.24.1003	Well Count: 6
Well Type: Resource Protetction (Other)		

5. Driller Details	
Professional Name [Architect | Engineer | Surveyor] (if applicable):	License Number:
Drilling Company Name: CASCADE DRILLING OREGON - CLACKAMAS	Phone Number: (503) 775-4118
Licensed Driller Name: CHRIS BAKER	Driller License Number: 3080
Comments:	

6. Fee Summary

Total amount due: $240.00

Remit payment to: Department of Ecology Cashiering Unit, P.O. Box 47611, Olympia WA 98504-7611
OR Pay online at https://appswr.ecology.wa.gov/wellconstruction/Wells/NoticeOfIntentPaymentRequest.aspx

Notice Status	Date	Confirmation | Cash Journal Number
Pending	2/5/2024 3:07:19 PM	24020530224873

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

- [x] Construction
- [ ] Decommission ⇨ Original NOI No. _____

Ecology Well ID Tag No. BPR 846

Site Well Name SW-1

Consulting Firm Glacier Environmental Services, Inc

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Baker, Chris

Driller/Engineer/Trainee Signature _____

License No. 3080

Company Name Cascade Drilling

If trainee box is checked, sponsor's license number: _____

Sponsor's signature _____

Notice of Intent No. RE25734

Type of Well:

- [ ] Resource Protection Well
- [x] Remediation Well
- [ ] Geotechnical Soil Boring
- [ ] Environmental Boring
- [ ] Injection Point
- [ ] Grounding Well
- [ ] Ground Source Heat Pump
- [ ] Other _____

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Kuk-Jin Choung

Well Street Address 2350 24th Ave E

City Seattle County King

Tax Parcel No. 6788201335

Location (see instructions): WWM ☐ or EWM ☒

SW ¼-¼ NE ¼, Section 21 Town 25n Range 4e

Latitude (Example: 47.12345) 47.640120

Longitude (Example: -120.12345) -122.301969

(WGS 84 Coordinate System)

Borehole diameter 8 inches Casing diameter 4 inches

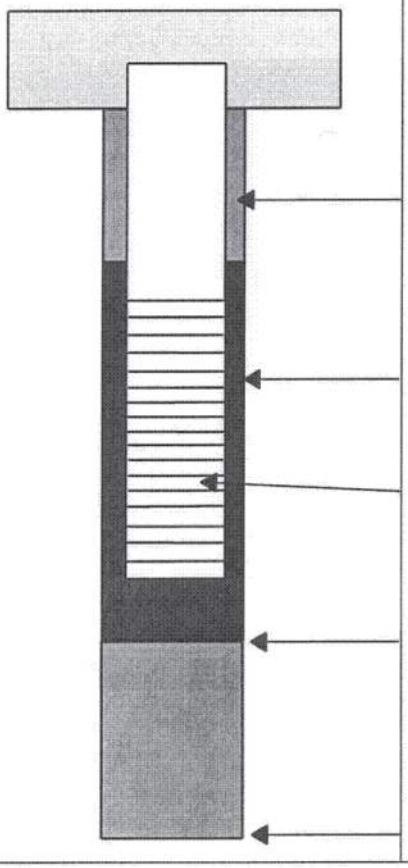
Static water level 5 ft below top of casing Date 02/10/24

☐ Above-ground completion with bollards ☒ Flush monument

↳ Stick-up of top of well casing _____ ft above ground surface

Start Date 2/6/2024 Completed Date 2/14/2024

Construction Design



Well Data

Concrete Surface Seal Depth	18" Flush Monument
Blank Casing (dia x dep)	.5-6
Material	PVC
Backfill	1-4
Type	Bentonite chips
Gravel Pack	4-23
Material	3/8" Minus Pea Gravel
Screen (dia x dep)	6-21
Slot Size	.010
Material	PVC
Well Depth	23
Backfill	
Material	
Total Hole Depth	23

Driller's Log

0 - 23 FT

Lt Brown to Dk Gray, fine to course silt & sand.

- FT

- FT

- FT

- FT

- FT

Cascade Drilling 110.24.1003

Received
Department of Ecology
MAY 16 2024
Water Resources Program
NWRO

The Department of Ecology does not warranty the data and\or information on this well report.

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:
- [x] Construction
- [ ] Decommission ⇨ Original NOI No. _____

Ecology Well ID Tag No. BPR 847
Site Well Name SW-2
Consulting Firm Glacier Environmental Services, Inc
Was a variance approved for this well/boring? ☐ Yes ☒ No
If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer
Name (Print Last, First Name) Baker, Chris
Driller/Engineer/Trainee Signature _____
License No. 3080
Company Name Cascade Drilling

If trainee box is checked, sponsor's license number: _____
Sponsor's signature _____

Notice of Intent No. RE25734

Type of Well:
- [ ] Resource Protection Well
- [x] Remediation Well
- [ ] Geotechnical Soil Boring
- [ ] Environmental Boring
- [ ] Injection Point
- [ ] Grounding Well
- [ ] Ground Source Heat Pump
- [ ] Other _____

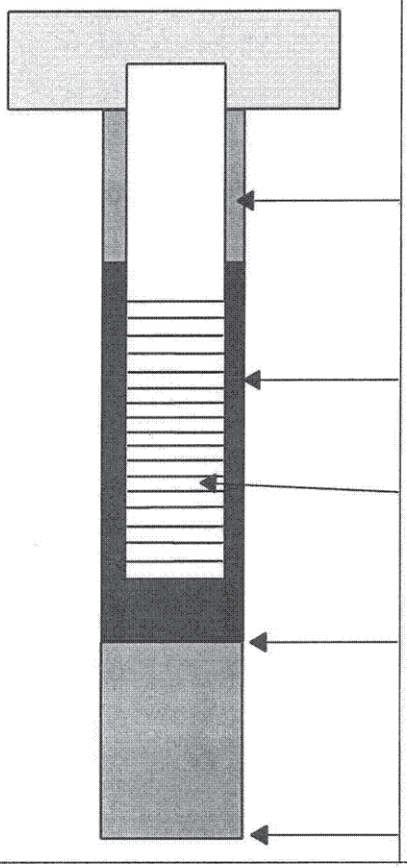
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Kuk-Jin Choung
Well Street Address 2350 24th Ave E
City Seattle County King
Tax Parcel No. 6788201335

Location (see instructions): WWM ☐ or EWM ☒
SW ¼-¼ NE ¼, Section 21 Town 25n Range 4e
Latitude (Example: 47.12345) 47.640071
Longitude (Example: -120.12345) -122.301933
(WGS 84 Coordinate System)

Borehole diameter 8 inches Casing diameter 4 inches
Static water level 5 ft below top of casing Date 02/12/24
☐ Above-ground completion with bollards ☒ Flush monument
↳ Stick-up of top of well casing _____ ft above ground surface
Start Date 2/6/2024 Completed Date 2/14/2024

Construction Design



Well Data

Concrete Surface Seal Depth	18" Flush Monument
Blank Casing (dia x dep)	.5-6
Material	PVC
Backfill	1-4
Type	Bentonite chips
Gravel Pack	4-23
Material	3/8" Minus Pea Gravel
Screen (dia x dep)	6-21
Slot Size	.010
Material	PVC
Well Depth	23
Backfill	
Material	
Total Hole Depth	23

Driller's Log

0 - 23 FT
Lt Brown to Dk Gray, fine to course silt & sand.

- FT

- FT

- FT

- FT

- FT

Cascade Drilling 110.24.1003

Received
Department of Ecology
MAY 16 2024
Water Resources Program
NWRO

The Department of Ecology does not warranty the data and\or information on this well report.

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

- [x] Construction
- [ ] Decommission ⇨ Original NOI No. _____

Ecology Well ID Tag No. BPR 845

Site Well Name SW-3

Consulting Firm Glacier Environmental Services, Inc

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Baker, Chris

Driller/Engineer/Trainee Signature _____

License No. 3080

Company Name Cascade Drilling

If trainee box is checked, sponsor's license number: _____

Sponsor's signature _____

Notice of Intent No. RE25734

Type of Well:

- [ ] Resource Protection Well
- [x] Remediation Well
- [ ] Geotechnical Soil Boring
- [ ] Environmental Boring
- [ ] Injection Point
- [ ] Grounding Well
- [ ] Ground Source Heat Pump
- [ ] Other _____

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Kuk-Jin Choung

Well Street Address 2350 24th Ave E

City Seattle County King

Tax Parcel No. 6788201335

Location (see instructions): WWM ☐ or EWM ☒

SW ¼-¼ NE ¼, Section 21 Town 25n Range 4e

Latitude (Example: 47.12345) 47.640029

Longitude (Example: -120.12345) -122.301933

(WGS 84 Coordinate System)

Borehole diameter 8 inches Casing diameter 4 inches

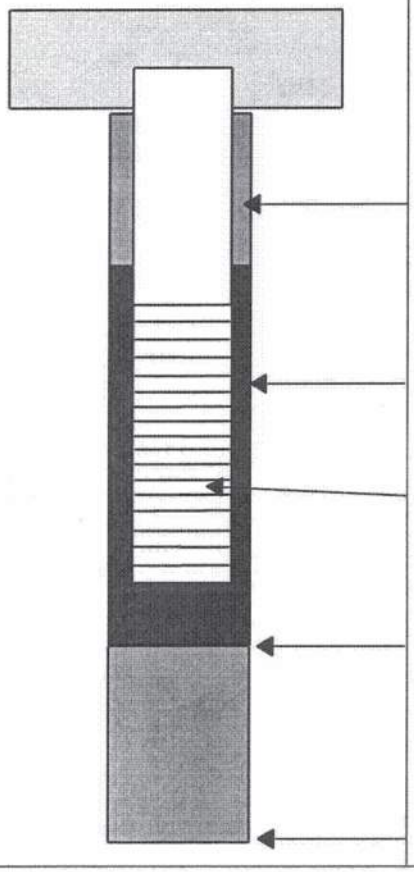
Static water level 5 ft below top of casing Date 02/09/24

☐ Above-ground completion with bollards ☒ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 2/6/2024 Completed Date 2/14/2024

Construction Design



Well Data

Concrete Surface Seal Depth	18" Flush Monument
Blank Casing (dia x dep)	.5-6
Material	PVC
Backfill	1-4
Type	Bentonite chips
Gravel Pack	4-23
Material	3/8" Minus Pea Gravel
Screen (dia x dep)	6-21
Slot Size	.010
Material	PVC
Well Depth	23
Backfill	
Material	
Total Hole Depth	23

Driller's Log

0 - 23 FT

Lt Brown to Dk Gray, fine to course silt & sand.

- FT

FT

Received
Department of Ecology
MAY 16 2024
Water Resources Program
NWRO

- FT

- FT

- FT

Cascade Drilling 110.24.1003

The Department of Ecology does not warranty the data and\or information on this well report.

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

- [x] Construction
- [ ] Decommission ⇨ Original NOI No. _____

Ecology Well ID Tag No. BPR 842

Site Well Name RW-8

Consulting Firm Glacier Environmental Services, Inc

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Baker, Chris

Driller/Engineer/Trainee Signature _____

License No. 3080

Company Name Cascade Drilling

If trainee box is checked, sponsor's license number: _____

Sponsor's signature _____

Notice of Intent No. RE25734

Type of Well:

- [ ] Resource Protection Well
- [x] Remediation Well
- [ ] Geotechnical Soil Boring
- [ ] Environmental Boring
  - ☐ Soil- ☐ Vapor- ☐ Water-sampling
- [ ] Injection Point
- [ ] Grounding Well
- [ ] Ground Source Heat Pump
- [ ] Other _____

Property Owner Kuk-Jin Choung

Well Street Address 2350 24th Ave E

City Seattle County King

Tax Parcel No. 6788201335

Location (see instructions): WWM ☐ or EWM ☒

SW ¼-¼ NE ¼, Section 21 Town 25n Range 4e

Latitude (Example: 47.12345) 47.640139

Longitude (Example: -120.12345) -122.301933

(WGS 84 Coordinate System)

Borehole diameter 8 inches Casing diameter 4 inches

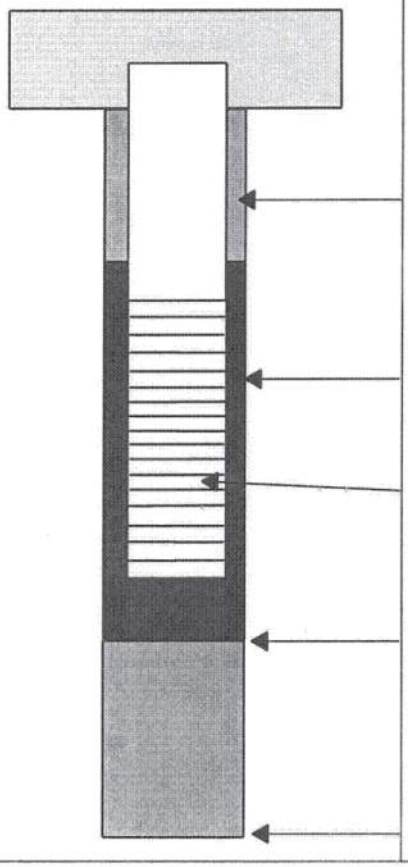
Static water level 5 ft below top of casing Date 02/07/24

☐ Above-ground completion with bollards ☒ Flush monument

Stick-up of top of well casing _____ ft above ground surface

Start Date 2/6/2024 Completed Date 2/14/2024

Construction Design



Well Data

Concrete Surface Seal Depth	12" Vaulted Monument
Blank Casing (dia x dep)	.5-5
Material	PVC
Backfill	1-3
Type	Bentonite chips
Gravel Pack	3-22
Material	3/8" Minus Pea Gravel
Screen (dia x dep)	5-20
Slot Size	.010
Material	PVC
Well Depth	22
Backfill	
Material	
Total Hole Depth	22

Driller's Log

0 - 22 FT

Lt Brown to Dk Gray, fine to course silt & sand.

- FT

- FT

- FT

- FT

- FT

Cascade Drilling 110.24.1003

Received
Department of Ecology
MAY 16 2024
Water Resources Program
NWRO

The Department of Ecology does not warranty the data and\or information on this well report.

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:
- [x] Construction
- [ ] Decommission ⇨ Original NOI No. _____

Ecology Well ID Tag No. BPR 843
Site Well Name RW-9
Consulting Firm Glacier Environmental Services, Inc
Was a variance approved for this well/boring? ☐ Yes ☒ No
If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer
Name (Print Last, First Name) Baker, Chris
Driller/Engineer/Trainee Signature _____
License No. 3080
Company Name Cascade Drilling

If trainee box is checked, sponsor's license number: _____
Sponsor's signature _____

Notice of Intent No. RE25734

Type of Well:
- [x] Resource Protection Well
- [x] Remediation Well
- [ ] Geotechnical Soil Boring
- [ ] Environmental Boring
- [ ] Injection Point
- [ ] Grounding Well
- [ ] Ground Source Heat Pump
- [ ] Other _____

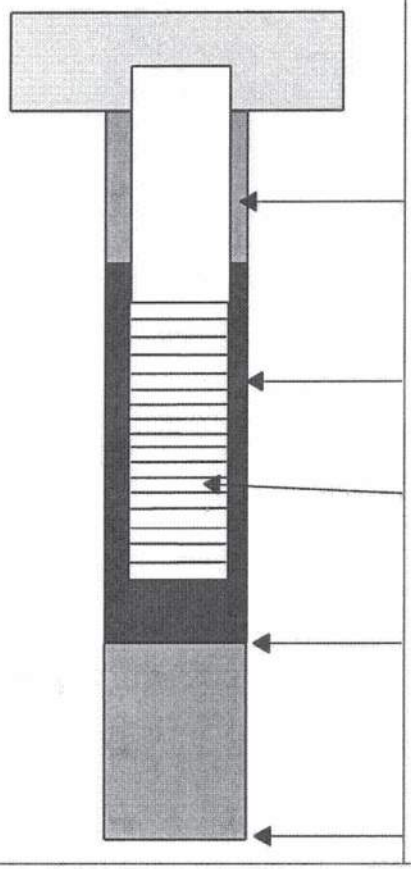
↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Kuk-Jin Choung
Well Street Address 2350 24th Ave E
City Seattle County King
Tax Parcel No. 6788201335

Location (see instructions): WWM ☐ or EWM ☒
SW ¼-¼ NE ¼, Section 21 Town 25n Range 4e
Latitude (Example: 47.12345) 47.639998
Longitude (Example: -120.12345) -122.301877
(WGS 84 Coordinate System)

Borehole diameter 8 inches Casing diameter 4 inches
Static water level 5 ft below top of casing Date 02/08/24
☐ Above-ground completion with bollards ☒ Flush monument
↳ Stick-up of top of well casing _____ ft above ground surface
Start Date 2/6/2024 Completed Date 2/14/2024

Construction Design



Well Data

Concrete Surface Seal Depth	12" Vaulted Monument
Blank Casing (dia x dep)	.5-5
Material	PVC
Backfill	1-3
Type	Bentonite chips
Gravel Pack	3-22
Material	3/8" Minus Pea Gravel
Screen (dia x dep)	5-20
Slot Size	.010
Material	PVC
Well Depth	22
Backfill	
Material	
Total Hole Depth	22

Driller's Log

0 - 22 FT
Lt Brown to Dk Gray, fine to course silt & sand.

- FT

- FT

- FT

- FT

- FT

Cascade Drilling 110.24.1003

Received
Department of Ecology
MAY 16 2024
Water Resources Program
NWRO

The Department of Ecology does not warranty the data and\or information on this well report.

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

- [x] Construction
- [ ] Decommission ⇨ Original NOI No. _____

Ecology Well ID Tag No. BPR 844

Site Well Name RW-10

Consulting Firm Glacier Environmental Services, Inc

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) Baker, Chris

Driller/Engineer/Trainee Signature _____

License No. 3080

Company Name Cascade Drilling

If trainee box is checked, sponsor's license number: _____

Sponsor's signature _____

Notice of Intent No. RE25734

Type of Well:

- [ ] Resource Protection Well
- [x] Remediation Well
- [ ] Geotechnical Soil Boring
- [ ] Environmental Boring
- [ ] Injection Point
- [ ] Grounding Well
- [ ] Ground Source Heat Pump
- [ ] Other _____

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Kuk-Jin Choung

Well Street Address 2350 24th Ave E

City Seattle County King

Tax Parcel No. 6788201335

Location (see instructions): WWM ☐ or EWM ☒

SW ¼-¼ NE ¼, Section 21 Town 25n Range 4e

Latitude (Example: 47.12345) 47.640053

Longitude (Example: -120.12345) -122.301796

(WGS 84 Coordinate System)

Borehole diameter 8 inches Casing diameter 4 inches

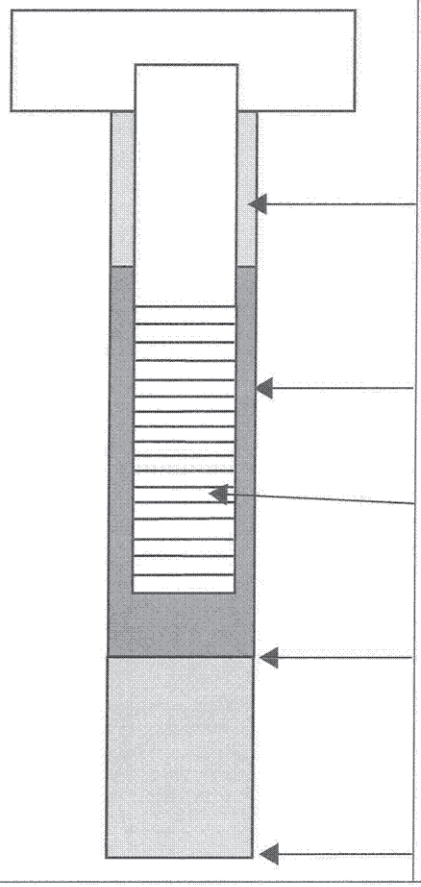
Static water level 22 ft below top of casing Date 02/08/24

☐ Above-ground completion with bollards ☒ Flush monument

↳ Stick-up of top of well casing _____ ft above ground surface

Start Date 2/6/2024 Completed Date 2/14/2024

Construction Design



Well Data

Concrete Surface Seal Depth	12" Vaulted Monument
Blank Casing (dia x dep)	.5-25
Material	PVC
Backfill	1-22
Type	Bentonite chips
Gravel Pack	22-31
Material	3/8" Minus Pea Gravel
Screen (dia x dep)	25-30
Slot Size	.010
Material	PVC
Well Depth	31
Backfill	
Material	
Total Hole Depth	31

Driller's Log

0 - 31 FT

Lt Brown to Dk Gray, fine to course silt & sand.

- FT

- FT

- FT

- FT

- FT

Cascade Drilling 110.24.1003

Received
Department of Ecology
MAY 16 2024
Water Resources Program
-NWRO

The Department of Ecology does not warranty the data and\or information on this well report.

WATER WELL REPORT

DEPARTMENT OF ECOLOGY State of Washington

Type of Work:
☐ Construction
☒ Decommission ⟹ Original installation NOI No. none

Proposed Use: ☐ Domestic ☐ Industrial ☐ Municipal ☐ Dewatering ☐ Irrigation ☐ Test Well ☐ Other _____

Construction Type: ☐ New well ☐ Alteration ☐ Deepening ☐ Other _____

Method: ☐ Driven ☐ Jetted ☐ Cable Tool ☐ Dug ☐ Air- ☐ Mud-Rotary

Dimensions: Diameter of boring _____ in., to _____ ft.
Depth of completed well _____ ft.

Construction Details:

Casing	Liner	Diameter	From	To	Wall Thickness	Steel	PVC	Welded	Thread
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐
☐	☐	____ in.	____	____	____ in.	☐	☐	☐	☐

Perforations: ☐ Yes ☐ No Type of perforator used _____
No. of perforations _____ Size of perforations _____ in. by _____ in.
Perforated from _____ ft. to _____ ft. below ground surface

Screens: ☐ Yes ☐ No ☐ K-Packer ⟹ Depth _____ ft.
Manufacturer's Name _____
Type _____ Model No. _____
Diameter _____ in. Slot size _____ in. from _____ ft. to _____ ft.
Diameter _____ in. Slot size _____ in. from _____ ft. to _____ ft.

Sand/Filter pack: ☐ Yes ☐ No Size of pack material _____ in.
Materials placed from _____ ft. to _____ ft.

Surface Seal: ☐ Yes ☐ No To what depth? _____ ft.
Material used in seal _____
Did any strata contain unusable water? ☐ Yes ☐ No
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

Pump: Manufacturer's Name _____ Type: _____
H.P. _____ Pump intake depth: _____ ft. Designed flow rate: _____ gpm

Water Levels: Land-surface elevation above mean sea level _____ ft.
Stick-up of top of well casing _____ ft. above ground surface
Static water level _____ ft. below top of well casing Date _____
Artesian pressure _____ lbs. per square inch Date _____
Artesian water is controlled by _____ (cap, valve, etc.)

Well Tests:
Was a pumping test performed? ☐ No ☐ Yes ⟹ by whom? _____
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Yield _____ gpm with _____ ft. drawdown after _____ hrs.
Recovery data (time = zero when pump is turned off – water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of pumping test _____
Bailer test _____ gpm with _____ ft. drawdown after _____ hrs.
Air test _____ gpm with stem set at _____ ft. for _____ hrs. } Date _____
Artesian flow _____ gpm
Temperature of water _____ ° F Was a chemical analysis made? ☐ Yes ☐ No

Notice of Intent No. AE81436
Unique Ecology Well ID Tag No. none
Site Well Name (if more than one well): none
Water Right Permit/Certificate No. none
Property Owner Name Kuk-Jin Choung
Well Street Address 2350 24th Ave East
City Seattle County King
Tax Parcel No. 6788201335
Was a variance approved for this well? ☐ Yes ☒ No
If yes, what was the variance for? _____

Location (see instructions on page 2): ☐ WWM or ☒ EWM
SW ¼-¼ of the NE ¼; Section 21 Township 25n Range 4e
Latitude (Example: 47.12345) 47.640182
Longitude (Example: -120.12345) -122.301689

Driller's Log/Construction or Decommission Procedure
Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each layer penetrated, with at least one entry for each change of information. Use additional sheets if necessary.

Material	From	To
Decommission in Place - Dug Well	4	19.5
Removal of Concrete Vault 4.5' h x 6' w x 8' l		
Removed All: Debris, appertenances, hoses, fittin		
Decommissioned per WAC 173-160-381		

Received
Department of Ecology
MAY 16 2024
Water Resources Program
NWRO

Start Date 02/13/2024 Completed Date 02/13/2024

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ PE – Print Name Trent Castner
Signature Trent Castner
License No. 2245
IF TRAINEE: Sponsor's License No.
Sponsor's Signature

Drilling Company Cascade Drilling LP
Address 13600 SE Ambler Rd
City, State, Zip Clackamas OR 97015
Contractor's Registration No. CASCADL915O8 Date 02/28/2024

The Department of Ecology does not warranty the data and\or information on this well report.

KRAZAN AND ASSOCIATES, INC.

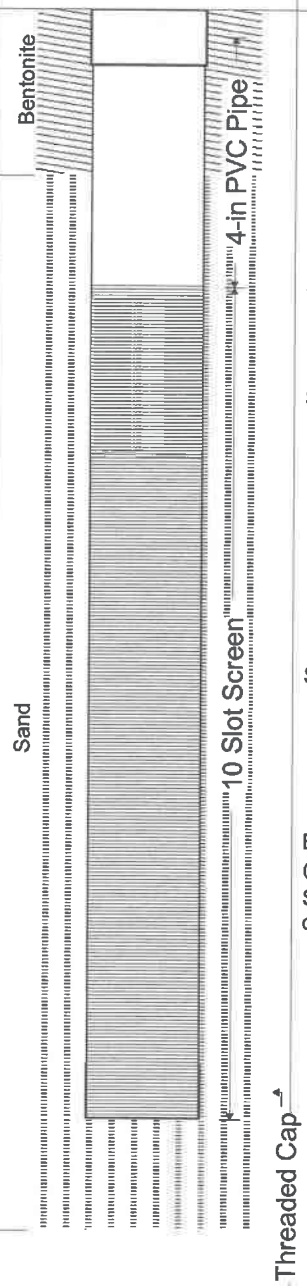
4303 198th Street SW
Lynnwood, WA 98036

LOG OF EXPLORATORY BORING RW-8

PROJECT: **Circle K Remediation Wells**
PROJECT NO.: **092-24002**
CONTRACTOR: **Cascade**
LOGGED BY: **AL**
SAMPLE METHOD: **Grab / Discrete**
TOTAL WELL DEPTH: **20 feet bgs**
CASING DIAMETER: **8-in**

DATE: **2/7/24**
PAGE: **1 of 1**
SURFACE ELEVATION: **Not Provided**
LOCATION: **Seattle, WA**
DRILLING METHOD: **Sonic Drill**
WELL DIAMETER: **4-In**
WELL ANGLE: **0 (Vertical)**

DEPTH (ft)	TIME	CORE RUN	RECOVERY %	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	PID Reading (PPM)	SAMPLES	WELL SCHEMATIC	Notes
	12:05					2-inch Asphalt				
						Brown Silt				
		1	90		ML	Brown Silt with Sand (Moist, Stiff)	0.4			
						Gray Fine Sand with Trace Gravel (Moist, Medium Dense)	0.5			
5	12:15							RW8-5		Sheen Test: No Sheen
							5.7			
		2	100							Sheen Test: Slight Sheen
							13.6			
10	12:30						4637	RW9-10		
					SP					
		3	90				5000+			Sheen Test: Slight Sheen
							5000+			
15	12:55									Becomes Moist to Wet @ 15' to 19'
		4	100				858			Strong petroleum-like odor @15'
							23.5			
		5	90							
20	13:18				ML	Gray Silt (Moist, Hard)	18.9			
					SP	Gray Fine Sand with Silt (Moist, Medium Dense to Dense)				
						End of Exploratory Boring	13.6			



Water Observations: Slight to moderate groundwater seepage was observed at a depth from about 15-ft to 19-ft bgs.

General Observations: Petroleum-like odor observed from approximately 5 feet to 15 feet bgs; Schedule 40 PVC Pipe.

KRAZAN AND ASSOCIATES, INC.

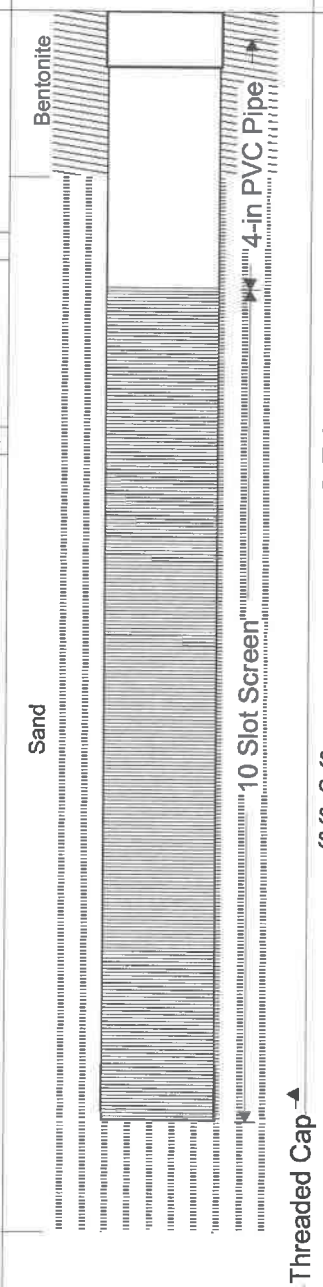
4303 198th Street SW
Lynnwood, WA 98036

LOG OF EXPLORATORY BORING RW-9

PROJECT: **Circle K Remediation Wells**
PROJECT NO.: **092-24002**
CONTRACTOR: **Cascade**
LOGGED BY: **EC**
SAMPLE METHOD: **Grab / Discrete**
TOTAL WELL DEPTH: **20 feet bgs**
CASING DIAMETER: **8-in**

DATE: **2/8/24**
PAGE: **1 of 1**
SURFACE ELEVATION: **Not Provided**
LOCATION: **Seattle, WA**
DRILLING METHOD: **Sonic Drill**
WELL DIAMETER: **4-in**
WELL ANGLE: **0 (Vertical)**

DEPTH (ft)	TIME	CORE RUN	RECOVERY %	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	PID Reading (PPM)	SAMPLES	Notes
	8:40					2-inch Asphalt			
		1	100		ML	Brown Sandy Silt with Clay and Gravel (Moist, Stiff)	1.5		
						Gray Silt (Moist, Stiff)	67	RW9-4	
5	8:55				SM	Gray Silty Sand (Moist, Medium Dense)			
		2	100		ML	Mottled Gray Silt and Med-Coarse Brown Sand (Moist, Stiff)	42		
						Gray Silty Sand with Trace Gravel (Moist, Medium Dense to Dense)	78	RW9-7.5	Sheen Test: Slight Sheen Becomes Moist to Wet @ 8' to 15'
10	9:10						1218		
		3	90		SM		1621		
							5000+		Strong petroleum-like odor @15' Sheen Test: Moderate Sheen
15	9:40					Gray Silt with Trace Gravel (Moist, Very Stiff)			
		4	100				8		
		5	100		ML		1.8		
20	9:45						1.2		
						End of Exploratory Boring	0.8		



Water Observations: Slight to moderate groundwater seepage was observed at a depth from about 8 feet to 15 feet bgs.

General Observations: Petroleum-like odor observed from approximately a depth of 10 feet to 15 feet bgs; Schedule 40 PVC Pipe.

KRAZAN AND ASSOCIATES, INC.

4303 198th Street SW
Lynnwood, WA 98036

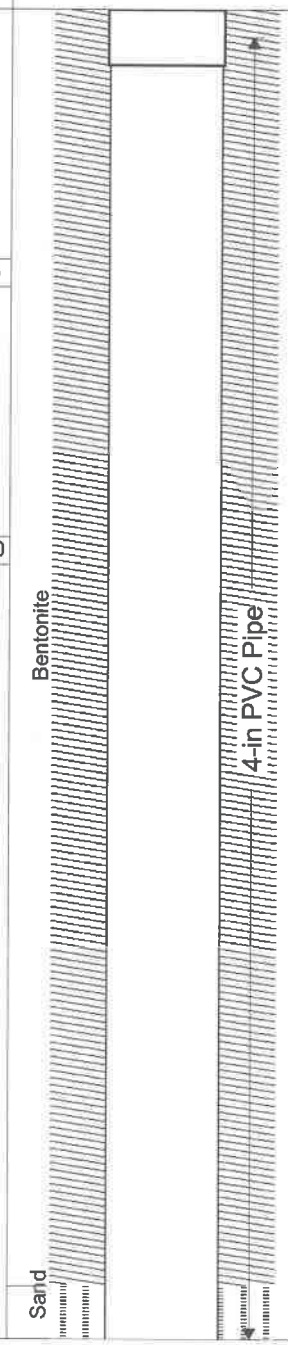
LOG OF EXPLORATORY BORING RW-10

PROJECT: **Circle K Remediation Wells**
PROJECT NO.: **092-24002**
CONTRACTOR: **Cascade**
LOGGED BY: **EC**
SAMPLE METHOD: **Grab / Discrete**
TOTAL WELL DEPTH: **30 feet bgs**
CASING DIAMETER: **8-in**

DATE: **2/8/24**
PAGE: **1 of 2**
SURFACE ELEVATION: **Not Provided**
LOCATION: **Seattle, WA**
DRILLING METHOD: **Sonic Drill**
WELL DIAMETER: **4-in**
WELL ANGLE: **0 (Vertical)**

DEPTH (ft)	TIME	CORE RUN	RECOVERY %	USCS	MATERIAL DESCRIPTION	PID Reading (PPM)	SAMPLES	Notes
	12:35				2.5-inch Asphalt			
				SP	Dark Brown Sand with Silt and Gravel (Moist, Loose)			
		1	100	CL	Brown Silty Clay with Gravel (Moist, Stiff)	3.5		
					Gray Silty Clay (Mottled with Brown) (Moist, Stiff)	20		
5	13:15						RW10-5	
				SP	Gray Sand (Moist, Medium Dense)	5000+		
		2	100	ML	Gray Silt (Moist, Stiff)			
				SP	Brown Sand with Silt (Moist, Medium Dense to Dense)	858		
				ML	Brown Silt (Mottled with Gray) (Moist, Stiff)			
10	13:25					1200	RW10-10	
					Gray Silty Sand with Trace Gravel (Moist, Dense)			
		3	100			5000+		Sheen Test: Slight Sheen
				SM		5000+		
15	13:50							Strong petroleum-like odor, moderate-heavy sheen @ 15'
						31		Sheen Test: No Sheen
		4	100		Gray Silt with Sand and Trace Gravel (Moist, Stiff)	22		
20	14:00			ML	Gray Sandy Silt with Trace Gravel (Moist to Wet, Stiff)	10		
		5	80			5000+		

WELL SCHEMATIC



Water Observations: Moderate to heavy groundwater seepage was observed at a depth from about 20 feet to 25 feet bgs.

General Observations: Petroleum-like odor observed intermittently from approximately 5 feet to 25 feet bgs; Schedule 40 PVC Pipe.

KRAZAN AND ASSOCIATES, INC.

4303 198th Street SW
Lynnwood, WA 98036

LOG OF EXPLORATORY BORING RW-10

PROJECT: **Circle K Remediation Wells**
PROJECT NO.: **092-24002**
CONTRACTOR: **Cascade**
LOGGED BY: **EC**
SAMPLE METHOD: **Grab / Discrete**
TOTAL WELL DEPTH: **30 feet bgs**
CASING DIAMETER: **8-in**

DATE: **2/8/24**
PAGE: **2 of 2**
SURFACE ELEVATION: **Not Provided**
LOCATION: **Seattle, WA**
DRILLING METHOD: **Sonic Drill**
WELL DIAMETER: **4-in**
WELL ANGLE: **0 (Vertical)**

DEPTH (ft)	TIME	CORE RUN	RECOVERY %	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	PID Reading (PPM)	SAMPLES	WELL SCHEMATIC	Notes
	12:50					Gray Sandy Silt with Trace Gravel (Moist, Stiff)	5000+			No odor/sheen
		6	90		ML	Gray Silt with Sand and Trace Gravel (Moist, Stiff)	32		Sand; 10 Slot Screen; Threaded Cap	
28							5			
							3.5			
						End of Exploratory Boring				
33										
38										
43										

Water Observations: Moderate to heavy groundwater seepage was observed at a depth from about 20 feet to 25 feet bgs.

General Observations: Petroleum-like odor observed intermittently from approximately 5 feet to 25 feet bgs; Schedule 40 PVC Pipe.

KRAZAN AND ASSOCIATES, INC.

4303 198th Street SW
Lynnwood, WA 98036

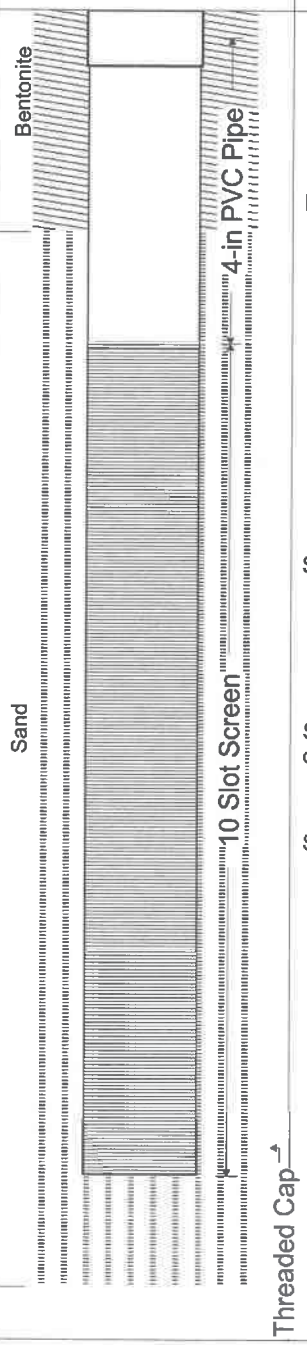
LOG OF EXPLORATORY BORING SW-1

PROJECT: **Circle K Remediation Wells**
PROJECT NO.: **092-24002**
CONTRACTOR: **Cascade**
LOGGED BY: **AL**
SAMPLE METHOD: **Grab / Discrete**
TOTAL WELL DEPTH: **21 feet; 18.2 feet bgs**
CASING DIAMETER: **8-in**

DATE: **2/10/24**
PAGE: **1 of 1**
SURFACE ELEVATION: **Not Provided**
LOCATION: **Seattle, WA**
DRILLING METHOD: **Sonic Drill**
WELL DIAMETER: **4-in**
WELL ANGLE: **30 degrees**

(BGS)	DEPTH (ft)	TIME	CORE RUN	RECOVERY %	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	PID Reading (PPM)	SAMPLES	Notes
		11:56					5-inch Concrete			
			1	100			Brown Clayey Silt with Organics (Moist, Stiff)	0.8		
						ML	Grayish Brown Silt with Sand and Gravel (Moist, Stiff)	0.4	SW1@4'	Mottled Brown Soils
(4.3)	5	12:05						0.6		
			2	100			Gray Silty Sand with Gravel (Moist, Medium Dense)	0.4		
(8.7)	10	12:15						0.9	SW1@10'	Sheen Test: No Sheen
			3	90		SM		13.3		Strong petroleum-like odor from 13'-20'
						SP	Gray Sand with Silt and Trace Gravel (Moist, Medium Dense)	2653		
(13)	15	12:30				ML	Brown Silt (Moist, Stiff)	266.2		Sheen Test: No Sheen
			4	100		SP	Gray Sand with Silt (Moist to Wet, Dense)	1260		
(17.3)	20	1:00					Gray Silt with Sand (Moist, Stiff)	893.2	SW1@20'	
			5	100		ML		3.3		
							End of Exploratory Boring			

WELL SCHEMATIC



Water Observations: Slight groundwater seepage was observed from a depth of about 16 feet to 20 feet.

General Observations: Petroleum-like odor observed intermittently from approximately 13 feet to 20 feet; Schedule 40 PVC Pipe

KRAZAN AND ASSOCIATES, INC.

4303 198th Street SW
Lynnwood, WA 98036

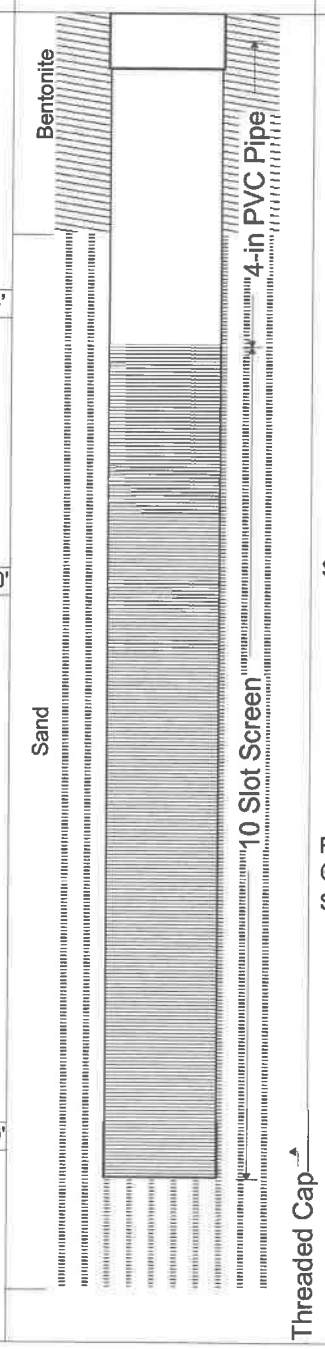
LOG OF EXPLORATORY BORING SW-2

PROJECT: **Circle K Remediation Wells**
PROJECT NO.: **092-24002**
CONTRACTOR: **Cascade**
LOGGED BY: **AL**
SAMPLE METHOD: **Grab / Discrete**
TOTAL WELL DEPTH: **21 feet; 18.2 feet bgs**
CASING DIAMETER: **8-in**

DATE: **2/12/24**
PAGE: **1 of 2**
SURFACE ELEVATION: **Not Provided**
LOCATION: **Seattle, WA**
DRILLING METHOD: **Sonic Drill**
WELL DIAMETER: **4-in**
WELL ANGLE: **30 degrees**

(BGS) DEPTH (ft)	TIME	CORE RUN	RECOVERY %	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	PID Reading (PPM)	SAMPLES	Notes
	9:05					4-inch Asphalt			
					ML	Gray to Brown Silt with Gravel and Organics (Moist, Stiff)	0		Mottled Brown Soils
		1	80			Brown Silty Sand with Gravel (Moist, Medium Dense)	0		
(4.3) 5	9:10				SM			SW2@5'	
							3.5		
		2	100		SP	Gray Sand with Silt and Trace Gravel (Moist, Medium Dense)	6.9		
(8.7) 10	9:25						39.3	SW2@10'	Sheen Test: No Sheen
		3	90		SM	Gray to Brown Silty Sand (Moist, Medium Dense)	26.3		
						Gray Sand with Silt (Moist, Dense)	77.3		
(13) 15	9:45								Petroleum-like odor @15'-16'
							1348		Sheen Test: Slight Sheen
		4	100		SP	Gray Medium-Coarse Sand (Moist, Medium Dense)	283.6		
(17.3) 20	10:15						273	SW2@20'	
		5	90		ML	Gray Silt (Moist, Very Stiff)			
					SP	Gray Sand (Moist, Dense)	124		
					ML	Gray Silt with Sand (Moist, Stiff)			

WELL SCHEMATIC



Water Observations: Groundwater seepage was not observed.

General Observations: Petroleum-like odor observed intermittently from approximately 10 feet to 23 feet; Schedule 40 PVC Pipe

KRAZAN AND ASSOCIATES, INC.

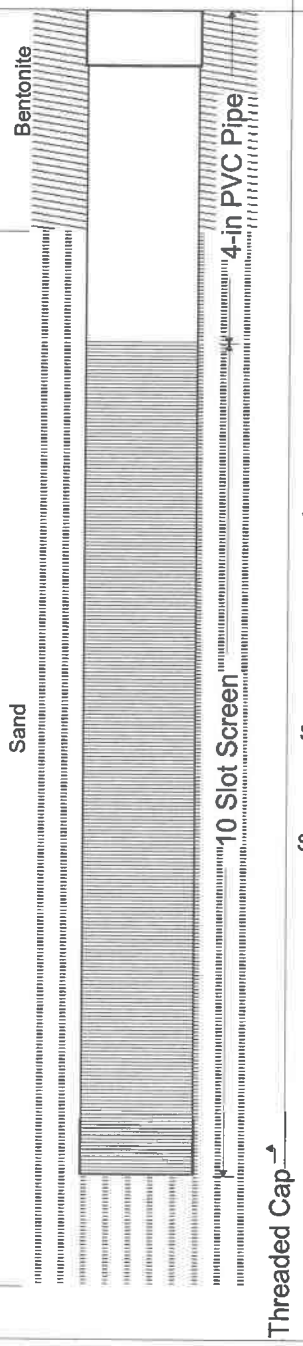
4303 198th Street SW
Lynnwood, WA 98036

LOG OF EXPLORATORY BORING SW-3

PROJECT: **Circle K Remediation Wells**
PROJECT NO.: **092-24002**
CONTRACTOR: **Cascade**
LOGGED BY: **EC**
SAMPLE METHOD: **Grab / Discrete**
TOTAL WELL DEPTH: **21 feet; 18.2 feet bgs**
CASING DIAMETER: **8-in**

DATE: **2/9/24**
PAGE: **1 of 1**
SURFACE ELEVATION: **Not Provided**
LOCATION: **Seattle, WA**
DRILLING METHOD: **Sonic Drill**
WELL DIAMETER: **4-in**
WELL ANGLE: **30 degrees**

(BGS)	DEPTH (ft)	TIME	CORE RUN	RECOVERY %	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	PID Reading (PPM)	SAMPLES	Notes
		9:05					3-inch Asphalt			
			1	90		CL	Brown Silty Clay with Trace Gravel (Moist, Stff)	0		Mottled Gray Soils
(4.3)	5	9:10				SM	Brown Silty Sand with Trace Gravel (Moist, Medium Dense)	0 20	SW3@4'	
			2	100			Gray Silty Sand (Moist, Medium Dense)	2180	SW3@8'	
(8.7)	10	9:45				ML	Gray Sandy Silt with Clay (Moist, Stiff)	21		Sheen Test: No Sheen
			3	100				1921		
(13)	15	9:50				SM	Gray Silty Sand with Trace Gravel (Moist, Medium Dense to Dense)	163	SW3@15'	Slight Sheen Sheen Test: No Sheen
				100				0		
			4				Brown Sandy Silt with Clay and Gravel (Moist, Stiff)	0		
(17.3)	20	10:50		100		ML		0		
			5				Brown Silt with Trace Gravel (Moist, Stiff)	0		
							End of Exploratory Boring			



Water Observations: Groundwater seepage was not observed.

General Observations: Petroleum-like odor observed intermittently from approximately 5 feet to 14 feet; Schedule 40 PVC Pipe

February 22, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On February 9th, 8 samples were received by our laboratory and assigned our laboratory project number EV24020077. The project was identified as your Circle K Site 1461 / 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/7/2024 12:20:00 PM
CLIENT SAMPLE ID	RW8-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/10/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/13/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**83.2**	02/10/2024	MNC
Toluene-d8	EPA-8260	**97.6**	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/7/2024 12:40:00 PM
CLIENT SAMPLE ID	RW8-10	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**660**	30	10	MG/KG	02/13/2024	MNC
Benzene	EPA-8260	**600**	170	10	UG/KG	02/14/2024	DLC
Toluene	EPA-8260	**1900**	100	10	UG/KG	02/14/2024	DLC
Ethylbenzene	EPA-8260	**4900**	150	10	UG/KG	02/14/2024	DLC
m,p-Xylene	EPA-8260	**21000**	290	10	UG/KG	02/14/2024	DLC
o-Xylene	EPA-8260	**8200**	180	10	UG/KG	02/14/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 10X Dilution	NWTPH-GX	**123**	02/13/2024	MNC
Toluene-d8 10X Dilution	EPA-8260	**96.7**	02/14/2024	DLC

Chromatogram indicates that it is likely that sample contains weathered gasoline.
Gasoline range product results biased high due to semivolatile range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-05
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/8/2024 8:50:00 AM
CLIENT SAMPLE ID	RW9-4	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/13/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/13/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**69.4**	02/13/2024	MNC
Toluene-d8	EPA-8260	**102**	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-06
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/8/2024 9:04:00 AM
CLIENT SAMPLE ID	RW9-7.5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/10/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/13/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**93.5**	02/10/2024	MNC
Toluene-d8	EPA-8260	**93.3**	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-07
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/8/2024 12:50:00 PM
CLIENT SAMPLE ID	RW10-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**54**	3.0	1	MG/KG	02/10/2024	MNC
Benzene - Reanalysis1	EPA-8260	**190**	17	1	UG/KG	02/14/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene - Reanalysis1	EPA-8260	**820**	14	1	UG/KG	02/14/2024	DLC
m,p-Xylene	EPA-8260	**52**	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**103**	02/10/2024	MNC
Toluene-d8	EPA-8260	**89.8**	02/13/2024	DLC
Toluene-d8 - Reanalysis1	EPA-8260	**104**	02/14/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains an unidentified gasoline range product.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-08
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/8/2024 1:00:00 PM
CLIENT SAMPLE ID	RW10-10	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**24**	3.0	1	MG/KG	02/10/2024	MNC
Benzene	EPA-8260	**880**	11	1	UG/KG	02/15/2024	DLC
Toluene	EPA-8260	**570**	10	1	UG/KG	02/15/2024	DLC
Ethylbenzene	EPA-8260	**600**	10	1	UG/KG	02/15/2024	DLC
m,p-Xylene	EPA-8260	**2300**	20	1	UG/KG	02/15/2024	DLC
o-Xylene	EPA-8260	**920**	12	1	UG/KG	02/15/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**99.7**	02/10/2024	MNC
Toluene-d8	EPA-8260	**95.4**	02/15/2024	DLC

Chromatogram indicates that it is likely that sample contains lightly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020077
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY BLANK RESULTS

MBG-020924S - Batch 207440 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	02/10/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021324S - Batch 207432 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	UG/KG	5.0	02/13/2024	DLC
Toluene	EPA-8260	U	UG/KG	10	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	02/13/2024	DLC
o-Xylene	EPA-8260	U	UG/KG	10	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	2/22/2024 EV24020077 C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 207440 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**98.4**			66.5	122.7	02/10/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**100**	**2**		66.5	122.7	02/10/2024	MNC

ALS Test Batch ID: 207432 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8260	**100**			75	138	02/13/2024	DLC
Benzene - BSD	EPA-8260	**90.0**	**11**		75	138	02/13/2024	DLC
Toluene - BS	EPA-8260	**99.5**			71.6	122.1	02/13/2024	DLC
Toluene - BSD	EPA-8260	**90.1**	**10**		71.6	122.1	02/13/2024	DLC
Ethylbenzene - BS	EPA-8260	**98.1**			50	150	02/13/2024	DLC
Ethylbenzene - BSD	EPA-8260	**88.9**	**10**		50	150	02/13/2024	DLC
m,p-Xylene - BS	EPA-8260	**98.6**			50	150	02/13/2024	DLC
m,p-Xylene - BSD	EPA-8260	**89.9**	**9**		50	150	02/13/2024	DLC
o-Xylene - BS	EPA-8260	**103**			50	150	02/13/2024	DLC
o-Xylene - BSD	EPA-8260	**92.9**	**10**		50	150	02/13/2024	DLC

APPROVED BY

Rob Greer
Laboratory Director

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Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV24020077

Date 2/8/24 Page 1 Of 1

PROJECT ID: Circle K Site 14101
REPORT TO COMPANY: Glacier Environmental Services, Inc
PROJECT MANAGER: Lauren Golembiewski
ADDRESS: 7509 212th St SW
Edmonds WA 98026
PHONE: 425-355-2526 P.O. #: 23008
E-MAIL: LMiles@glacierenvir.com
INVOICE TO COMPANY: Same as above
ATTENTION:
ADDRESS:

ANALYSIS REQUESTED / OTHER (Specify)

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 / BTEX by EPA 8260	MTBE by EPA 8021 / MTBE by EPA 8260	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 / Pesticides by EPA 8081	Metals-MTCA-5 / RCRA-8 / Pri Pol / TAL	Metals Other (Specify)	TCLP-Metals / VOA / Semi-Vol / Pest / Herbs	OTHER (Specify)	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. RW8-5	2/7/24	12:20	Soil	1			X	X													5	
2. RW8-10	2/7/24	12:40 pm	Soil	2			X	X													5	
3. RW8-3	2/7/24	13:00	Soil	3			X	X												HOLD	3	
4. RW8-4	2/7/24	13:20	Soil	4			X	X												HOLD	3	
5. RW9-4	2/8/24	8:50	Soil	5			X	X													3	
6. RW9-7.5	2/8/24	9:04	Soil	6			X	X													3	
7. RW10-5	2/8/24	12:50	Soil	7			X	X													4	
8. RW10-10	2/8/24	13:00	Soil	9			X	X													4	
9.																						
10.																						

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Amelia Leong, Kvazan, 2/8/24, 2:30 pm
   Received By: Thayne Westman 2/8/24 2:30 pm
2. Relinquished By: Thayne Westman 2/9/24 600 pm
   Received By: Lauren Golembiewski 2/9/24 9:30am

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 (Standard) | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 (Standard) | 3 | 1 | SAME DAY

OTHER: Specify:

Rel'd: 2/9/24 1225
Rec'd: ACS 2/9/24 1225

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Env Serv Inc ALS Job#: Ev24020077

Project: Circle K Site 1461

Login Date: 2-9-2024 Login Time: 12:28 Login By: MH

Type of Shipping Container: Cooler ✓ Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered ✓ ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container? If yes, how many? ___ Where? ___ Custody seal date: ___ Seal name: ___			✓
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓	X	
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?			✓
Bubbles present in sample #: ___			
5035A kits received? # Low Kits: ✓ (6) # High Kits: ___	✓		
5035A kits returned? # Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 7.3°C On ice?	✓		

Explain any discrepancies:
Sample #1 not rec'd for 5035A, Kit made outside of hold time (48hr) for 5035A.
Sample #2 not rec'd for 5035A, Kit made within hold time for 5035A. CN 2/9/24

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

February 22, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On February 9th, 3 samples were received by our laboratory and assigned our laboratory project number EV24020082. The project was identified as your Circle K Site 1461 / 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020082 EV24020082-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/9/2024 9:10:00 AM
CLIENT SAMPLE ID	MW3 @ 4'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/13/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**91.0**	02/14/2024	MNC
Toluene-d8	EPA-8260	**97.2**	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020082 EV24020082-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/9/2024 9:15:00 AM
CLIENT SAMPLE ID	MW3 @ 8'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**1600**	60	20	MG/KG	02/15/2024	MNC
Benzene	EPA-8260	U	16	1	UG/KG	02/14/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/14/2024	DLC
Ethylbenzene	EPA-8260	U	13	1	UG/KG	02/14/2024	DLC
m,p-Xylene	EPA-8260	U	26	1	UG/KG	02/14/2024	DLC
o-Xylene	EPA-8260	U	17	1	UG/KG	02/14/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 20X Dilution	NWTPH-GX	**102**	02/15/2024	MNC
Toluene-d8	EPA-8260	**97.4**	02/14/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains an unidentified gasoline range product.
Gasoline range product results biased high due to semivolatile range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020082 EV24020082-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/9/2024 9:50:00 AM
CLIENT SAMPLE ID	MW3 @ 15'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	**9.1**	5.0	1	UG/KG	02/14/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/14/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/14/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/14/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/14/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**74.0**	02/14/2024	MNC
Toluene-d8	EPA-8260	**96.8**	02/14/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020082
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY BLANK RESULTS

MBG-021324S - Batch 207363 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	02/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021324S - Batch 207432 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	UG/KG	5.0	02/13/2024	DLC
Toluene	EPA-8260	U	UG/KG	10	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	02/13/2024	DLC
o-Xylene	EPA-8260	U	UG/KG	10	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020082
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 207363 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**93.6**			66.5	122.7	02/14/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**93.2**	**0**		66.5	122.7	02/14/2024	MNC

ALS Test Batch ID: 207432 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8260	**100**			75	138	02/13/2024	DLC
Benzene - BSD	EPA-8260	**90.0**	**11**		75	138	02/13/2024	DLC
Toluene - BS	EPA-8260	**99.5**			71.6	122.1	02/13/2024	DLC
Toluene - BSD	EPA-8260	**90.1**	**10**		71.6	122.1	02/13/2024	DLC
Ethylbenzene - BS	EPA-8260	**98.1**			50	150	02/13/2024	DLC
Ethylbenzene - BSD	EPA-8260	**88.9**	**10**		50	150	02/13/2024	DLC
m,p-Xylene - BS	EPA-8260	**98.6**			50	150	02/13/2024	DLC
m,p-Xylene - BSD	EPA-8260	**89.9**	**9**		50	150	02/13/2024	DLC
o-Xylene - BS	EPA-8260	**103**			50	150	02/13/2024	DLC
o-Xylene - BSD	EPA-8260	**92.9**	**10**		50	150	02/13/2024	DLC

APPROVED BY

Rob Greer
Laboratory Director

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Everett, WA 98208
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Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)
EV24020082

Date 2/9/24 Page 1 Of 1

PROJECT ID: CIRCLE K SITE 1461
REPORT TO COMPANY: Glacier Environmental
PROJECT MANAGER: Laura Golembiewski
ADDRESS: 7509 212th St SW
EDMONDS WA 98026
PHONE: 425 355 2826 P.O. #: 23008
E-MAIL: Lmiles@glacierenviro.com
INVOICE TO COMPANY: Glacierenvironmental
ATTENTION: SAME AS Above
ADDRESS:

ANALYSIS REQUESTED / OTHER (Specify)

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 (BTEX by EPA 8260)	MTBE by EPA 8021 (MTBE by EPA 8260)	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 (Pesticides by EPA 8081)	Metals-MTCA-5 (RCRA-8, Pri Pol, TAL)	Metals Other (Specify)	TCLP-Metals (VOA, Semi-Vol, Pest, Herbs)	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. MW3@4'	2/9/24	9:10	Soil	1			X	X												4	
2. MW3@8'	2/9/24	9:15	Soil	2			X	X												4	
3. MW3@15'	2/9/24	9:50	Soil	3			X	X												4	
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Amelia Leong, Krazan, 2/9/24, 3:00PM
   Received By: Thaine Wastman 2/9/24 3:00 PM
2. Relinquished By: Thaine Wastman 2/9/24 3:50 PM
   Received By: ALS 2/9/24 1550

TURNAROUND REQUESTED in Business Days* 3.9C

Organic, Metals & Inorganic Analysis: ~~10~~ (Standard) 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis: ~~5~~ (Standard) 3 1 SAME DAY

OTHER:
Specify:

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacial Env ALS Job#: Ev24020082

Project: Circle K Site 1461

Login Date: 2-9-24 Login Time: 15:50 Login By: MH

Type of Shipping Container: Cooler x Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered x ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container? If yes, how many? ___ Where? ___ Custody seal date: ___ Seal name: ___			x
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	x		
Did all bottles have labels?	x		
Did all bottle labels and tags agree with Chain of Custody?	x		
Were samples received within hold time?	x		
Did all bottles arrive in good condition (unbroken, etc.)?	x		
Was sufficient amount of sample sent for the tests indicated?	x		
Was correct preservation added to samples?	x		
Subcontract test containers added to Subcontract Bin?			x
Wetchem test containers marked with required Tests?			x
Short hold time test containers delivered to analysts?			x
Were VOA vials checked for absence of air bubbles?			x
Bubbles present in sample #: ___			
5035A kits received? # Low Kits: 3 # High Kits: ___	x		
5035A kits returned? # Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: ~~9.9~~ Ice On ice?	x		

Explain any discrepancies: 3.9

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

February 22, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On February 12th, 3 samples were received by our laboratory and assigned our laboratory project number EV24020089. The project was identified as your Circle K Site 1461 / 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020089 EV24020089-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/10/2024 12:10:00 PM
CLIENT SAMPLE ID	SMW1 @ 4'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**87.7**	02/14/2024	MNC
Toluene-d8	EPA-8260	**93.8**	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020089 EV24020089-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/10/2024 12:20:00 PM
CLIENT SAMPLE ID	SMW1 @ 10'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**89.9**	02/14/2024	MNC
Toluene-d8	EPA-8260	**93.5**	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020089 EV24020089-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/10/2024 12:40:00 PM
CLIENT SAMPLE ID	SMW1 @ 20'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**13**	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	**950**	14	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	**730**	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	**460**	12	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	**1700**	23	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	**570**	14	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**69.9**	02/14/2024	MNC
Toluene-d8	EPA-8260	**94.9**	02/17/2024	DLC

Chromatogram indicates that it is likely that sample contains weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020089
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY BLANK RESULTS

MBG-021324S - Batch 207363 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	02/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021724S - Batch 207719 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	UG/KG	5.0	02/17/2024	DLC
Toluene	EPA-8260	U	UG/KG	10	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	02/17/2024	DLC
o-Xylene	EPA-8260	U	UG/KG	10	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	2/22/2024 EV24020089 C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 207363 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**93.6**			66.5	122.7	02/14/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**93.2**	**0**		66.5	122.7	02/14/2024	MNC

ALS Test Batch ID: 207719 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8260	**91.5**			75	138	02/17/2024	DLC
Benzene - BSD	EPA-8260	**97.0**	**6**		75	138	02/17/2024	DLC
Toluene - BS	EPA-8260	**95.5**			71.6	122.1	02/17/2024	DLC
Toluene - BSD	EPA-8260	**100**	**5**		71.6	122.1	02/17/2024	DLC
Ethylbenzene - BS	EPA-8260	**94.0**			50	150	02/17/2024	DLC
Ethylbenzene - BSD	EPA-8260	**98.6**	**5**		50	150	02/17/2024	DLC
m,p-Xylene - BS	EPA-8260	**96.2**			50	150	02/17/2024	DLC
m,p-Xylene - BSD	EPA-8260	**101**	**5**		50	150	02/17/2024	DLC
o-Xylene - BS	EPA-8260	**98.3**			50	150	02/17/2024	DLC
o-Xylene - BSD	EPA-8260	**104**	**6**		50	150	02/17/2024	DLC

APPROVED BY

Rob Greer
Laboratory Director

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Everett, WA 98208

Chain of Custody Form

Page 1 of 1

EV24020089

ALS Project Manager:		Work Order #:	

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	23-008	Project Name	Circle K site 1461	A	NWTPH-GX
Work Order		Project Number	23-008	B	BTEX by EPA 8260
Company Name	Glacier Environmental	Bill To Company	Glacier Environmental	C	
Send Report To	Lauren Golembiewski	Invoice Attn.	Lauren Golembiewski	D	
Address	7509 212th st SW	Address	7509 212th st SW	E	
				F	
City/State/Zip	Edmonds WA 98026	City/State/Zip	Edmonds WA 98026	G	
Phone	425-355-2826	Phone	425-355-2826	H	
Fax		Fax		I	
e-Mail Address	lmiles@glacierenviro.com	e-Mail Address	lmiles@glacierenviro.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SMW1 @ 4'	2/10/24	12:10	SOIL		4	X	X									
2	SMW1 @ 10'	2/10/24	12:20	SOIL		4	X	X									
3	SMW1 @ 20'	2/10/24	12:40	SOIL		4	X	X									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign Amelia Leong

Shipment Method:

Required Turnaround Time: ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date:	Time:	Received by:
Amelia Leong	2/10/24	1:00pm	Thayne Wastman
Thayne Wastman	2/12/24	0600 pm	Received by (Laboratory): 2/12/24 12:15
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):

Notes: Elise Hegrat Delivered 12:48pm, ALS, 2/12/24 1248

Cooler Temp.

QC Package: (Check Box Below)

	Level II: Standard QC		TRRP-Checklist
	Level III: Std QC + Raw Data		TRRP Level IV
	Level IV: SW846 CLP-Like		
	Other: _____		

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Environmental ALS Job#: EV24020089

Project: Circle K site 1461

Login Date: 2/12/24 Login Time: 1248 Login By: AJ

Type of Shipping Container: Cooler ✓ Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered ✓ ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container?		✓	
If yes, how many? ___ Where? ___			
Custody seal date: ___ Seal name: ___			
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓		
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?		✓	
Bubbles present in sample #: none (soil samples)			
5035A kits received?	✓		
# Low Kits: 3 # High Kits: ___			
5035A kits returned?			
# Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 1.6°C On ice?	✓		

Explain any discrepancies:

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

February 22, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On February 12th, 3 samples were received by our laboratory and assigned our laboratory project number EV24020093. The project was identified as your Circle K Site 1461 / 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020093 EV24020093-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/12/2024 9:20:00 AM
CLIENT SAMPLE ID	SMW2 @ 5'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**88.8**	02/14/2024	MNC
Toluene-d8	EPA-8260	**92.2**	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020093 EV24020093-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/12/2024 9:30:00 AM
CLIENT SAMPLE ID	SMW2 @ 10'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**88.0**	02/14/2024	MNC
Toluene-d8	EPA-8260	**95.9**	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020093 EV24020093-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/12/2024 10:00:00 AM
CLIENT SAMPLE ID	SMW2 @ 20'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**6.7**	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	**54**	12	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	**390**	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	**280**	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	**1000**	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	**370**	13	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**84.5**	02/14/2024	MNC
Toluene-d8	EPA-8260	**94.9**	02/17/2024	DLC

Chromatogram indicates that it is likely that sample contains weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020093
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY BLANK RESULTS

MBG-021324S - Batch 207363 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	02/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021724S - Batch 207719 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	UG/KG	5.0	02/17/2024	DLC
Toluene	EPA-8260	U	UG/KG	10	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	02/17/2024	DLC
o-Xylene	EPA-8260	U	UG/KG	10	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	2/22/2024 EV24020093 C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 207363 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**93.6**			66.5	122.7	02/14/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**93.2**	**0**		66.5	122.7	02/14/2024	MNC

ALS Test Batch ID: 207719 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8260	**91.5**			75	138	02/17/2024	DLC
Benzene - BSD	EPA-8260	**97.0**	**6**		75	138	02/17/2024	DLC
Toluene - BS	EPA-8260	**95.5**			71.6	122.1	02/17/2024	DLC
Toluene - BSD	EPA-8260	**100**	**5**		71.6	122.1	02/17/2024	DLC
Ethylbenzene - BS	EPA-8260	**94.0**			50	150	02/17/2024	DLC
Ethylbenzene - BSD	EPA-8260	**98.6**	**5**		50	150	02/17/2024	DLC
m,p-Xylene - BS	EPA-8260	**96.2**			50	150	02/17/2024	DLC
m,p-Xylene - BSD	EPA-8260	**101**	**5**		50	150	02/17/2024	DLC
o-Xylene - BS	EPA-8260	**98.3**			50	150	02/17/2024	DLC
o-Xylene - BSD	EPA-8260	**104**	**6**		50	150	02/17/2024	DLC

APPROVED BY

Rob Greer
Laboratory Director

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Chain of Custody Form

Page 1 of 1

EV24020093

		ALS Project Manager:		**Work Order #:**	

Customer Information		**Project Information**		**Parameter/Method Request for Analysis**	
Purchase Order	23-008	Project Name	Circle K site 1461	A	NWTPH-GX
Work Order		Project Number	23-008	B	BTEX by EPA 8260
Company Name	Glacier Environmental	Bill To Company	Glacier Environmental	C	
Send Report To	Lauren Golembiewski	Invoice Attn.	Lauren Golembiewski	D	
Address	7509 212th st SW	Address	7509 212th st SW	E	
				F	
City/State/Zip	Edmonds WA 98026	City/State/Zip	Edmonds WA 98026	G	
Phone	425-355-2826	Phone	425-355-2826	H	
Fax		Fax		I	
e-Mail Address	lmiles@glacierenviro.com	e-Mail Address	lmiles@glacierenviro.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SMW2@ 5'	2/12/24	9:20	SOIL		4	X	X									
2	SMW2@ 10'	2/12/24	9:30	SOIL		4	X	X									
3	SMW2@ 20'	2/12/24	10:00	SOIL		4	X	X									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Amelia Leong

Shipment Method:

Required Turnaround Time: ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	**Date:**	**Time:**	**Received by:**	**Notes:**
Amelia Leong	2/12/24	10:45am	Thayne Westman	
Relinquished by: Thayne Westman	**Date:** 2/12/24	**Time:** 16:12 pm	**Received by (Laboratory):** 2/12/24	**Cooler Temp.** Ice 2
Logged by (Laboratory):	**Date:**	**Time:**	**Checked by (Laboratory):**	2.1°C

QC Package: (Check Box Below)

- ☐ Level II: Standard QC
- ☐ Level III: Std QC + Raw Data
- ☐ Level IV: SW846 CLP-Like
- ☐ Other: _____
- ☐ TRRP-Checklist
- ☐ TRRP Level IV

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Env. ALS Job#: EV24020093

Project: Circle K site 1461

Login Date: 2/12/24 Login Time: 1612 Login By: CR

Type of Shipping Container: Cooler X Box___ Other___

Shipped via: FedEx Ground___ UPS___ Courier___ Hand Delivered X ALS Courier___
FedEx Express___

	Yes	No	N/A
Were custody seals on outside of shipping container? If yes, how many? ___ Where? ___ Custody seal date: ___ Seal name: ___			X
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	X		
Did all bottles have labels?	X		
Did all bottle labels and tags agree with Chain of Custody?	X		
Were samples received within hold time?	X		
Did all bottles arrive in good condition (unbroken, etc.)?	X		
Was sufficient amount of sample sent for the tests indicated?	X		
Was correct preservation added to samples?	X		
Subcontract test containers added to Subcontract Bin?			X
Wetchem test containers marked with required Tests?			X
Short hold time test containers delivered to analysts?			X
Were VOA vials checked for absence of air bubbles?			X
Bubbles present in sample #: ___			
5035A kits received? # Low Kits: 3 # High Kits: ___	X		
5035A kits returned? # Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 2.1°C On ice?	X		

Explain any discrepancies:

Returned ~~5~~ 4 5 MeOH voas unused and clean

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

June 14, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On June 12th, 6 samples were received by our laboratory and assigned our laboratory project number EV24060109. The project was identified as your 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

Environmental
www.alsglobal.com
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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 7:50:00 AM
CLIENT SAMPLE ID	NW Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**78**	3.0	1	MG/KG	06/13/2024	MNC
Benzene	EPA-8021	**0.059**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	**0.23**	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	**63**	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**100**	06/13/2024	MNC
TFT	EPA-8021	**105**	06/13/2024	MNC
C25	NWTPH-DX	**92.2**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and an unidentified oil range product.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 7:50:00 AM
CLIENT SAMPLE ID	NB Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**74**	3.0	1	MG/KG	06/13/2024	MNC
Benzene	EPA-8021	**0.041**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	**0.26**	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	**0.74**	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**80.9**	06/13/2024	MNC
TFT	EPA-8021	**91.4**	06/13/2024	MNC
C25	NWTPH-DX	**92.2**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 7:50:00 AM
CLIENT SAMPLE ID	NE Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**5.7**	3.0	1	MG/KG	06/13/2024	MNC
Benzene	EPA-8021	U	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**62.4**	06/13/2024	MNC
TFT	EPA-8021	**72.4**	06/13/2024	MNC
C25	NWTPH-DX	**96.8**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-04
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 8:15:00 AM
CLIENT SAMPLE ID	SW Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**73**	3.0	1	MG/KG	06/13/2024	MNC
Benzene	EPA-8021	**0.053**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	**0.58**	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	**0.33**	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	**30**	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**76.4**	06/13/2024	MNC
TFT	EPA-8021	**85.2**	06/13/2024	MNC
C25	NWTPH-DX	**93.8**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and an unidentified diesel range product.
Diesel range product results biased high due to gasoline range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-05
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 8:15:00 AM
CLIENT SAMPLE ID	SB Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**1200**	300	100	MG/KG	06/14/2024	MNC
Benzene	EPA-8021	**0.67**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	**12**	5.0	100	MG/KG	06/14/2024	MNC
Xylenes	EPA-8021	**5.2**	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	**37**	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 100X Dilution	NWTPH-GX	U, SUR07	06/14/2024	MNC
TFT	EPA-8021	**204 SUR12**	06/13/2024	MNC
TFT 100X Dilution	EPA-8021	U, SUR07	06/14/2024	MNC
C25	NWTPH-DX	**94.1**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
SUR12 -Surrogate recoveries were outside of the control limits due to matrix interference.
SUR07 -The surrogate recovery could not be determined due to dilution below the calibration range.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and an unidentified diesel range product.
Diesel range product results biased high due to gasoline range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-06
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 8:15:00 AM
CLIENT SAMPLE ID	SE Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**520**	30	10	MG/KG	06/14/2024	MNC
Benzene	EPA-8021	**0.46**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	**4.1**	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 10X Dilution	NWTPH-GX	**102**	06/14/2024	MNC
TFT	EPA-8021	**138**	06/13/2024	MNC
C25	NWTPH-DX	**94.6**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	6/14/2024
		ALS SDG#:	EV24060109
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	23-008		

LABORATORY BLANK RESULTS

MBG-061224S - Batch 213560 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	06/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-061224S - Batch 213560 - Soil by EPA-8021

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	U	MG/KG	0.030	06/13/2024	MNC
Toluene	EPA-8021	U	MG/KG	0.050	06/13/2024	MNC
Ethylbenzene	EPA-8021	U	MG/KG	0.050	06/13/2024	MNC
Xylenes	EPA-8021	U	MG/KG	0.20	06/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-061324S - Batch 213522 - Soil by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	6/14/2024
		ALS SDG#:	EV24060109
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 213560 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**84.5**			66.5	122.7	06/13/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**95.7**	**12**		66.5	122.7	06/13/2024	MNC

ALS Test Batch ID: 213560 - Soil by EPA-8021

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8021	**95.7**			67.7	124	06/13/2024	MNC
Benzene - BSD	EPA-8021	**95.2**	**1**		67.7	124	06/13/2024	MNC
Toluene - BS	EPA-8021	**91.5**			71	123	06/13/2024	MNC
Toluene - BSD	EPA-8021	**90.9**	**1**		71	123	06/13/2024	MNC
Ethylbenzene - BS	EPA-8021	**94.3**			69.8	120	06/13/2024	MNC
Ethylbenzene - BSD	EPA-8021	**94.2**	**0**		69.8	120	06/13/2024	MNC
Xylenes - BS	EPA-8021	**92.3**			70	120	06/13/2024	MNC
Xylenes - BSD	EPA-8021	**89.3**	**3**		70	120	06/13/2024	MNC

ALS Test Batch ID: 213522 - Soil by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range - BS	NWTPH-DX	**107**			75.5	122.1	06/13/2024	DHM
TPH-Diesel Range - BSD	NWTPH-DX	**111**	**4**		75.5	122.1	06/13/2024	DHM

APPROVED BY

Rob Greer
Laboratory Director

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ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV24060109

Date 6/12/24 Page 1 Of 1

PROJECT ID: 23-008
REPORT TO COMPANY: Glacier Environmental
PROJECT MANAGER: Lauren Golembiewski
ADDRESS: 7509 212TH ST SW
EDMONDS WA 98026
PHONE: 425-355-2826 P.O. #:
E-MAIL: LMiles@glacierenviro.com
INVOICE TO COMPANY: Glacier Environmental
ATTENTION: Lauren
ADDRESS: 7509 212TH ST SW
EDMONDS WA 98026

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8260 ☐ / BTEX by EPA 8021 ☒	MTBE by EPA 8260 ☐ / MTBE by EPA 8021 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☐ / Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐ / RCRA-8 ☐ / Pri Pol ☐ / TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ / VOA ☐ / Semi-Vol ☐ / Pest ☐ / Herbs ☐	OTHER (Specify)							NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. NW Trench	6-12-24	7:50	Soil	1		X	X	X																				
2. NB Trench	6-12-24	7:50	Soil	2		X	X	X																				
3. NE Trench	6-12-24	7:50	Soil	3		X	X	X																				
4. SW Trench	6-12-24	8:15	Soil	4		X	X	X																				
5. SB Trench	6-12-24	8:15	Soil	5		X	X	X																				
6. SE Trench	6-12-24	8:15	Soil	6		X	X	X																				
7.																												
8.																												
9.																												
10.																												

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: 6-12-24 2:55
Received By: Julia ALS 6/12/24 1455
2. Relinquished By:
Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 (Standard) | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 (Standard) | 3 | 1 | SAME DAY

OTHER:
Specify: 8021 and GX = 1 day
DX = 2 day

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Environmental ALS Job#: EV24060109

Project: 23-008

Login Date: 6/12/24 Login Time: 1455 Login By: AV

Type of Shipping Container: Cooler ✓ Box ____ Other ____

Shipped via: FedEx Ground ____ UPS ____ Courier ____ Hand Delivered ✓ ALS Courier ____
FedEx Express ____

	Yes	No	N/A
Were custody seals on outside of shipping container? If yes, how many? ____ Where? ____ Custody seal date: ____ Seal name: ____			✓
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓		
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?			✓
Bubbles present in sample #: ____			
5035A kits received? # Low Kits: ____ # High Kits: 6	✓		
5035A kits returned? # Low Kits: ____ # High Kits: ____			
Temperature of cooler upon receipt: 12.5°C On ice?		✓	

Explain any discrepancies:
Client wanted a 1 day rush for all tests. Dx, I mentioned to aim for 1 day but if not, it will be 2 day.

Was client contacted? ____ Who was called? ____ By whom? ____ Date: ____

Outcome of call:

June 24, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On June 21st, 3 samples were received by our laboratory and assigned our laboratory project number EV24060182. The project was identified as your 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/24/2024 EV24060182 EV24060182-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/21/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/21/2024 10:15:00 AM
CLIENT SAMPLE ID	WS Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**28**	3.0	1	MG/KG	06/24/2024	MNC
Benzene	EPA-8021	**0.38**	0.030	1	MG/KG	06/24/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Ethylbenzene	EPA-8021	**0.12**	0.050	1	MG/KG	06/24/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/24/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/24/2024	DHM
TPH-Oil Range	NWTPH-DX	**79**	50	1	MG/KG	06/24/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**99.1**	06/24/2024	MNC
TFT	EPA-8021	**114**	06/24/2024	MNC
C25	NWTPH-DX	**106**	06/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and an unidentified oil range product.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/24/2024 EV24060182 EV24060182-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/21/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/21/2024 10:15:00 AM
CLIENT SAMPLE ID	WB Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	06/24/2024	MNC
Benzene	EPA-8021	U	0.030	1	MG/KG	06/24/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/24/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/24/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**86.6**	06/24/2024	MNC
TFT	EPA-8021	**101**	06/24/2024	MNC
C25	NWTPH-DX	**105**	06/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/24/2024 EV24060182 EV24060182-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/21/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/21/2024 10:15:00 AM
CLIENT SAMPLE ID	WN Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**3.6**	3.0	1	MG/KG	06/24/2024	MNC
Benzene	EPA-8021	**0.040**	0.030	1	MG/KG	06/24/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/24/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/24/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**92.5**	06/24/2024	MNC
TFT	EPA-8021	**106**	06/24/2024	MNC
C25	NWTPH-DX	**106**	06/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	6/24/2024
		ALS SDG#:	EV24060182
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	23-008		

LABORATORY BLANK RESULTS

MBG-062424S - Batch 214018 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	06/24/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-062424S - Batch 214018 - Soil by EPA-8021

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	U	MG/KG	0.030	06/24/2024	MNC
Toluene	EPA-8021	U	MG/KG	0.050	06/24/2024	MNC
Ethylbenzene	EPA-8021	U	MG/KG	0.050	06/24/2024	MNC
Xylenes	EPA-8021	U	MG/KG	0.20	06/24/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-062324S - Batch 214011 - Soil by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	06/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	06/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	6/24/2024
		ALS SDG#:	EV24060182
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 214018 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**112**			66.5	122.7	06/24/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**114**	**2**		66.5	122.7	06/24/2024	MNC

ALS Test Batch ID: 214018 - Soil by EPA-8021

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8021	**120**			67.7	124	06/24/2024	MNC
Benzene - BSD	EPA-8021	**121**	**1**		67.7	124	06/24/2024	MNC
Toluene - BS	EPA-8021	**114**			71	123	06/24/2024	MNC
Toluene - BSD	EPA-8021	**116**	**1**		71	123	06/24/2024	MNC
Ethylbenzene - BS	EPA-8021	**116**			69.8	120	06/24/2024	MNC
Ethylbenzene - BSD	EPA-8021	**117**	**1**		69.8	120	06/24/2024	MNC
Xylenes - BS	EPA-8021	**113**			70	120	06/24/2024	MNC
Xylenes - BSD	EPA-8021	**113**	**0**		70	120	06/24/2024	MNC

ALS Test Batch ID: 214011 - Soil by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range - BS	NWTPH-DX	**105**			75.5	122.1	06/24/2024	DHM
TPH-Diesel Range - BSD	NWTPH-DX	**102**	**3**		75.5	122.1	06/24/2024	DHM

APPROVED BY

Rob Greer
Laboratory Director

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ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV24060182

Date 6-21-24 Page 1 Of 1

PROJECT ID: 23-008
REPORT TO COMPANY: Glacier Environmental
PROJECT MANAGER: Loren Golembiewski
ADDRESS: 7509 212TH S SW
Edmonds WA 98026
PHONE: 425 355 2826 P.O. #:
E-MAIL: LMiles@glacierenviro.com
INVOICE TO COMPANY:
ATTENTION: — Same —
ADDRESS:

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 ☑ / BTEX by EPA 8260 ☐	MTBE by EPA 8021 ☐ / MTBE by EPA 8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☐ / Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐ / RCRA-8 ☐ / Pri Pol ☐ / TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ / VOA ☐ / Semi-Vol ☐ / Pest ☐ / Herbs ☐	OTHER (Specify)							NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. WS Trench	6/21/24	10:15	S	1		x	x	x																				
2. WB Trench	6/21/24	10:13		2		x	x	x																				
3. WN Trench	6/21/24	10:15		3		x	x	x																				
4.																												
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: 1410 6-21-24
   Received By: ALS 6/21/24 1410
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 (Standard) | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 (Standard) | 3 | ~~1~~ | SAME DAY

OTHER:
Specify:

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Environmental ALS Job#: EV24060182

Project: 23-008

Login Date: 6/21/24 Login Time: 1410 Login By: AV

Type of Shipping Container: Cooler ✓ Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered ✓ ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container?			✓
If yes, how many? ___ Where? ___			
Custody seal date: ___ Seal name: ___			
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓		
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?			✓
Bubbles present in sample #: ___			
5035A kits received? ~~3~~ AV # Low Kits: ~~3~~ # High Kits: 3	✓		
5035A kits returned? # Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 11.3 °C On ice?	✓		

Explain any discrepancies:

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

APPENDIX E- TEST & INSPECTION REPORTS

PRESSURE TESTING REPORT

Project: Circle K

Pipe Being Tested: Well Piping- Well Bank 1 (RW-6, MW-4, RW-2)

Date of Test: 7/25/2024

Type of Test (Air/Water): Air

	Time		Pressure
Duration:	2 hours		30

Witnessed By: Todd Leach

Remarks (leaks, repairs, etc.) After finding out most sample ports leaked I did a quick test and verified that all sample ports were leaking so I removed all sample ports and retaped and used thread sealant and reinstalled them.

Evaluation (Pass/Fail): Pass

Pipe Being Tested: Well Piping- Well Bank 2 (RW-10, SW-2, RW-5)

Date of Test: 7/25/2024

Type of Test (Air/Water): Air

	Time		Pressure
Duration:	2 hours		30

Witnessed By: Todd Leach

Remarks (leaks, repairs, etc.) After finding out most sample ports leaked I did a quick test and verified that all sample ports were leaking so I removed all sample ports and retaped and used thread sealant and reinstalled them.

Evaluation (Pass/Fail): Pass

PRESSURE TESTING REPORT

Pipe Being Tested: Well Piping-Well Bank 3 (SW-1, RW-8, RW-4)

Date of Test: 7/26/2024

Type of Test (Air/Water): Air

	Time		Pressure
Duration:	2 hours		30

Witnessed By: Todd Leach

Remarks (leaks, repairs, etc.) After finding out most sample ports leaked I did a quick test and verified that all sample ports were leaking so I removed all sample ports and retaped and used thread sealant and reinstalled them.

Evaluation (Pass/Fail): Pass

Pipe Being Tested: Well Piping- Well Bank 4 (RW-7, SW-3, RW-3, RW-9)

Date of Test: 7/26/2024

Type of Test (Air/Water): Air

	Time		Pressure
Duration:	2 hours		30

Witnessed By: Todd Leach

Remarks (leaks, repairs, etc.) After finding out most sample ports leaked I did a quick test and verified that all sample ports were leaking so I removed all sample ports and retaped and used thread sealant and reinstalled them.

Evaluation (Pass/Fail): Pass

PRESSURE TESTING REPORT

	Time	Temp	Pressure
Start:	10:50	45*F	10.5 PSI
End:	13:10	47*F	10 PSI

Witnessed By: Thayne Wastman

Remarks (leaks, repairs, etc.)

Evaluation (Pass/Fail): Pass

Pipe Being Tested: t-400 to Mixing tank

Date of Test: 11/15-11/18/2024

Type of Test (Air/Water): Water

		Time	Temp	Pressure
Start:	11/15/2024	6:50		30
End:	11/18/2024	8:51		30

Witnessed By: Thayne Wastman

Remarks (leaks, repairs, etc.)

Evaluation (Pass/Fail): Pass

PRESSURE TESTING REPORT

Pipe Being Tested: T301-T400 including LGAC skid

Date of Test: 11/15-11/18/2024

Type of Test (Air/Water):

		Time	Temp	Pressure
Start:	11/12/2024	12:01		30
End:	11/13/2024	6:45		30

Witnessed By: Thayne Wastman

Remarks (leaks, repairs, etc.)

Evaluation (Pass/Fail): Pass

Pipe Being Tested: T300 to T301

Date of Test: 11/15-11/18/2024

Type of Test (Air/Water): Water

		Time	Temp	Pressure
Start:	11/15/2024	11:01		30
End:	11/18/2024	7:23		30

Witnessed By: Thayne Wastman

Remarks (leaks, repairs, etc.)

Evaluation (Pass/Fail): Pass

Name:__Shawn Koliadko / Mason Inman_____, Date finished:_____

Corrected altitude: *~175'* I.P. Address:_____

WO -__8135__Hr (start/finish) - *Within January of 2024* /_____

(Items in Red are not applicable)

Electrical Precheck:

__SK__Perform a wire pull test and re-torque all connections.

__SK__Check the disconnect wiring before powering up the unit.

__SK__Connect main power feed to the power distribution block

Electrical Power:

__SK__Flip the disconnect and main breaker (check for correct power input with a meter).

__SK__Flip the control circuit breaker and check for hot/neutral at the feed terminals.

__SK__Switch on battery backup and check the hot/neutral inputs.

__SK__With battery backup on, check for power output from surge and battery outlets.

__SK__Test for 120 volt and 24 volt hot and neutral.

__N/A__Set phase monitor.

System Voltage - Primary: NP (V/FLA)=__208__V/__162__A,__3__PH

L1+L2=__210.2__V, L1+L3=__209.6__V, L2+L3=__209.7__V

L1=__121.2__V, L2=__121.2__V, L3=__120.8__V

Secondary Voltage : NP (V/FLA)=__120__V/__N/A__A,__1__PH

L1+L2=__120.8__V, L1+L3=_____V, L2+L3=_____V

L1=_____V, L2=_____V, L3=_____V

Control Circuit Voltage - Primary: NP=__24__V, L1=__24.01__V

__SK__Take a photograph of the HMI displays to modify the checklist.

Preliminary Inspection:

__SK__Check all documents against the system.

__SK__Verify that all clean out ports can be accessed.

__SK__Verify that all wiring is properly sized, terminated in the correct location, and installed in a clean and orderly manner.

__SK__Ensure check valves and solenoids are in the correct direction.

__SK__Verify that the appropriate gaskets were used in the application (Buna, Viton, EPDM, etc)

__SK__No green PVC suction hose on positive pressure water lines (except for 1" hose if used with metal camlocks)

__SK__Check that the sides of all electrical junction boxes (XP) are supported.

__SK__Examine Class 1, Division 1, and Division 2 motors and devices.

__SK__Check that every conduit is secured in accordance with the National Electrical Code.

__SK__Ensure that all Seal-Tite connections are correctly tightened.

__SK__Check that, in accordance with the National Electrical Code, all seal-offs are in their proper locations.

__SK__Verify that a ground lug is installed on the skid.

_MI_ Check for USB drive on touch screen HMI displays

__SK__Inspect that all components that flow air are grounded (AST, MS, etc)

__SK__Motors and their respective thermal protectors are contrasted.

__SK__Remove all floats to ensure that all Centering disks are installed on all float stems.

__N/A__The pressure/vacuum relief (vacuum breaker) is adjusted and positioned after the final outlet point. (only on systems where there is liquid phase carbon OR if there is a big downhill to the end-point)

__N/A__Check that the mini-helix and magnehelic have the zero set property and that the case is secure.

__SK__Check that all gauges are positioned for convenient ground-level viewing.

__N/A__Verify that the solenoid valve for the compressor has been installed in the correct location.

__N/A__Centrifugal blower inlet guards are installed.

__SK__Exhaust stack(s) and vent risers are fabricated and installed.

__N/A__Verify that all AST rods are properly tightened prior to operation.

__SK__The product tank(s) is/are assembled with 1" galvanized plugs in all unused bungs.

__SK__ On every oil-filled unit, make sure to check the oil level and oil fill tag.

__SK__Compare motor overload and circuit breaker specifications to motor maximum load amperage.

__SK__Check that all threaded conduit has bushings installed when entering a junction box.

__N/A__Verify the VFD voltage/amperage to the motor/panel specifications.

__N/A__Check to ensure that all line voltage junction boxes and devices have grounds installed, tightened, and sized properly. (No less than #12 wire on all “field” devices.)

__SK__Verify that all transmitters and switches are operational and readable.

__SK__Verify that all Transmitter/switch setpoints in the HMI have been updated.

__SK__No clear tubing on water pressure transmitters

__N/A__Program VFDs (if applicable).

__SK__Check ISR inputs (Intrinsic circuit).

__SK__Check "CR” operations.

__SK__Check that every GFCI outlet trips when tested.

MI Check ALL hose attachments, including gauge tubing.

__SK__Check for bonding bushings on all conduits entering/exiting classified areas.

__SK__Examine the caulking on all walls separating classified from unclassified areas.

__SK__Ensure that seal-offs are present on all heaters in classified areas.

__SK__Examine the tension of each cord grip.

_*MI*_ All filters are installed.

__SK__Check pipe strapping in electrical and plumbing systems.

_*MI/SK*_ Program electromagnetic flowmeters.

__SK__All piping is aligned and straight.

_____ Check that all doors open and close properly, and that all locks operate with the appropriate keys

__SK__Blower/compressor motor cooling exhaust ducting (If necessary)

__SK__Check the temperature and pressure resistance of each hose.

__SK__Examine all fasteners on flanges and connections.

__SK__Verify that the shields of all control cables have been terminated and grounded on the panel grounding bar.

__N/A__Confirm that the condensate line feeding the compressor line is in place.

__SK__Check that the MS tank is equipped with a vacuum relief valve, and record the vacuum relief point. __27__”__HG__

__SK__Pitot tubes, transmitters, and gauges have been outfitted with tubing.

_*MI/SK*_ Check PLC inputs/outputs while hand operating sensors/switches.

__SK__Verify that the HMI display reads all associated transmitters on the status screen.

Liquid Test:

_*MI*_ Check all water connections to ensure there are no major leaks on startup.

_*MI*_ Check all plumbing valves to ensure they are in the correct position for startup flow.

_MI_ Install cam locks on the unit's inlet and outlet apertures for testing.

_MI_ Look for leakage in cam locks and hoses.

_MI_ Fill the vessel with water (as much as possible without starting the motors) (check for leakage and report).

_MI_ Check for water leaks from all pumps, devices, and connections.

Operational Testing:

Specifications to validate and test:

Provide 300 ACFM at ~~29~~ 24 inches of mercury. At 60 Hz, the motor shall operate at 1,750 RPM. (per RFQ and Submittal) **Achieved:** 352.9 ACFM (~70 SCFM) @ 24 Hg

_Min of 5 gpm and max 10 gpm. (per RFQ)_____

_Provide a heat exchanger that will drop the exit temperature on the discharge side of the oil sealed liquid ring pump to within 15F of the ambient average annual maximum temperature. (per Sign Off Form 1.2.3.)_____

_Transfer pump Max Discharge Pressure of 50 psig (per Sign Off Form 1.2.3.)_____

_MI_ Turn on all breakers to all devices

_MI/SK_ Check motor rotation starting with the largest motor.

_MI_ Obtain flow diagrams to compare the airflow of all blowers and compressors.

_____ Test the pressure relief valve operation on the compressor. _____psi

_MI_ Test the auto oiler's operation.

_MI_ Check that the manually engaged motor overloads break the circuit.

_MI_ Create failure scenarios in order to observe the system's response.

_N/A_ Validate the operation of the air compressor's automatic drain.

_MI/SK_ Check that all transmitters and switches work as they should.

__SK__ Test unit CFM Rated flow vs. actual flow.

_MI_ Test pump(s) GPM Rated flow vs Actual flow.

_MI/SK_ Test all alarms on the HMI screen.

_N/A_ Test VFD panel fan and thermostat.

__SK__ Decibel reading recorded inside:__98__ dB outside at 10ft:__66__ dB.

_MI/SK_ Auto restart tested if applicable.

_MI/SK_ After turning on, leave the unit running with the vent fans off for at least two hours to assess the ventilation in the space.

_MI_ Check all air compressor connections and plumbing for air leaks.

_N/A_ Run AST at normal operation then disengage AST blower (to mock an failure scenario) to allow water to dump then check for leaks.

_____ Meet with Mel or Brian to do a pre-departure inspection

LRP HOA

Hand: _MI_

Off: _MI_

Auto: _MI_

MS Pump HOA

Hand: _MI_

Off: _MI_

Auto: _MI_

P-400 Pump HOA

Hand: _MI_

Off: _MI_

Auto: _MI_

P-401 Pump HOA

Hand: *MI*

Off: *MI*

Auto: *MI*

Mixer HOA

Hand: *MI*

Off: *MI*

Auto: *MI*

Mixing pump HOA

Hand: *MI*

Off: *MI*

Auto: *MI*

Influent Pump #2 HOA

Hand:_____

Off: _____

Auto:_____

Effluent Pump #1 HOA

Hand:_____

Off: _____

Auto:_____

Effluent Pump #2 HOA

Hand:_____

Off: _____

Auto:_____

Chemical (sequestrant) Pump #1 HOA

Hand:_____

Off: _____

Auto:_____

Chemical (sequestrant) Pump #2 HOA

Hand:_____

Off: _____

Auto:_____

Equalizer Tank #1 Pump HOA

Hand:_____

Off: _____

Auto:_____

Equalizer Tank #2 Pump HOA

Hand:_____

Off: _____

Auto:_____

SYSTEM COMPONENTS: (Nameplate, Amperage, Setpoint, Pressure, Flow rate)

LRP: NP=__48__A@__208__V, L1= *50.7 A* , L2= *46.8 A* , L3= *49.9 A* ,

SP= *max* ,Press *~24 Hg @ 70 SCFM* , Breaker=__100__A, Overload=__47-57__A,

HP=__20__, RPM=__1770____

Compressor: NP= *10* A@ *120* V, L1= *11.2* A, L2=_____ A, L3=_____A,

SP= *165 psi* ,Press@ *165 max psi* @_____CFM,

Breaker= *20* A, Overload= *N/A* , HP=_____, RPM=_____

MS Pump: NP=__3.18__A@ 208 V, L1= 2.36 A, L2= 2.53 A, L3= 2.32 A,

SP=_____,Press@ 10 PSI @_____GPM,

Breaker=__15__A, Overload=__3.5-5__A, HP=__1__, RPM=__1745__

P-400 Transfer Pump: NP=__2.8__A@ 208 V, L1= 1.86 A , L2= 1.76 A, L3= 1.85 A,

SP=_____,Press@ ~30 psi @ 9.79 GPM ,

Breaker=__15__A, Overload=__2.2-3.2__A, HP=__0.75__, RPM=__3475__

P-401 Transfer Pump: NP=__2.8__A@ 208 V, L1= 1.87 A, L2= 1.84 A, L3= 1.88 A,

SP=_____,Press@ ~30psi @ 9.18 GPM,

Breaker=__15__A, Overload=__2.2-3.2__A, HP=__0.75__, RPM=__3475__

P-500 Mixing Tank Pump: NP=__3.32__A@ 208 V, L1= 1.62 A , L2= 1.64 A , L3= 1.58 A ,

SP=_____,Press@ 38 psi @ 9.8 GPM,

Breaker=__15__A, Overload=__2.8-4__A, HP=__1__, RPM=__3435__

T-500 Mixer: NP=__6__A@ 120 V, L1= 5.92 A, L2=_____ A, L3=_____ A,

SP=_____,Press@_____@_____GPM,

Breaker=__20__A, Overload=__4.5-6.3__A, HP=__.33__, RPM=__1725__

O2 Generator: NP= 5 A@ 120 V, L1= 3.53 A, L2=_____A, L3=_____A,

SP=_____,Press@ ~23 psi @_____GPM,

Breaker=__20__A, Overload=__N/A__A, HP=_____, RPM=_____

Heat Exchanger: NP=__1.91__A@_____V, L1= 1.63 A,L2= 1.71 A, L3= 1.81 A,

Breaker=__15__A, Overload=__1.8-2.5__A, HP=__.5__, RPM=__1760_____

Bioremediation Room vent fan: NP=__.45__A@ 120 V, L1= 0.76 A, L2=_____ A, L3=_____

A, SP=_____, Breaker=__20__A, Overload=__N/A__A, HP=__N/A__, RPM=__N/A__

Extraction Room Vent Fan: NP=__1.9__A@_ V, L1= 1.29 A, L2= 1.25 A, L3= 1.38 A, SP= 80

F , Breaker=__15__A, Overload=__1.8-2.5__A, HP=__1/3__, RPM=__1770__

Bioremediation Room heater: NP=__4.2__A@ *120* V, L1= *3.4* A, L2=_____A, L3=_____A,

SP= *70 F* , Breaker=__20__A, Overload=__N/A__A, HP=__N/A__, RPM=__N/A__

Control Room heater: NP=__5__A@ *120* V, L1= *3.2* A, L2=_____A, L3=_____A,

SP= *70 F* , Breaker=__20__A, Overload= *n/a* , HP=*n/a*

Lights: *0.62* A@ *120* V

Control Circuit from Breaker: *0.72* A@ *120* V

FLOATS, TRANSMITTERS, AND SWITCHES:

Float Switches for N/O (Float high high alarms on alarm section:

_____AST #1:

H=_____-_____

L=_____-_____

_____AST #2:

H=_____-_____

L=_____-_____

MI MS:

H= *MI* - *High level float turn on MS pump when raised*

L= *MI* - *Low level float shuts off MS pump when float drops*

MI Holding Tank #1 (T-301):

H= *MI* - *Holding tank high float turns on pump P-400*

L= *MI* - *Holding tank low float turns off pump P-400*

MI Tank #2 (T-400):

H= *MI* - *Holding tank high float turns on pump P-401*

L= *MI* - *Holding Tank low float turns off pump P-401*

Transmitter(s):

MI Vacuum Transmitter(s):

MI - Pre-LRP Vac Trans - Tied to Low and High Vac alarms

MI/SK Pressure Transmitter(s):

MI/SK - O2 Press Trans - Tied to Oxygen feed Low and High pressure alarms

MI/SK - Post Venturi Press Trans - Tied to post venturi Low and High pressure alarms

MI/SK - Post LRP Press Trans - Tied to Status screen only

MI/SK - Post P-400 Press Trans - Tied to high discharge Pressure alarm

MI/SK - Pre LGAC Carbon Press Trans - Tied to High Pressure alarm

MI/SK - Post Mixing Tank Pump Press Trans -

MI Temperature Transmitter(s):

MI - Bioremediation room Temp Trans - Tied to Low and High Temp alarms

MI - Extraction Room Temp Trans - Tied to Low and High Temp alarms

MI - Post Hx Temp Trans - Tied to High temp alarm

MI/SK - Falco Temp Trans - 3 Trans are internal and trans Low and High Alarms to reflect on HMI of system

MI Flow Transmitter(s):

MI/SK - Post LRP Flow Trans - Allows for monitoring of CFM flow rate

MI/SK - Post mixing tank flow trans - Allows for Monitoring of effluent GPM flow rate

Switch(es):

MI/SK Oil Level High *Triggers High Level Alarm to protect LRP*

MI/SK Oil Level Low *Triggers Low Level Alarm to protect LRP*

MI/SK Vacuum switch *internal to the LRP*

ALARMS and High/Low alarms (Refer to this link to verify alarms):

https://docs.google.com/spreadsheets/d/1E1X3SRvANDD3itaE5dTF4nNvU8iwITm5/edit?usp=sharing&ouid=108429924932933678506&rtpof=true&sd=true

Finalization:

MI Update engineering for As-Builts

MI Remove power from the panel(s).

_____ ”PRMFiltration” stickers to be at the upper portion of the unit exterior

MI Verify that every connection into the panel(s) is impermeable by performing a leak test.

MI Verify that all Hose connections on the unit's inlets and outlets correspond to customer connections.

MI Flow meter reading documented following testing *4,300 gal*.

MI Ensure that the system is operating at the required flow/pressure/vacuum and are these flows recorded?

MI Verify glycerin's liquid level and the cleanliness of the gauges.

MI Clearly marked shipment brackets are to be removed after shipping.

_____ A fresh set of control panel schematics is uploaded to the QR code

MI All seal-offs are poured.

_____ Paint neatly applied.

_____ Caulking (and Great Stuff if the opening is excessive) was meticulously applied to all required areas inside and outside of the unit.

MI Electrical box covers in place.

MI Filter bags are installed in bag filter housings, and spare bag filters are stored in close proximity to bag filter housings.

MI Panel panduit covers are in place in the control panel.

_____ AST rods tightened after testing.

_____ Manuals are given to the driver.

_____ Pallets containing loose products are packed properly.

_____ Driver has directions, contact name/phone, and a delivery acceptance sheet.

_____ The list of loose objects packed into the unit and photographed.

_____ Tighten all zip ties contained within the panel(s).

_*MI*_ Dielectric test.

_____ Verify that all Trailers have corner stabilizers installed (if requested).

_____ Bubble wrap loose piping.

_*MI*_ Cover all exterior holes with gorilla tape.

_*MI*_ Drain all storage containers, sumps, and housings.

_____ Fill carbon vessels.

_____ Install finger guards.

_____ Secure vent fan louvers prior to transport.

_*MI*_ Examine the roof for debris and loosening of the rivets.

_____ Check VFDs for covers.

_*MI*_ Verify that all carbon vessel have been secured for shipping

_____ Examine tire pressures.

_*MI*_ Contact Mel/Brian for a final walk through inspection

_*MI*_ Clean and blow out the unit.

_____ Upload and update all documents in Drive

REMEDIATION EQUIPMENT TERMS OF ACCEPTANCE AND WARRANTY CARD

1. All remediation equipment supplied by PRM must be wired by a licensed electrician. The electrician to perform the work should be familiar with typical applications and all work must conform to the NEC. Failure to have a licensed electrician perform connections will void the system warranty.

2. All mechanical work should be done in a neat and orderly fashion without kinks and strains imposed on hoses and piping systems.

3. Each system supplied by PRM must be registered with PRM a minimum of 2 days prior to startup. This allows PRM to assign a technical support number to the project for start up and technical assistance. Failure to register the equipment will cause technical support delays.

4. Equipment supplied by PRM that will be powered by a generator will require low voltage protection across each phase. Equipment with electronic or solid state controls must be provided with clean power that is supplied with surge protection and appropriate equipment to provide a regulated power source. Failure to provide this power protection will void the warranty on the control system and possibly on the equipment itself.

5. Technical support is available 8:30am to 4:30pm Eastern Standard Time. Monday through Friday except for Holidays. Technical support offered after hours will be billable at a rate of $95.00 per hour with a minimum 1 hour billing.

WARRANTY CARD WO-8135

WARRANTY CARD WO-8135

Site Name DOE Circle K Site 1461

Electrician SHJElectric License No. / Ph. No. SHJELCI061B5

Size of service 200A 208V 3Ph Conductors 3/6

THIS CARD MUST BE RETURNED TO PRM FOR TECHNICAL SUPPORT TO BE ACTIVATED.

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

March 3, 2025

KA No. 096-24255
Permit No. 6996584-CN

Ms. Lauren Golembiewski (E-Mail)
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212th Street SW
Edmonds, WA 98026

RE: CONSTRUCTION TESTING AND INSPECTION
Circle K
2350 24th Avenue E
Seattle, Washington

Dear Ms. Golembiewski,

In accordance with your request and authorization, our firm performed construction testing and inspection for the above-referenced project. The sampling and testing was performed by our inspectors and reports are included.

If you have any questions, or if we can be of further assistance, please do not hesitate to contact our office.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Jerry L. Gelder
Project Manager
Pacific Northwest Division

JLG/lkj

C.C. CITY OF SEATTLE (UPLOAD)

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

WELDING INSPECTION
REPORT NO.: 09624255SSR022625-ZZ

DATE: 2/26/2025
PROJECT #: 09624255
PROJECT: CIRCLE K
LOCATION: 2350 24th Ave E., Seattle, WA
KA P.M.: Jeffrey Dewey

CONTRACTOR: GLACIER
PERMIT #: 6996584
INSPECTOR: Zelalem Zerihun
JURISDICTION: City of Seattle
WEATHER: Cloudy
TEMP: 40's

STRUCTURAL STEEL

☑ FIELD ☐ SHOP WELDING ☑ VISUAL ☐ MATERIAL ID

Item(s) Inspected:

Inspected field welds for the angle to the container corners per 4/S1.1.

Location:

The container anchorage to the footing, one per corner per 4/S1.1.

Welder qualification / certification verified for:

					N/A
Position:	☐ FLAT	☑ VERTICAL	☐ OVERHEAD	☑ HORIZONTAL	☐ Filler Metal:
Process:	☐ SMAW	☑ FCAW	☐ SAW	☐ GMAW	☐ Other:
Weld Type:	☑ FILLET	☐ C.P.	☐ PLUG	☐ P.P.	☐ Other:
Weld Size:	☐ 3/16"	☑ 1/4"	☐ 3/8"	☐ 5/16"	☐ Other:
Codes:	☑ AWS	☑ AISC	☐ ASME	☐ IBC	☐ Other:

☑ NOTES ☐ DISCREPANCIES ___ % COMPLETE

1) **Welds** joining angle-to-container frame at 4 corners were inspected per 4/S1.1 and met the visual criteria outlined in AWS D1.1-2020, clauses 8. See photos taken during the inspection.
2) **Adhesive** bolts, one 3/4" A.B. at each corner of the container, were installed into the concrete footing through the steel angle. According to the contractor, the ¾"x10" long anchor bolts had been drilled & epoxied with 8" embed. Based on the bolt protrusion we have observed, the 8" embed information appeared correct. We measured the anchor diameter and confirmed with the required size. We then conducted a torque test by applying over 90% of the recommended maximum installation torque force, 100 lb-ft. In my opinion, the adhesive appeared done per the MPII. The EOR should review this report and either accept it or suggest any necessary remediations.

To the best of my knowledge, the above **WAS performed in accordance with the approved plans, specifications and regulatory requirements.**

Superintendent/Representative:

Technician:

The information provided on this report is prepared for the exclusive use of the client. This report may not be reproduced in any format without the written permission of the client and Krazan & Associates. This report indicates our inspectors observation and testing results based on site conditions and contractor activities. This information is subject to review prior to final submittal. By signing this report, our inspector does not accept responsibility for validity of results. The same information has been provided by others on site. The test results apply only to the specific locations, and items inspected or tested.

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

July 1, 2024

KA No. 096-24255
Permit No. 6996584-CN

Ms. Lauren Golembiewski (E-Mail)
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212th Street SW
Edmonds, WA 98026

RE: CONSTRUCTION TESTING AND INSPECTION
Circle K
2350 24th Avenue E
Seattle, Washington

Dear Ms. Golembiewski,

In accordance with your request and authorization, our firm performed construction testing and inspection for the above-referenced project. The sampling and testing was performed by our inspectors and reports are included.

If you have any questions, or if we can be of further assistance, please do not hesitate to contact our office.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Jeffrey S. Mercer
Operations Manager
Pacific Northwest Division

JSM/lkj

C.C. CITY OF SEATTLE (UPLOAD)

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

Field
Report NO.: 09624255DFR6272024TT

DATE: 6/27/2024	Set Count:	CONTRACTOR: Glacier Environmental
PROJECT #: 09624255		PERMIT #: 6996584
PROJECT: Circle K		INSPECTOR: T. Tran
LOCATION: 2350 24th Ave E		JURISDICTION: Seattle
KA P.M.: JSM		WEATHER: Cloudy TEMP: 59° F

On site as requested for reinforcing steel.

Inspected the resteel for (4) footings for the container. Resteel in place corrected size, spacing, lap, grade, and clearance per S1.1 called out.

Reviewed By:		ASTM Test #:		Asset Number(s):	

To the best of my knowledge, the above WAS performed in accordance with the approved plans, specifications and regulatory requirements.

Superintendent/Representative:	Technician:

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Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

July 15, 2024

KA No. 096-24255
Permit No. 6996584-CN

Ms. Lauren Golembiewski (E-Mail)
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212th Street SW
Edmonds, WA 98026

RE: CONSTRUCTION TESTING AND INSPECTION
Circle K
2350 24th Avenue E
Seattle, Washington

Dear Ms. Golembiewski,

In accordance with your request and authorization, our firm performed construction testing and inspection for the above-referenced project. The sampling and testing was performed by our inspectors and reports are included.

If you have any questions, or if we can be of further assistance, please do not hesitate to contact our office.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Jeffrey S. Mercer
Operations Manager
Pacific Northwest Division

JSM/lkj

C.C. CITY OF SEATTLE (UPLOAD)

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

Field
Report NO.: 09624255DFR070824JA

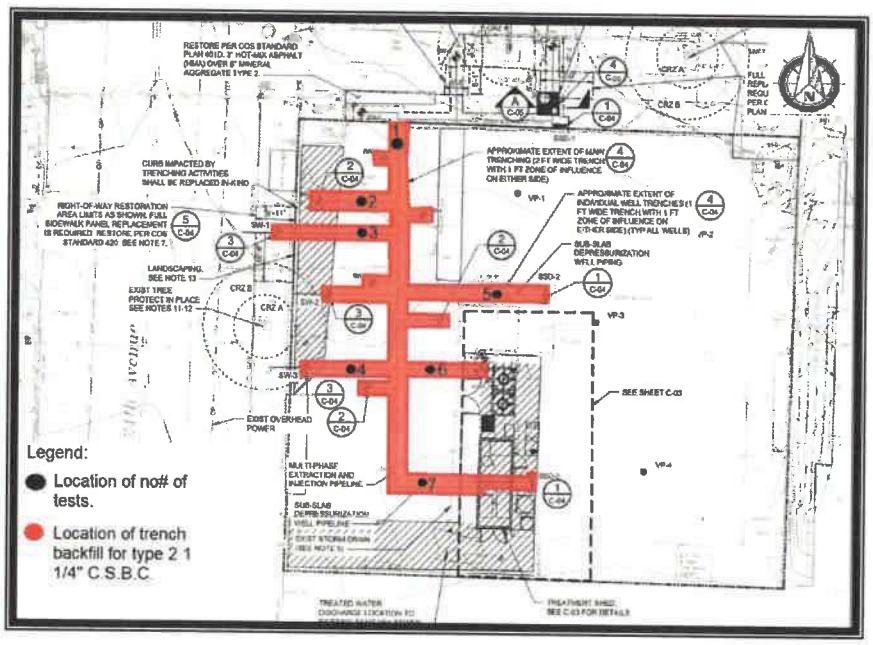
DATE: 7/8/2024	Set Count:	CONTRACTOR: GLACIER
PROJECT #: 09624255		PERMIT #: 6996584
PROJECT: Circle K		INSPECTOR: Joseph Aranas
LOCATION: 2350 24th Ave E		JURISDICTION: City of Seattle
KA P.M.: JM		WEATHER: Sunny TEMP: 80° F

In Place Density:

A krazan and associate arrive onsite on time as requested to performed in place density, upon arrival krazan meet with the contractor (GLACIER) and discussed the detail of inspection, krazan observed contractor already backfill of 12-in thick type 2 1 ¼" C.S.B.C. trench well piping and compacted using jumping jack. Krazan use equipment nuclear gauge KA-268 troxler 3430. Calibration date: Sept.2023

Today, krazan performed seven (7) compaction tests. Test results are pending while waiting for the laboratory test result for the compaction requirement per ASTM D1557 (modified Proctor) of Type 2 1 ¼" C.S.B.C. Refer to compaction report no. 09624255SCR782024JA for compaction details. Site photos are attached for reference.

A bulk sample of type 2 1 ¼" C.S.B.C. materials was also collected at the project site at site stock pile in general accordance to AASHTO T-2 sampling procedures. The collected sample was brought back to our laboratory for the determination of its maximum dry density (ASTM D1557: modified Proctor), gradation (ASTM C136: sieve analysis) and moisture content (ASTM D2216: water content determination by mass).



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Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

Field
Report NO.: 09624255DFR070824JA

Reviewed By:		ASTM Test #:		Asset Number(s):	
To the best of my knowledge, the above WAS performed in accordance with the approved plans, specifications and regulatory requirements.					
Superintendent/Representative:			Technician:		

The information provided on this report is prepared for the exclusive use of the client. This report may not be reproduced in any format without the written permission of the client and Krazan & Associates. This report indicates our inspectors observation and testing results based on site conditions and contractor activities. This information is subject to review prior to final submittal. By signing this report, our inspector does not accept responsibility for validity of results. The same information has been provided by others on site. The test results apply only to the specific locations, and items inspected or tested. Template date 12/8/2023

Krazan & Associates, Inc.
Geotechnical Engineering • Environmental Engineering
Construction Testing and Inspection

COMPACTION REPORT NO.: 09624255SCR070824-JA

DATE: 7/8/2024
PROJECT #: 09624255
PROJECT: Circle K
LOCATION: 2350 24th Ave E
KA P.M.: JM

CONTRACTOR: GLACIER
PERMIT #: 6996584
INSPECTOR: Joseph Aranas
JURISDICTION: City of Seattle
WEATHER: Sunny TEMP: 80

☐ NUCLEAR DENSOMETER ASTM D6938
☐ SANDCONE ASTM D1556
☐ OTHER

LOCATION MAP

○ Paved Areas :
○ Building Pad(s) :
◉ Utility : Well Piping
○ Other :

Curve	Unified Soils Classification or Description	Maximum Dry Density / Rice (PCF)	Optimum Moisture
A	Type 2 1 1/4" C.S.B.C.	128.8	4.4%
	(Uncorrected Value)		

TEST	ELEVATION	LOCATION	CURVE	MODE & DEPTH	DENSITY (PCF)	MOISTURE	COMPACTION	REQUIRED COMPACTION
1	grade	trench Well piping	A	8	127.0	3.3%	99%	95%
2	grade	trench Well piping	A	8	126.0	4.3%	98%	95%
3	grade	trench Well piping	A	8	123.2	3.9%	96%	95%
4	grade	trench Well piping	A	8	123.9	3.2%	96%	95%
5	grade	trench Well piping	A	8	123.2	3.6%	96%	95%
6	grade	trench Well piping	A	8	124.0	4.2%	96%	95%
7	grade	trench Well piping	A	8	123.8	5.3%	96%	95%

EQUIPMENT NO.: B-268 troxler 3430 CALIBRATION DATE: Sept.2023
DAILY AVERAGE STANDARD DENSITY COUNT: 2544
DAILY AVERAGE STANDARD MOISTURE COUNT: 665

Reviewed By: [signature]

This testing does not preclude the possibility that the soil or hot mix asphalt may be loosened by future construction or rainfall events. The compaction tests were performed at the approximate locations and elevations shown, and indicate relative compaction at those locations. Horizontal and vertical limits of the compacted areas were determined by others. Our firm does not guarantee earthwork or paving construction, nor does our work relieve the contractor's responsibility to conform to the approved project plans and specifications.

To the best of my knowledge, the above WAS performed in accordance with the approved plans, specifications and regulatory requirements.

REMARKS :

Superintendent/Representative: Technician:

The information provided on this report is prepared for the exclusive use of the client. This report may not be reproduced in any format without the written permission of the client and Krazan & Associates. This report indicates our inspectors observation and testing results based on site conditions and contractor activities. This information is subject to review prior to final submittal. By signing this report, our inspector does not accept responsibility for validity of results. The same information has been provided by others on site. The test results apply only to the specific locations, and items inspected or tested.

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

July 15, 2024

KA No. 096-24255
Lab Report No. 01

Ms. Lauren Golembiewski (E-Mail)
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212th Street SW
Edmonds, WA 98026

RE: SOILS LABORATORY TESTING
Circle K – 1 ¼" minus, C.S.B.C
2350 24th Avenue E
Seattle, Washington

Dear Ms. Golembiewski,

In accordance with your request and authorization, we have performed laboratory tests for the above referenced project.

Laboratory testing was performed in accordance with ASTM standards. Attached are the results of the Proctor Value with Natural Moisture Content & Sieve Analysis for sample number 86586 dated July 8, 2024 as performed in the Krazan and Associates laboratory. If you have any questions; or if we can be of further assistance, please do not hesitate to contact our office.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

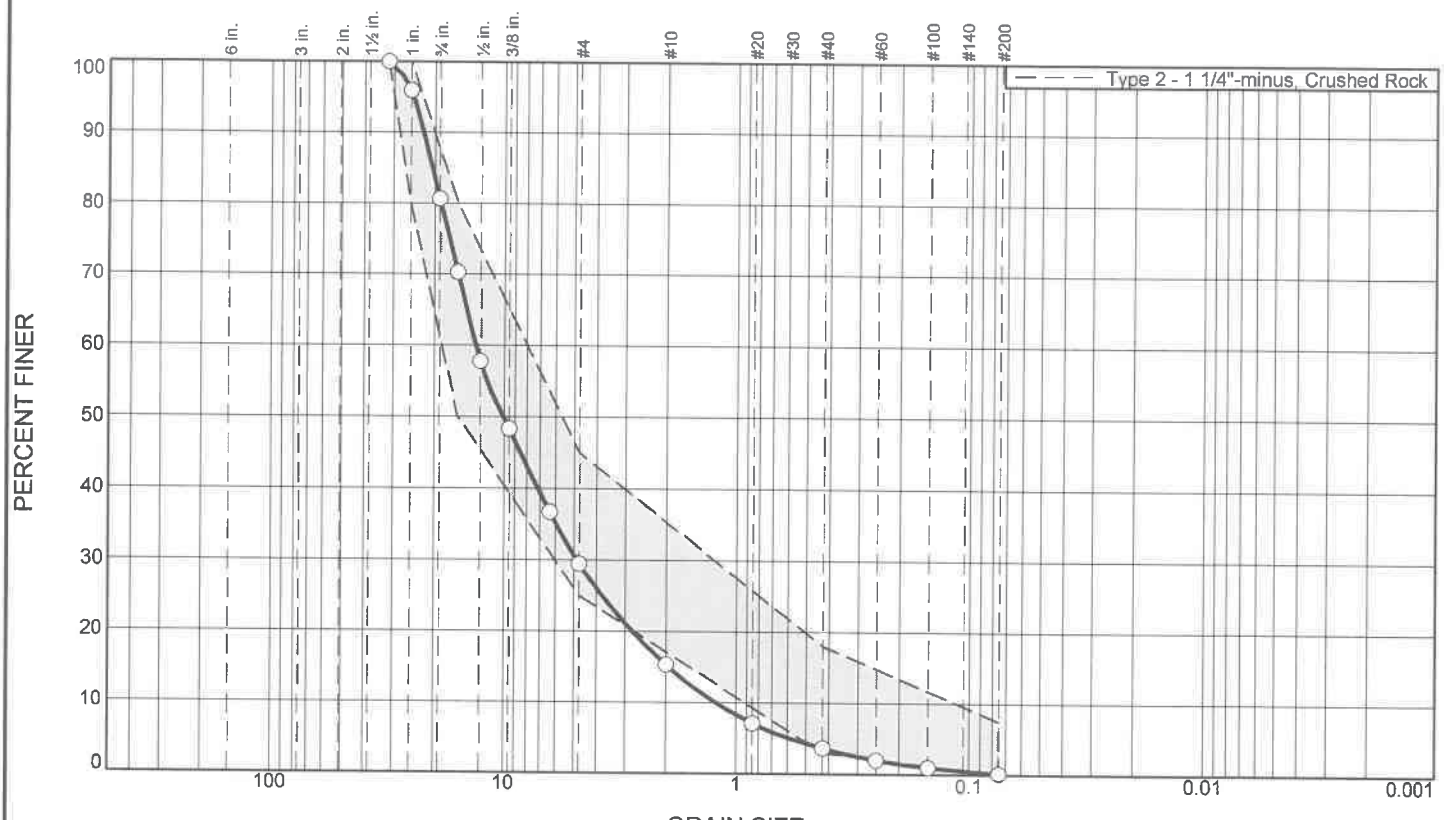
Jeffrey S. Mercer
Operations Manager
Pacific Northwest Division

JSM/lkj

C.C. CITY OF KIRKLAND

Krazan & Assoc. Sieve Analysis

ASTM C117 & C136



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	19.4	51.1	14.1	11.7	3.6	0.1	

Test Results (ASTM C117 & C136)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
1.25	100.0	100		
1	96.0	80-100		
.75	80.6			
.625	70.3	50-80		
.5	57.8			
.375	48.3			
.25	36.7			
#4	29.5	25-45		
#10	15.4			52.1
#20	7.1			24.2
#40	3.7	3-18		12.5
#60	2.0			6.7
#100	1.0			3.4
#200	0.1	0-7.5		0.4

* Type 2 - 1 1/4"-minus, Crushed Rock

Material Description

Type 2 (1 1/4" minus, C.S.B.C.)

Atterberg Limits

PL= NP LL= NP PI= NP

Coefficients

D_{90}= 22.3899 D_{85}= 20.5443 D_{60}= 13.2994
D_{50}= 10.0760 D_{30}= 4.8702 D_{15}= 1.9458
D_{10}= 1.2152 C_u= 10.94 C_c= 1.47

Classification

USCS= GW AASHTO= A-1-a

Test Remarks

AS-Received Moisture Content (ASTM D-2216): 3.4%

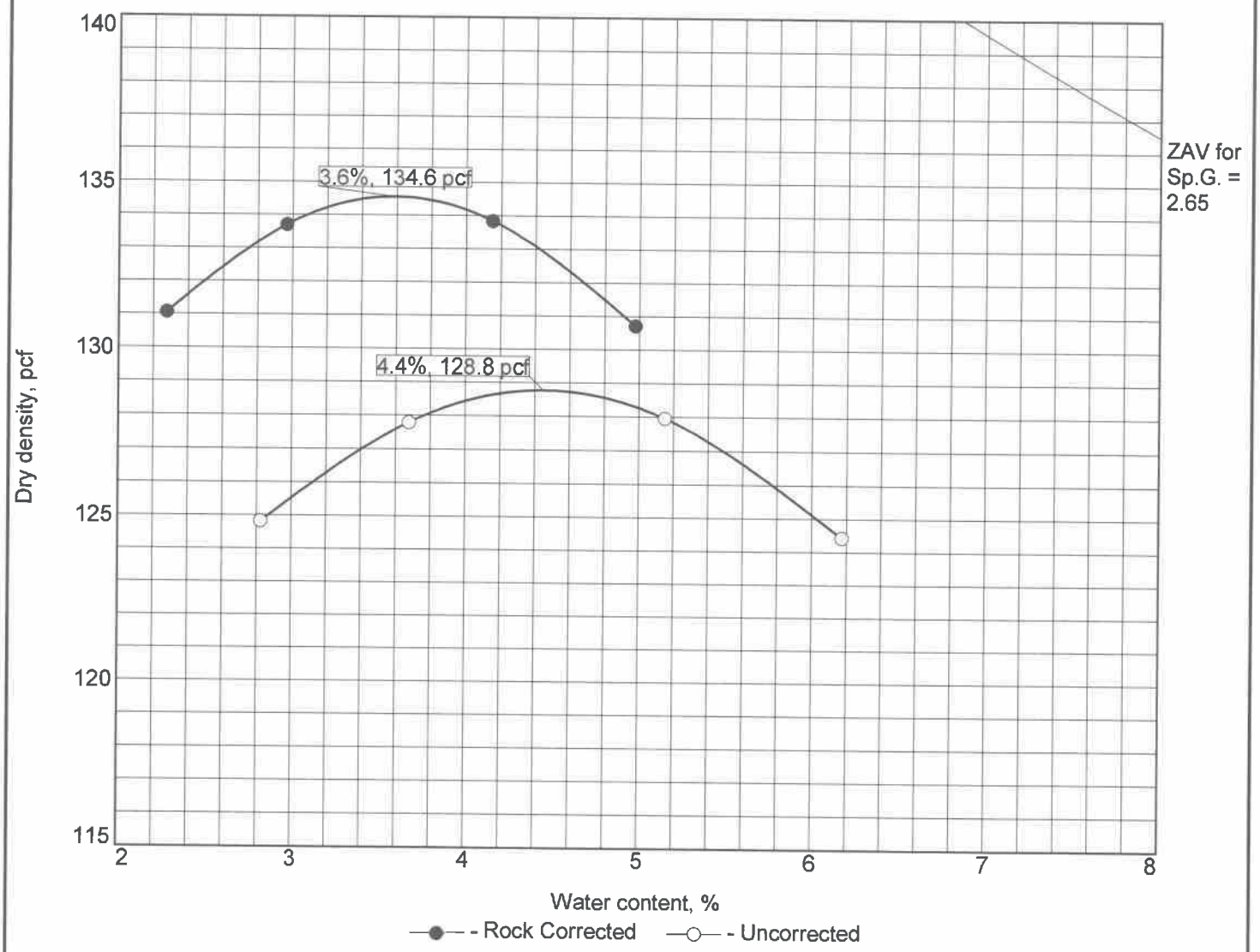
Location: Hiedelberg High Rock - Monroe, WA
Sample Number: 86586
Sample Date: 7/8/2024

Krazan

Client: Glacier Environmental Services, Inc.
Project: Circle K
Project No: 09624255
Figure

Tested By: Dave Hill **Checked By:** Cole Demas

COMPACTION TEST REPORT for Curve No. A



Test specification: ASTM D 1557-12 Method C Modified
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
	GW	A-1-a	3.4%	2.65	NP	NP	19.4	0.1

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 134.6 pcf	128.8 pcf	Type 2 (1 1/4" minus, C.S.B.C.)
Optimum moisture = 3.6 %	4.4 %	

Project No. 09624255 **Client:** Glacier Environmental Services, Inc.
Project: Circle K
Date: 7/9/2024
○ **Location:** Hiedelberg High Rock - Monroe, WA **Sample Number:** 86586

Krazan

Remarks:
Type of Rammer Used: Mechanical.
Sample ID: 86586.
Sample Date: 7/8/2024

Figure

Tested By: Cole Demas **Checked By:** Cole Demas

APPENDIX F- RFIs and WORK CHANGE DIRECTIVES

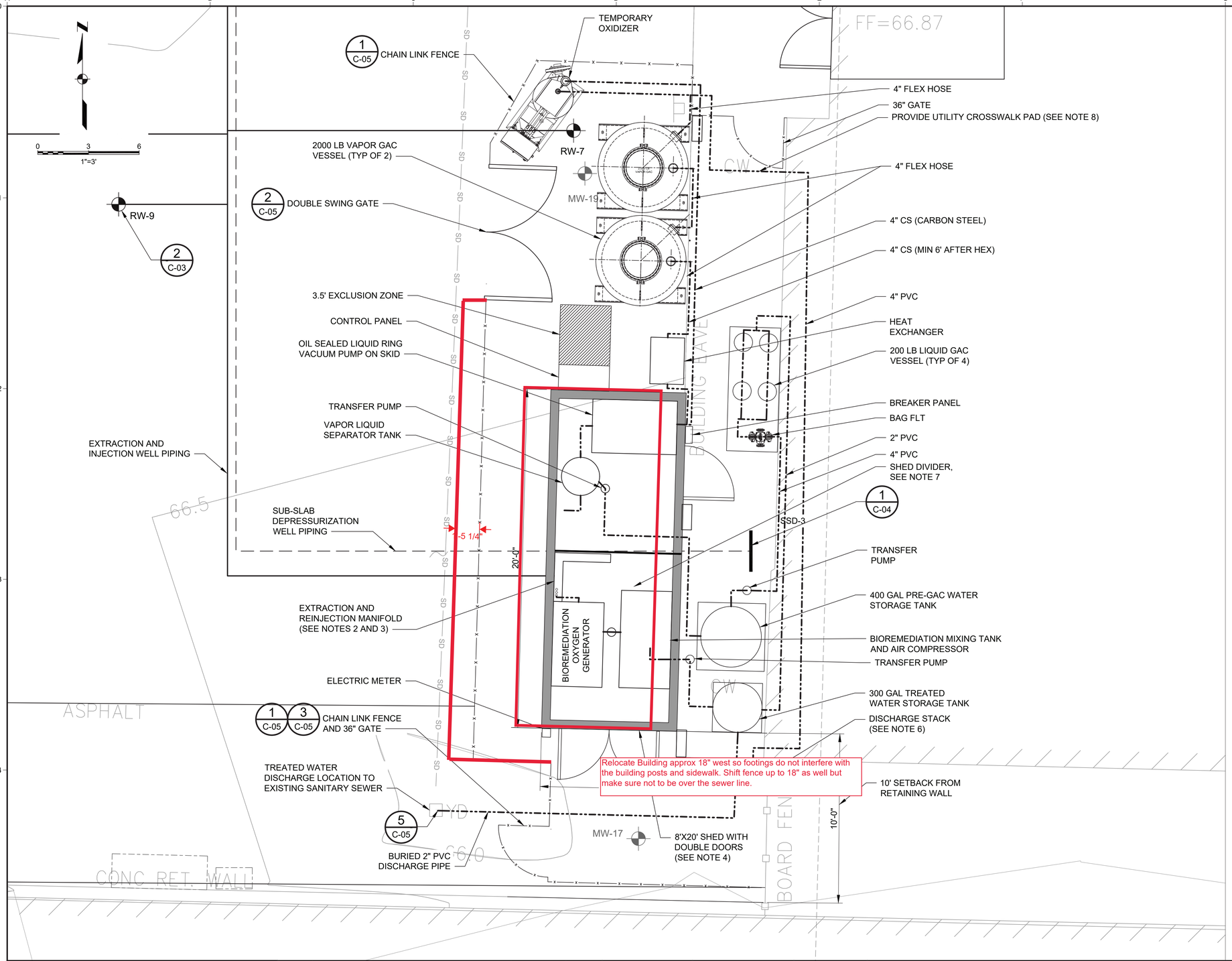
Work Change Directive Form
Change No: 01

Kennedy Jenks

Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	31 May 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

Relocate treatment system building up to 18" west so footings do not interfere with building posts and sidewalk. Shift fence up to 18" west. Refer to attached drawing. Do not interfere with existing sanitary sewer drain line.



GENERAL SHEET NOTES

1. WELL TERMINOLOGY:
   1A. MW = EXISTING MONITORING WELL
   1B. RW = REMEDIATION WELL (EITHER EXISTING OR TO BE INSTALLED
2. ALL MANIFOLDS SHALL BE EQUIPPED WITH GATE VALVE, SAMPLE PORTS, AND 1/4" TAP FOR FLOW INSERTION.
3. EXTRACTION AND REINJECTION MANIFOLDS SHALL BE EQUIPPED WITH CONTROL VALVES AND FLOW METER FOR EACH WELL.
4. PIPING AND VALVES SHALL BE STACKED VERTICALLY ALONG EQUIPMENT ENCLOSURE WALL FOR ACCESS TO FLOW PATH AND MEASUREMENTS.
5. CONTRACTOR SHALL RECREATE ALL PARKING SPACES AFFECTED BY THE REMEDIATION SYSTEM AS SHOWN ON SHEET C-06 INCLUDING REPAINTING PARKING LOT STRIPING AND HANDICAP SYMBOLS, AND REPLACING EXISTING CURBS WITH NEW CURBS.
6. INSTALL ANY NECESSARY PIPE SUPPORTS TO DISCHARGE STACK TO EXTEND TOP OF STACK TO 3 FEET ABOVE THE ROOF. DISCHARGE STACK PIPE SUPPORTS SHALL BE CONTRACTOR DESIGNED AND SUBMITTED TO THE ENGINEER FOR APPROVAL.
7. DIVIDER AND SHED CONSTRUCTION SHALL MEET IBC AND NFPA REQUIREMENTS TO SEPARATE ZONES. SHED CONSTRUCTION SHALL INCLUDE DIVIDER TO SEPARATE UNCLASSIFIED AND CLASS 1, DIVISION 2 RATED EQUIPMENT OR CONTRACTOR SHALL PROVIDE TWO SEPARATE SHEDS INSTALLED ADJACENT TO EACH OTHER.
8. PIPE ROUTING IS APPROXIMATE. FIELD ROUTE AS NEEDED TO MAINTAIN PATHWAYS AND ACCESS TO EQUIPMENT AND VALVES. PROVIDE STEP OVERS/RAMPS WHERE REQUIRED OR ELEVATE TO MINIMUM 7 FEET ABOVE GROUND TO MAINTAIN ACCESS PER SPECIFICATIONS. PROVIDE LOW POINT DRAINS AND HIGH POINT VENTS AS NEEDED. CONTRACTOR DESIGNED SUPPORTS SHALL BE FAVORABLY APPROVED BY ENGINEER. EXCEPT AS MAY BE REQUIRED FOR THE DISCHARGE STACK, SUPPORTS SHALL NOT BE ANCHORED TO THE BUILDING WALL, AWNING, ROOF, OR COLUMNS.
9. TREATMENT SYSTEM SHALL BE COMMISSIONED IN ACCORDANCE WITH SPECIFICATION SECTION 01 77 00.
10. EQUIPMENT AND PIPING LOCATIONS ARE SHOWN FOR CONCEPTUAL PURPOSES ONLY. ACTUAL EQUIPMENT AND PIPING LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR.

LEGEND

- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION WELL PIPING
- REMEDIATION SYSTEM PROCESS PIPING (SEE NOTE 4)
- CHAIN LINK FENCE
- SUB-SLAB DEPRESSURIZATION WELL
- VAPOR MONITORING PIN
- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-01)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

ISSUED FOR PERMIT

ANY PRINTS NOT BEARING THIS STAMP MAY HAVE BEEN PRINTED PRIOR TO ADVERTISING AND CANNOT BE CONSIDERED AS BID DOCUMENTS. USERS OF THIS DOCUMENT IN EDITABLE ELECTRONIC FORMATS ARE CAUTIONED AGAINST USE WITHOUT FIRST DETERMINING WHETHER CHANGES MAY HAVE BEEN MADE SUBSEQUENT TO ITS PREPARATION.

NO	REVISION	DATE	BY
1	SEATTLE DEPARTMENT OF TRANSPORTATION PERMIT	10/09/2023	CMW

SCALES 0 — 10"

BENJAMIN EDWARD SMITH, STATE OF WASHINGTON, 38425, REGISTERED PROFESSIONAL ENGINEER, 4/16/2024

DESIGNED CMW
DRAWN CMW
CHECKED BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

REMEDIATION SYSTEM LAYOUT

SCALE 1" = 10'
JOB NO 2196008.00
DATE APRIL 2024
SHEET 8 OF 24
C-03

Plot Date: 4/16/2024 1:58 PM
User: RICHARD HILLS
File: C:\bms\kjce-pw\d0181574219600800-C-03.DWG

Work Change Directive Form
Change No: 02

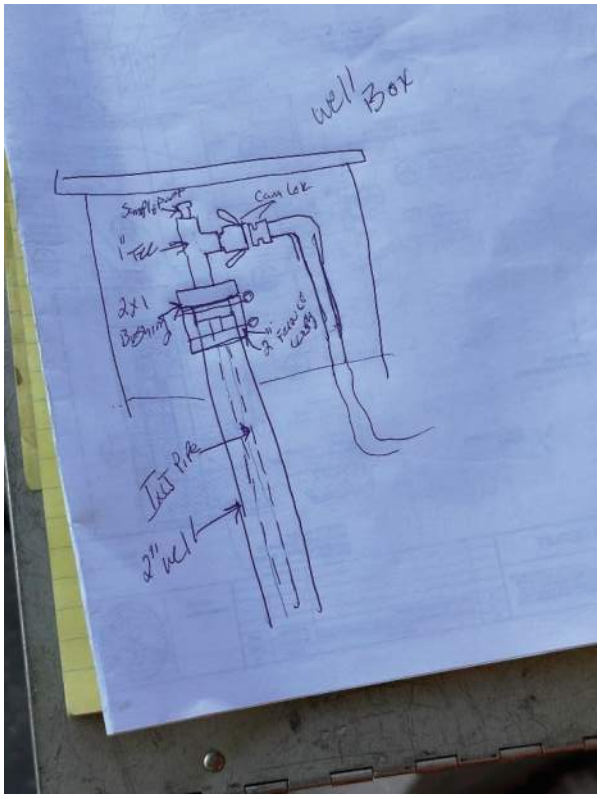
Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	31 May 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

At monitoring well MW-4 (total depth of 18 feet), increase the size of the well monument and well box to 18". Make piping connection to the well as shown in the sketch (provided by Glacier) below.

To account for the additional head these changes will create, when connecting the wells to the treatment system, move wells MW-4 and RW-6 to Well Bank 4 and wells SW-3 and RW-7 to Well Bank 1. The updated Well Bank configuration will be as follows:

- Well Bank 1: ~~MW-4, RW-6,~~ RW-9, RW-3, SW-3, RW-7
- Well Bank 2: RW-4, RW-8, SW-1
- Well Bank 3: RW-5, SW-2, RW-10
- Well Bank 4: ~~SW-3, RW-7,~~ RW-2, MW-4, RW-6



Work Change Directive Form
Change No: 03

Kennedy Jenks

Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	8 November 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

Coalescer Drainage
Excessive water is collecting in the coalescer. This accumulation poses concern for freezing in the coalescer, vapor phase GAC units and associated piping, clogging vapor phase GAC or reducing adsoprtion capacity, or causing issues to the CatOx system.

Contractor is directed to make the following changes:
Install barb fitting and flexible 5/16 to 3/8 vinyl tubing from coalescer drainage to vacuum gauge VI 210, directly upstream of the moisture separator tank (T-300) inlet. Add a tee fitting with valve and barb between VI 210 and the 4-inch piping. Tubing shall be routed along the 4-inch discharge piping to the north side of the building. The tubing shall penetrate the side of the north wall near the ceiling and routed high overhead before dropping down to the connection point. Protect and seal the wall penetration. Use zip ties to secure the tubing to existing pipe and piping supports.

FT-500 Totalizer
The specified ½-inch combination flowmeter / totalized FT-500 for the outlet of tank T-400 to the sanitary sewer was restricting flow to a rate that was not registering on the meter and was also backing up flow so the high-high level was engaging. On 8/29/2024, the King County Industrial Waste (KCIW) program approved providing an average daily discharge volume (calculated as the difference between recorded discharge volumes on a totalizer meter divided by elapsed time) instead of daily flow meter reading for KCIW Wastewater Discharge Authorization (WDA) No. 4614-01. Therefore, a flowmeter is not needed at this location, only a totalizer.

It is important that the totalizer cannot lose power and the total gallons value cannot be "erased". As such, a larger diameter analog totalizer is required. The totalizer may also include a pulse counter that could be tied into the PLC for remote monitoring and logging of the total gallons discharged.

Replace the FT-500 combination flowmeter / totalizer and associated ½" diameter SCH80 PVC piping with PRM 1-¼-inch Multi-Jet Brass Totalizing Water Meter with Pulse Output. Contractor shall transition the piping between the 2-inch piping and 1-¼-inch totalizer as quickly as possible to reduce friction losses.

Contractor shall provide a quote to perform the additional following work and receive approval prior to proceeding:
- Connect the pulse wire of the new totalizer installed above to the control panel.
- Modify the PLC to remotely monitor and log the discharge gallons to SS.
- Modify HMI Status screen to distinguish "Total Discharge Gallons" as "Total Injection Discharge Gallons" and add "Total SS Discharge Gallons" display.

Work Change Directive Form
Change No: _03_____

Kennedy Jenks

Work Change Directive Form
Change No: 05

Kennedy Jenks

Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	12 December 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants, Inc.	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

Treated Water Drainage

Water is ponding at the catch basin connected to the sanitary sewer discharge. Storm drain piping connecting catch basin to sanitary sewer main determined to be blocked after CCTV inspection. A new connection to sanitary sewer is necessary for discharge of treated water during system operation. Existing remediation piping in SE corner of the property was determined to be connected to the sanitary sewer and will be the new discharge location.

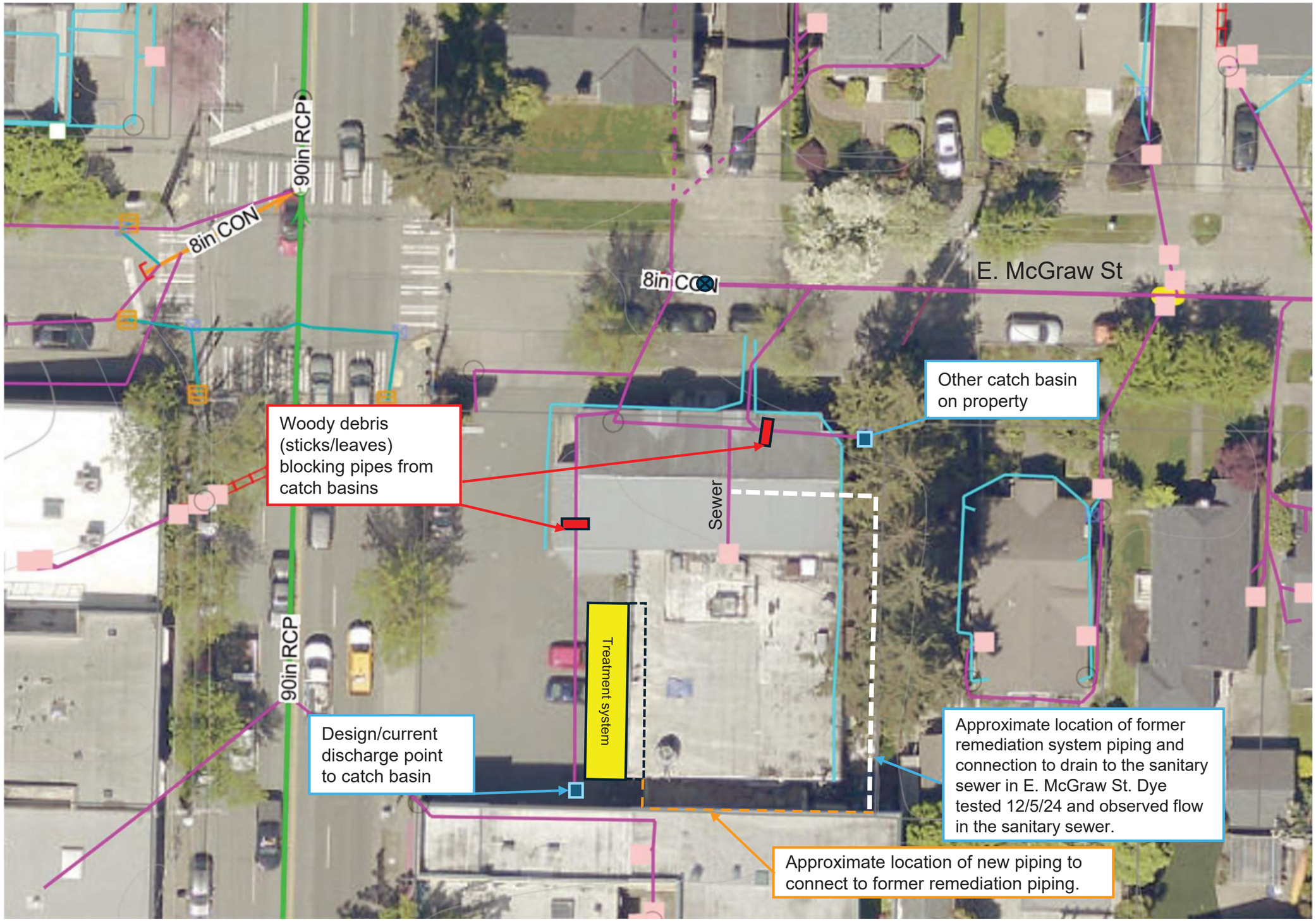
Contractor is directed to make the following changes:
Connect treated water discharge piping to existing remediation piping as shown on the attached figures.

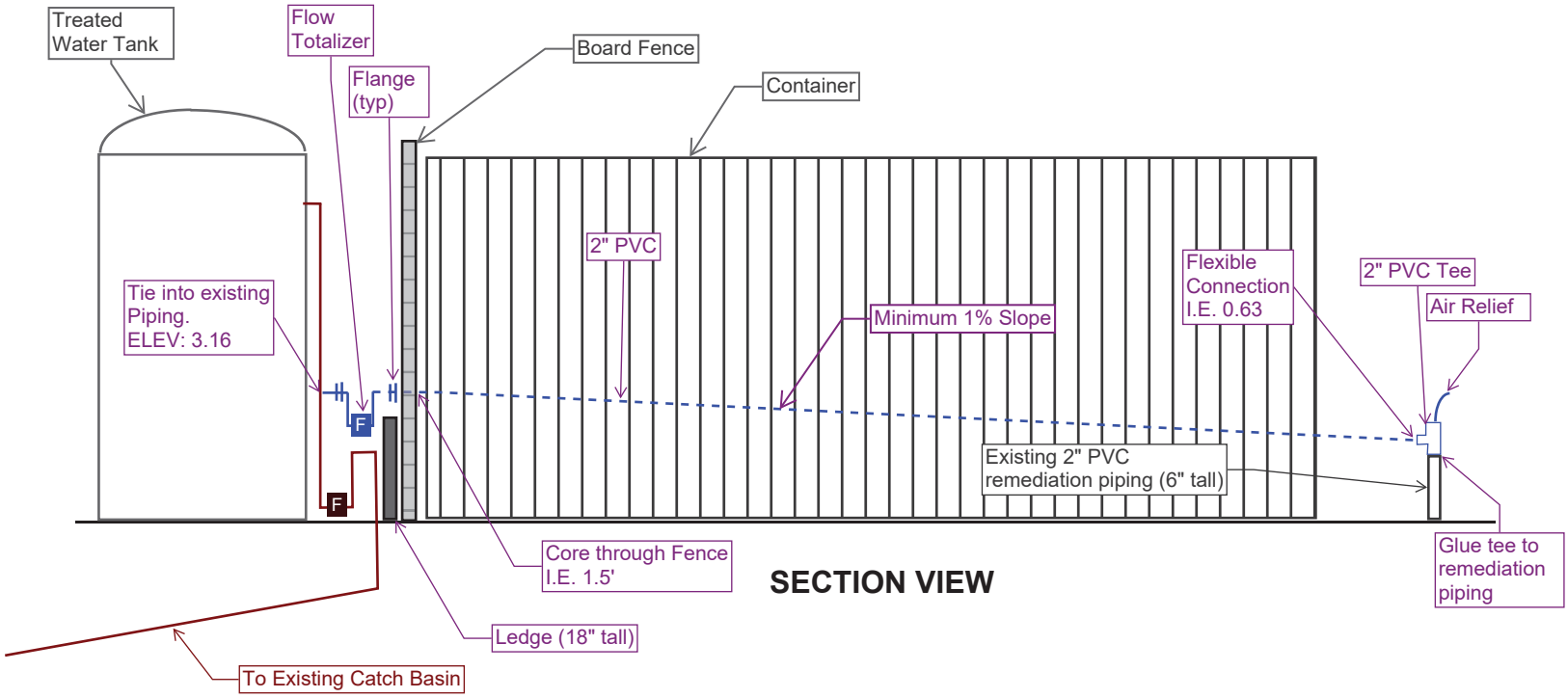
Install 2" SCH 80 PVC tee on 2" PVC existing remediation piping. Glue tee to piping. Provide air relief at top of tee.

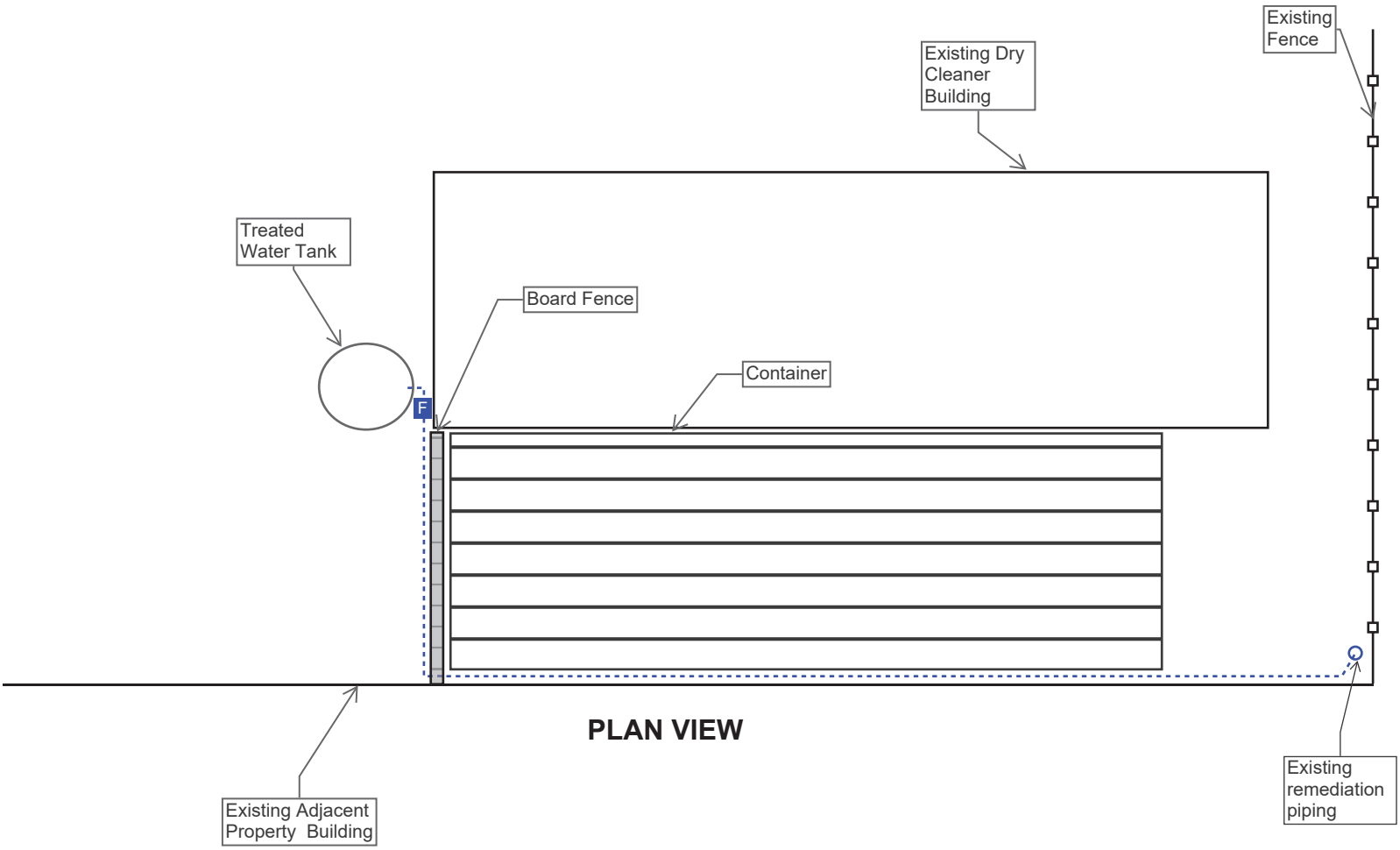
Connect 2" SCH 80 PVC pipe to existing 2" PVC discharge piping at treated water tank T-400. Install new FT-500 flow totalizer (refer to WCD 03). Route piping in front of board fence to building at southern property boundary. Core through board fence and run piping in the space between the container and the southern property boundary wall. Connect piping to tee using flexible connection to allow for slope. Flexible connection shall be 2-inch NPS x 2-inch barb with two stainless steel hose clamps on each hose connection. Alternatively, contractor may use cam-lock fittings.

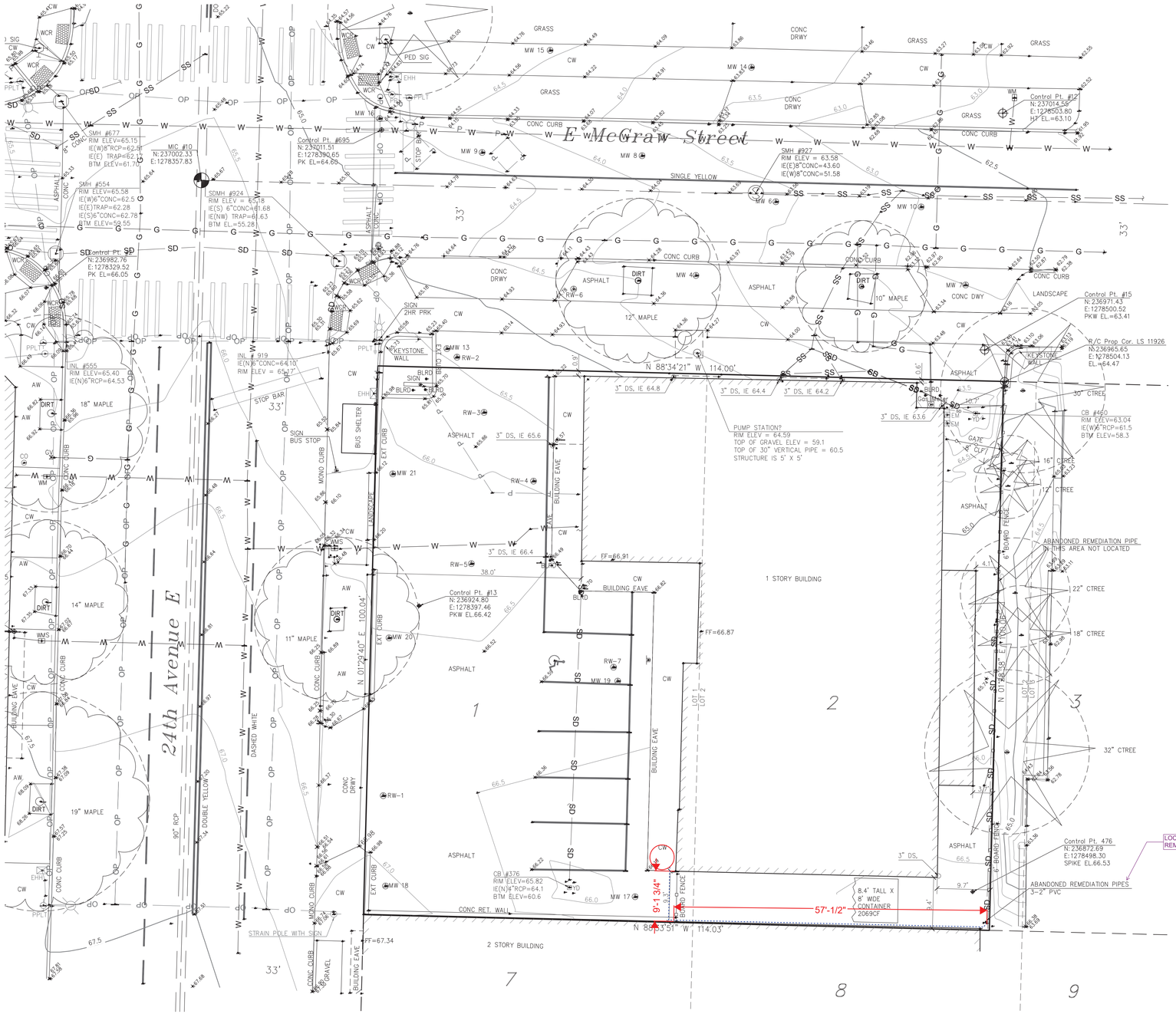
Contractor shall comply with the following requirements:

1. Install piping in accordance with the specifications.
2. Pipe core in fence shall be a minimum of 18" above the ground.
3. Pipe connection into T-400 piping shall be a minimum of 38" above the ground.
4. All pipe shall have a minimum slope of 1% and maximum slope of 2%.
5. Pipe shall be supported by freestanding pipe supports with cradle for piping, such as cinder blocks, every 5 feet, in accordance with Specification Section 33 14 16.13.
6. Pipe shall be insulated in accordance with Specification Section 40 41 00. No heat tracing is required.
7. Provide air relief (via tubing or mechanical air relief valve) on tee connected to existing remediation piping.


90in RCP
8in CON
8in CON
E. McGraw St
Other catch basin on property
Woody debris (sticks/leaves) blocking pipes from catch basins
Sewer
Treatment system
90in RCP
Design/current discharge point to catch basin
Approximate location of former remediation system piping and connection to drain to the sanitary sewer in E. McGraw St. Dye tested 12/5/24 and observed flow in the sanitary sewer.
Approximate location of new piping to connect to former remediation piping.


Treated Water Tank
Flow Totalizer
Flange (typ)
Board Fence
Container
2" PVC
Tie into existing Piping. ELEV: 3.16
Minimum 1% Slope
Flexible Connection I.E. 0.63
2" PVC Tee
Air Relief
F
F
Existing 2" PVC remediation piping (6" tall)
Core through Fence I.E. 1.5'
Glue tee to remediation piping
SECTION VIEW
Ledge (18" tall)
To Existing Catch Basin


Existing Fence
Existing Dry Cleaner Building
Treated Water Tank
Board Fence
Container
F
PLAN VIEW
Existing Adjacent Property Building
Existing remediation piping



LEGAL DESCRIPTION

LOTS 1 AND 2, BLOCK 29, LESS EASTERLY 6 FEET THEREOF, PIKE'S 2ND ADDITION TO UNION CITY, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 1 OF PLATS, PAGE 65A, IN KING COUNTY, WASHINGTON.

TAX PARCEL NO. 678820-1335

NOTES

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE, NORTH ZONE, NAD83/91.
2. VERTICAL DATUM: NAVD 88.
3. DATE OF SURVEY: JUNE 8, 2017
4. EQUIPMENT USED: LEICA TS 12.
5. UTILITIES SHOWN HEREON WERE FROM PHYSICAL STRUCTURES ONLY.
6. 0.5' CONTOUR INTERVAL.
7. TOTAL AREA OF PROPERTY: 11,407 SQ. FT.

LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- CENTERLINE
- SD — STORM DRAIN
- OP — OVERHEAD POWER
- P — UNDERGROUND POWER
- G — GAS
- SS — SANITARY SEWER
- WOOD FENCE
- DECIDUOUS TREE W/DRIPLINE
- MONUMENT IN CASE
- WATER METER
- ELECTRIC METER
- GAS METER
- STREET SIGN
- POWER POLE
- TRAFFIC SIGNAL W/LUMINAIRE
- EHH — JUNCTION BOX
- SEWER MANHOLE
- STORM DRAIN MANHOLE
- CB — CATCH BASIN
- DS — DOWN SPOUT
- MW — MONITORING WELL
- BLRD — BOLLARD
- CW — CONCRETE WALK

ABBREVIATIONS

AW	ASPHALT WALK
BLRD	BOLLARD
CB	CATCH BASIN
CTREE	CONIFEROUS TREE
CW	CONCRETE WALK
DRWY	DRIVEWAY
DS	DOWNSPOUT
ECAB	ELECTRICAL CABINET
EHH	ELECTRIC HANDHOLE
EM	ELECTRIC METER
FF	FINISHED FLOOR
HYD	FIRE HYDRANT
IE	INVERT ELEVATION
MIC	MONUMENT IN CASE
MW	MONITORING WELL
PED SIG	PEDESTRIAN SIGNAL
PPLT	POWER POLE WITH LUMINAIRE
RW	RECLAMATION WELL
WM	WATER METER
WV	WATER VALVE
YD	YARD DRAIN

CONTROL POINT INFORMATION

POINT NO.	NORTHING	EASTING	ELEVATION
2	236982.76	1278329.52	66.05
12	237014.55	1278503.80	63.10
13	236924.80	1278397.46	66.42
15	236971.43	1278500.52	63.41
16	237010.81	1278536.57	61.93
476	236872.69	1278498.30	66.53
695	237011.51	1278390.65	64.60

N
W E
S

GRAPHIC SCALE

10 0 5 10 20

(IN FEET)

SURVEYED: KM/SW
DRAWN: JB
CHECKED: TI

REV	REVISION	DATE	BY	APP'D

True NORTH LAND SURVEYING, INC.
815 S. Weller Street
Suite 200
Seattle, WA 98104-3023
206.332.0800

EILEEN M. FORRESTER
STATE OF WASHINGTON
31453
REGISTERED
PROFESSIONAL LAND SURVEYOR

Date: 6-20-2017
Scale: 1" = 10'
Book: J16186.dwg

2401 E McGraw Street, Seattle, WA
SITE PLAN
For KENNEDY/JENKS

PORTION OF THE SE 1/4 OF THE NW 1/4 OF SECTION 21, T 25 N, R 4 E, W.M.

Job Number: J16-186.00
Sheet: 1 of 1

Request for Information/
Design Clarification/Variation Request

RFI/DCVR No.: 01

Date: 04/09/2024
Contract Name: Circle K Site 1461 Environmental Remediation System
Contract Number: C2300123

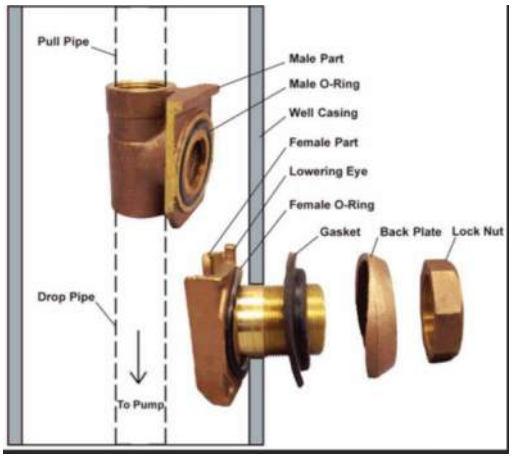
PROJECT No. 23-008
Contractor: Glacier Environmental Services Inc

Contractor Representative: Lauren Golembiewski
Response Requested By: ASAP

Nature of Work: Well Head assemblies
Reference Drawings: C-04
Reference Specification: 33 11 53.13

Description:
Detail 2 on sheet C-04 shows a pitless adapter going vertical to top of 4” pipe. The pitless adapter is basically an elbow 90 and does not have a pass through going vertically. The vertical pipe coming up is just to pull out the injection line. Then it shows a 4” compression fitting with a pass through for the 1” pipe with a 1” j-plug in it. You wouldn’t be able to sample through the 1” because of the blockage at the pitless adapter. Please clarify the fittings you are requesting and what access you need.

Detail 3 for slant well it does not show a pitless adapter and looks like it may show a wye. Plan does not show a 1” wye just a 4” wye. We would suggest using a pitless adapter on this application as well, that way all injection pipes can be removed as needed.



Request for Information/
Design Clarification/Variation Request

Engineer's Response:
19 April 2024

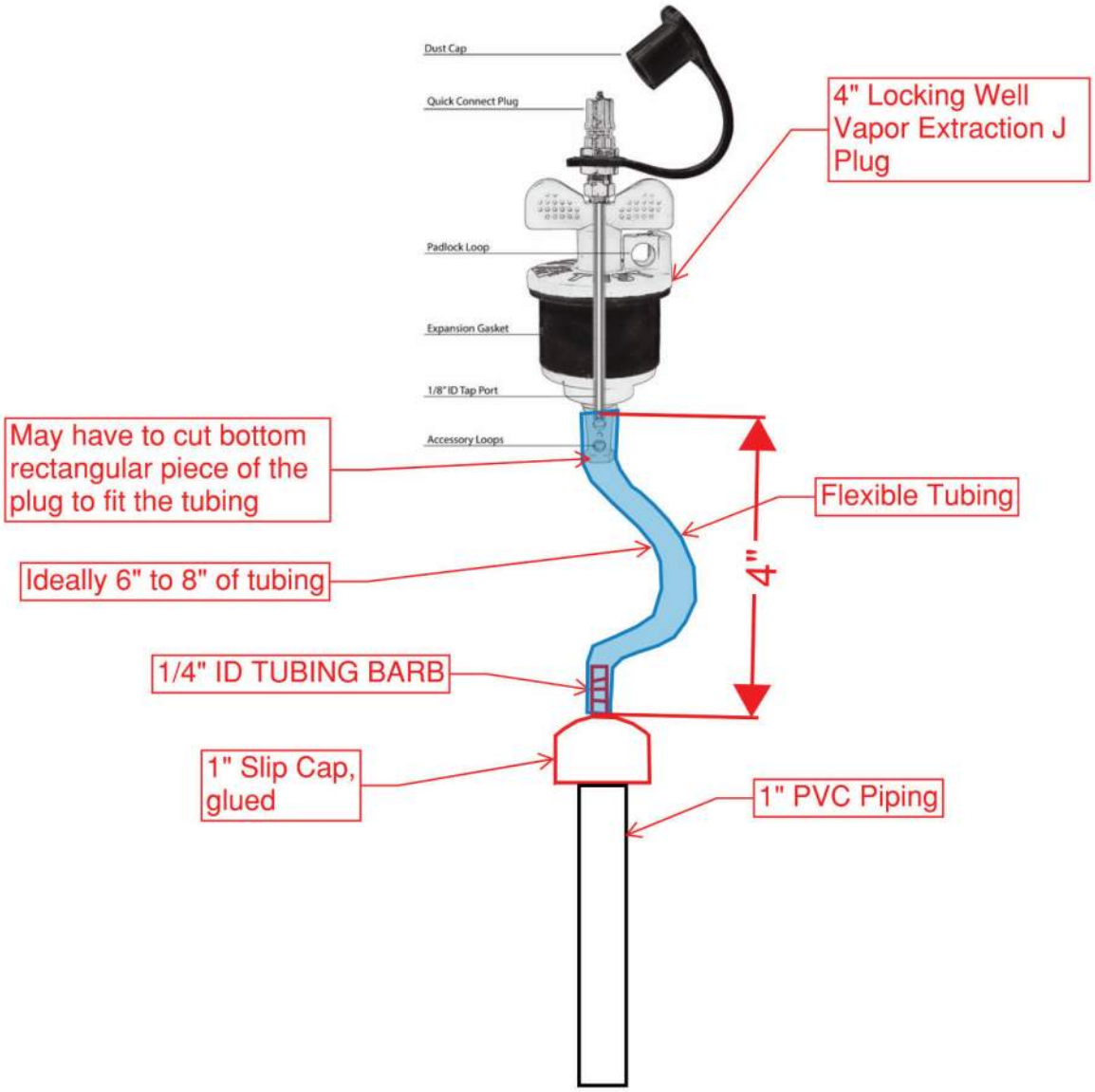
Intent is to be able to sample vapor and pressure directly from the 1-inch drop pipe without removing the 4-inch cap. Additionally, vertical drop pipes should be able to be removed to adjust drop pipe length if needed.

VERTICAL WELLS

1. Drill 3/8" hole centered through pitless adapter.
2. Use 1" slip cap, glued to pipe with tube barb fitting for flexible tube from cap up to bottom of 4-inch locking well vapor extraction J plug with quick disconnect. Picture below shows j-plug with quick disconnect fitting. J plug can be found here (or equal also acceptable): https://ectmfg.com/product/vapor-extraction-locking-well-plug

3. Connect tubing between barb on 1" cap and bottom of 4" J plug. Distance between bottom of 4" J plug and top of 1" cap should be approximately 4". Use 6" to 8" of tubing. Use appropriate size based on barb and accessory loops on 4" J plug. See sketch below for reference.
4. Provide vapor extraction quick connect coupling (https://ectmfg.com/product/vapor-extraction-quick-connect-coupling) to test construction.

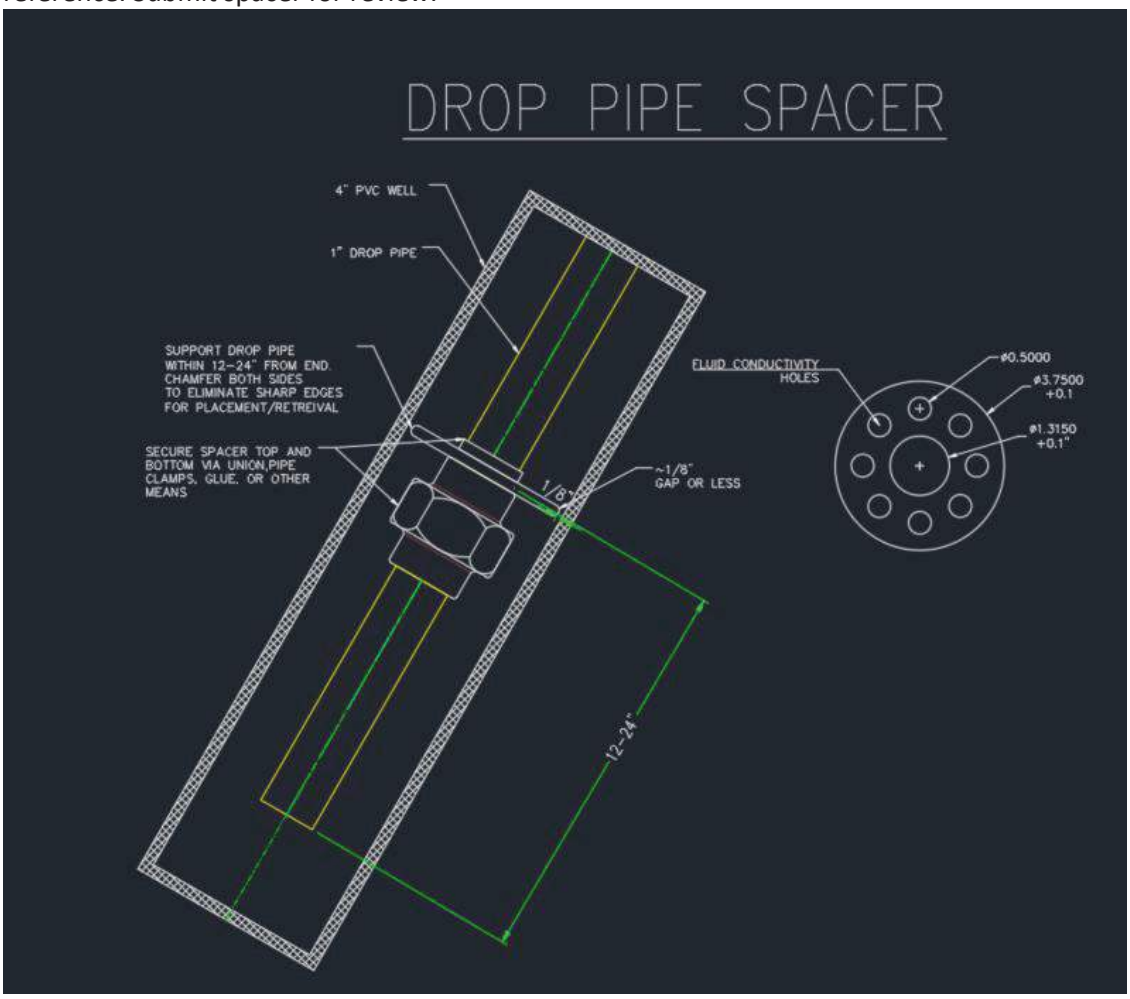
Request for Information/
Design Clarification/Variation Request



SLANTED WELLS

1. Utilize same cap and J plug detail above.
2. Pitless adapter may be used in-lieu of 1” wye inside 4” wye, assuming a 1” 45-degree elbow is installed outside well to avoid stressing/kinking HDPE tubing.
3. Provide contractor designed spacer for slanted drop pipe within 4” casing to support drop pipe near bottom. Spacer shall allow for fluid flow between annular space. See sketch below for

reference. Submit spacer for review.



Ryan Hultgren, P.E.

Distribution

	Submittal	Encl.	RESPONSE
Project Manager	Ryan Hultgren, KJ	x	
Resident Engineer	Cayla Whiteside, KJ	x	
Contractor	Lauren Golembiewski, Glacier	x	
Department of Ecology	Dale Myers	x	
File			

Request for Information/
Design Clarification/Variation Request

RFI/DCVR No.:	02
Date:	05/20/2024
Contract Name:	Circle K Site 1461 Environmental Remediation System
Contract Number:	C2300123
PROJECT No.	23-008
Contractor:	Glacier Environmental Services Inc
Contractor Representative:	Lauren Golembiewski
Response Requested By:	ASAP
Nature of Work:	Fence
Reference Drawings:	C-03
Reference Specification:	32 31 13

Description:
Please confirm that there is no barbed wire on the fence. The written spec mentions it on the gate but it is not shown on the drawing detail.

Also is the double swing gate width 10’ or 12’?

Engineer’s Response 5/21/24:
No barbed wire required on the fence.
Double swing gate width shall be 10’.

Request for Information/
Design Clarification/Variation Request

RFI/DCVR No.:	04
Date:	05/20/2024
Contract Name:	Circle K Site 1461 Environmental Remediation System
Contract Number:	C2300123
PROJECT No.	23-008
Contractor:	Glacier Environmental Services Inc
Contractor Representative:	Lauren Golembiewski
Response Requested By:	ASAP
Nature of Work:	Pipe slope and well boxes
Reference Drawings:	C-04
Reference Specification:	33 14 16.13

Description:

1. The existing vertical well boxes are 8”, the new vertical wells have 12” well boxes. Do you want to replace the existing ones with new 12” well boxes? This would be a change.

2. We do not see anywhere in the plans or specifications that specifies a minimum slope for the underground piping, please confirm that a minimum slope is not required.

Engineer’s Response:

1. Replace seven (7) existing 8-inch diameter well vaults with seven (7) new 12-inch diameter well vaults. During the 4 June 2024 Contractor Check-in Meeting, the cost for replacing these seven (7) well vaults was quoted at $880 by Glacier. Glacier stated that the replacement of the well vaults will reduce labor required for working around the existing ones.

2. Minimum slope is not required. If a slope is needed, pipes sloped back towards the wells would be preferred for draining moisture and easing injection.

12 December 2024

Memorandum

To: Dale Myers, Washington State Department of Ecology

From: Ryan Hultgren, Kennedy Jenks

Subject: Circle K 1461 – Soil Vapor Extraction (SVE) Operation
K/J 2196008*00

This memorandum has been prepared by Kennedy/Jenks Consultants, Inc. (Kennedy Jenks) for and on behalf of the Washington State Department of Ecology to present procedures for temporary operation of the Circle K 1461 (site) treatment system in soil vapor extraction (SVE) mode. These procedures have been modified from Section 4.2.1 of the Final Draft Operations and Maintenance Manual Environmental Remediation System Circle K 1461, Seattle, Washington (Kennedy Jenks 2024) (O&M Manual). The site is located at 2350 24th Avenue East in Seattle, King County, Washington. This site is listed on the Washington State Department of Ecology (Ecology) Site Information System and Hazardous Sites List as Circle K 1461, under cleanup site ID 5086 and facility/site ID 2322.

Phase 1 (Modified) – Temporary Soil Vapor Extraction (SVE)

Soil from the surface to the depth of the exposed saturated zone will be remedied by the extraction of vapor from the unsaturated soils. The vapor will be treated with a catalytic oxidizer (CatOx) until extraction vapor concentrations are reduced to 500 parts per million (ppm); when this concentration is reached, the catalytic oxidizer will be removed, and GAC will be employed for air treatment. Treated air will be discharged through an exhaust pipe. The use of the catalytic oxidizer is estimated to last from 1 to 3 months. GAC will be employed until groundwater concentrations stabilize and approach asymptotic levels, approximately 6 to 12 months, after which Phase 2 will commence (provided treated water discharge piping is completed).

Preliminary startup operations (in multiphase extraction (MPE) mode) indicated that vapor VOC concentrations were below 500 ppm (using a photoionization detector (PID) calibrated with isobutylene) when operating the system with all wells open 100%, including the subslab depressurization wells (SSDs). Closing SSDs completely resulted in inlet concentrations above 950 ppm, which caused the vacuum control valve (VCV) of the CatOx to close and VCV air dilution to open, thus dropping the vacuum to the extraction wells. A relatively steady state operation is preferred; therefore, an inlet vapor concentration of 700 to 800 ppm should be targeted.

© Kennedy/Jenks Consultants, Inc.

The following provides example system startup and adjustments:

1. Remove stingers (drop pipes) from the extraction / injection remediation wells (RW-2 through RW-10, MW-4, SW-1, SW-2, and SW-3). Close valve to well RW-10 at the extraction manifold, as it is screened below the water table (25 to 30 ft bgs).

2. Set Extraction Well Banks 1 – 4 to green on HMI screen.

3. Set valves to all wells (except RW-10) to 100% open on Manifold B.

4. Confirm manual air dilution valve at moisture separator is closed.

5. Start the blower. The VCV will close and VCV air dilution will open 100%. The VCV will begin to slowly open as TO-400 heats up to setpoint temperatures and VCV air dilution will begin to close. This process takes approximately 15 minutes.

6. Adjust SSD gate valves closed until vacuum is approximately 20-inches water column (WC) or less at Manifold A. The vacuum on each individual well at Manifold B is expected to be between 5 and 10-inches mercury (Hg).

7. Allow system to operate until TO-400 temperatures stabilize. Temperatures around 700-750°F indicate diluted soil vapor and temperatures of 950-1,000°F indicate excessive concentrations that may continue to climb and cause VCV to close and loss of vacuum at wells. Measure VOC concentrations at the coalescing filter to achieve target concentration.

8. Adjust extraction rates from SSD wells by opening the valves to reduce inlet concentrations or closing the valves to increase concentrations. Certain SSD and extraction/injection remediation wells have less measured PID concentrations and may be closed completely to increase vacuum and flow rates from other wells and, potentially, PID concentrations.

9. As shown in the attached Table 1, the baseline PID measurements from the wells in Well Bank 2 were the lowest, ranging from 5.0 ppm (SW-2) to 22.7 ppm (RW-5). If the inlet PID at the CatOx is less than the 700-800 ppm optimum range, extraction from Well Bank 2 can be discontinued by closing the valve to this Well Bank.

10. Balance the extraction rates for each well screen in each Well Bank by closing the dilution valve (if open) and adjusting the individual valves at the piping manifolds.

11. Record measurements (as applicable) on the Phase 1 MPE / SVE field form.

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Sampling requirements for Public Works Construction Contractor
To meet PSCAA substantial requirements, vapor concentrations of total petroleum hydrocarbons (TPH) as hexane or its equivalent can be measured using a PID (and the applicable response factors), including one of the following instruments (or similar):

- MiniRAE 2000 or 3000, Photoionization detector
- RAE Model 8000, Photoionization detector

PID measurements shall be taken at the inlet to and exhaust from the CatOx unit. Other parameters to record are shown on the attached field form.

[The Public Works O&M Contractor will also measure TPH/BTEX concentrations at each of the vapor pins and the SSD wells with low-detection PIDs (ppbRAE 3000 or equal) in accordance with the O&M Manual].

Table: Emission Limits to meet PSCAA Substantial Requirements

Cat Ox or GAC (at >99% control efficiency)	
Inlet flow (scfm)	Maximum Inlet PID (ppm)
50	8,000
100	4,000
150	2,500
200	2,000
250	1,600
300	1,300

Maximum inlet PID readings for controlled emissions of benzene, toluene, ethylbenzene, and total xylenes to be below WAC 173-460-150 De Minimis and Small Quantity Emission Rate (SQER) limits. Based on control efficiencies of 99% or higher for a catalytic oxidizer or two granular activated carbon (GAC) vessels in series.

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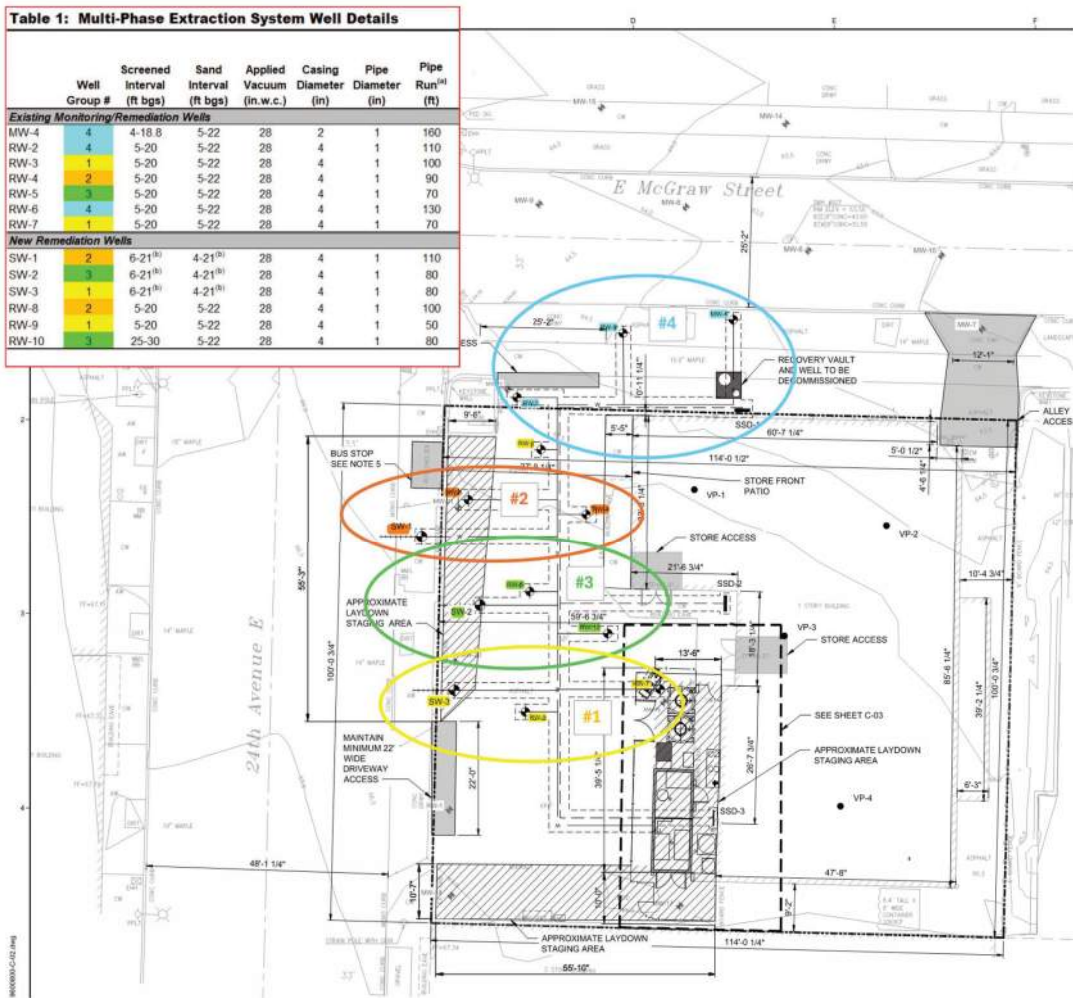
Memorandum

Dale Myers
12 December 2024
2196008*00
Page 4

Figure: Well Banks and Well Details Table and Well Location Plan View

Table 1: Multi-Phase Extraction System Well Details

	Well Group #	Screened Interval (ft bgs)	Sand Interval (ft bgs)	Applied Vacuum (in.w.c.)	Casing Diameter (in)	Pipe Diameter (in)	Pipe Run[a] (ft)
Existing Monitoring/Remediation Wells							
MW-4	4	4-18.8	5-22	28	2	1	160
RW-2	4	5-20	5-22	28	4	1	110
RW-3	1	5-20	5-22	28	4	1	100
RW-4	2	5-20	5-22	28	4	1	90
RW-5	3	5-20	5-22	28	4	1	70
RW-6	4	5-20	5-22	28	4	1	130
RW-7	1	5-20	5-22	28	4	1	70
New Remediation Wells							
SW-1	2	6-21[b]	4-21[b]	28	4	1	110
SW-2	3	6-21[b]	4-21[b]	28	4	1	80
SW-3	1	6-21[b]	4-21[b]	28	4	1	80
RW-8	2	5-20	5-22	28	4	1	100
RW-9	1	5-20	5-22	28	4	1	50
RW-10	3	25-30	5-22	28	4	1	80



References:

Kennedy/Jenks Consultants, Inc. 2024. Final Draft Operations and Maintenance Manual Environmental Remediation System Circle K 1461 Seattle, Washington. Prepared by Kennedy/Jenks Consultants, Inc. for Washington State Department of Ecology. 22 November 2024.

Enclosure(s) (2)

Table 1	Multi-phase Extraction Well Details
Field Form	System Monitoring Form Circle K – Phase 1: Multi-Phase Extraction (MPE) / Soil Vapor Extraction (SVE)

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Table 1 - Multi-Phase Extraction Well Details
Circle K 1461 Treatment System

Kennedy Jenks

Well	Bank	Screened Interval (ft bgs)	Sand Interval (ft bgs)	Applied Vacuum (in.w.c.)	Casing Diameter (in)	Pipe Run[a] (ft)	Baseline Measurements 10/31/2024 Vacuum / Pressure (in WC)	VOCs (PPM)	O2 %	CO2 %	Notes
MW-4	1	4-18.8	5-22	28.0	2.0	160.0	-3.0	584.0	7.6	14.8	
RW-6	1	5-20	5-22	28.0	4.0	130.0	-0.003	743.0	7.1	16.7	
RW-2	1	5-20	5-22	28.0	4.0	110.0	-0.003	758.0	7.4	15.1	
RW-10	2	25-30	5-22	28.0	4.0	80.0	-0.89	18.8	20.7	0.3	Well screened below water table.
RW-5	2	5-20	5-22	28.0	4.0	70.0	-0.003	22.7	20.7	0.3	
SW-2	2	6-21[b]	4-21[b]	28.0	4.0	80.0	-0.003	5.0	20.1	1.0	
SW-1	3	6-21[b]	4-21[b]	28.0	4.0	110.0	-0.023	65.0	16.0	4.0	
RW-8	3	5-20	5-22	28.0	4.0	100.0	+0.006	227.0	16.9	2.8	
RW-4	3	5-20	5-22	28.0	4.0	90.0	+0.013	247.5	15.8	2.5	
RW-7	4	5-20	5-22	28.0	4.0	70.0	-0.003	890.0	9.7	5.0	
SW-3	4	6-21[b]	4-21[b]	28.0	4.0	80.0	-0.037	87.7	20.7	0.2	
RW-3	4	5-20	5-22	28.0	4.0	100.0	+0.006	42.0	20.7	0.2	
RW-9	4	5-20	5-22	28.0	4.0	50.0	-0.033	395.0	19.3	1.1	
VP-1	NA	NA	NA	NA	NA	NA	+0.011	0.0	16.0	5.4	
VP-2	NA	NA	NA	NA	NA	NA	+0.006	0.0	19.1	1.2	
VP-3	NA	NA	NA	NA	NA	NA	+0.005	0.0	20.8	0.0	
VP-4	NA	NA	NA	NA	NA	NA	0.0	5.0	19.9	0.5	

Note and Abbreviations:

(a) Pipe run approximated from Construction Drawings. Pipe run lengths will be updated after system installation is complete.

(b) Depth expressed as measured depth within well casing. Well drilled at 30 degree angle.

ft bgs = feet below ground surface.

in.w.c. = vacuum or pressure in inches water column.

in = inches

- Pressures measured at wellheads.
- VOCs, O2, and CO2 measured at manifold. System operated for approximately 30 minutes with all valves open 100% except SSDs. Individual wells isolated from vacuum by closing valves while system was still running to allow for sampling.

SYSTEM MONITORING FORM
CIRCLE K - PHASE 1: MULTI-PHASE EXTRACTION (MPE) / SOIL VAPOR EXTRACTION (SVE)

Name & Company:

Date/time of data collection:

Weather:

System On on Arrival? (circle): yes no

System Hours:

Phase 1: MPE / SVE, all wells in extraction mode.

Barometric pressure (psi):	Barometric Pressure source:
Ambient Temperature (°F):	Ambient Temperature source:
Noise (dBA): If above 60 dBA, notify KJ personnel	Noise measurement source:

Moisture Separator Drained? (circle) Yes No

Approximate volume (gal):

Catalytic Oxidizer Installed? (circle) Yes No

Effluent Vapor VOC Conc (ppm):

PID Calibration Performed? (circle) Yes No

PID Calibration	Zero Gas	Span Gas
Calibration Value (ppm):		
Instrument Reading (ppm):		

Active Alarm Conditions (circle, note affected equipment):

1. No Alarm
2. High Water Level Tank(s):
3. Low Water Level Tank(s):
4. High Pressure Equipment:
5. Low Pressure Equipment:
6. System Shutdown Equipment:
7. Temperature Equipment:
8. Other:

Wells - Injection/Extraction (At Manifold)

Well ID	Pres/Vac (in Hg)	Flow (cfm)	PID (ppm)	Valve (O/C, fraction)
RW-2				
RW-3				
RW-4				
RW-5				
RW-6				
RW-7				
RW-8				
RW-9				
RW-10				
SW-1				
SW-2				
SW-3				
MW-4				
Well ID	Pres/Vac (in Hg)	Flow (cfm)	PID (ppm)	Valve (O/C, fraction)
SSD-1				
SSD-2				
SSD-3				
VP-1				
VP-2				
VP-3				
VP-4				

Treatment System

Location	ID	Temp (°F)	Pres/Vac (psi)	Flow (cfm/gpm)	PID (ppm)
Before MS	VI 210				
After MS	PI 310				
Before Blower	VI 300				
After Blower	PI/FI 302				
At Heat Exchanger	TT-302				
Before Vapor GAC	PI 411				
Vapor GAC Midpoint**	PI 412				
After Vapor GAC**	PI 410				
After Pump P-400	PI 400				
Before Bag Filter	PI-405				
After Bag Filter**	FI 400/PI 401				
Midpoint Liquid GAC 1**	PI 403				
After Liquid GAC 1	FE-404				
Midpoint Liquid GAC 2**	PI 406				
After Liquid GAC 2	FE-407				
After Liquid GAC**	PI-404				
Catalytic Oxidizer Temperatures (°F)		T1 Entrance:	T2 Exit:	T3 Interior:	
Catalytic Oxidizer PID (ppm)		Pre:	Post:		
Catalytic Oxidizer Flow Rate (scfm)		Pre:	Post:		
Water Discharge Flow Totalizer		Date	Time	Total Flow (gal)	
	FT 500				
	FT 500				

** Location for collection of air or water sample for laboratory analysis.

Comments/Maintenance Activities:

Permit Discharge Limits (see permits):

Air: 200 scfm Water: 3 gpm / 4500 gpd

If exceeded, notify Kennedy Jenks personnel.

Notes: psi = pounds/square inch; cfm = cubic feet per minute; ppm = parts per million; gal = gallons; MS = vapor liquid separator; GAC = granular activated carbon; O/C= open/closed

Plot Date: 4/16/2024 1:54 PM
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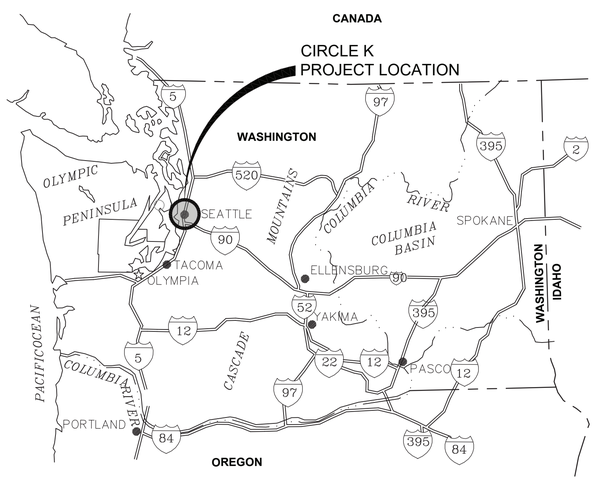
LOCATION MAP
SCALE: NTS



VICINITY MAP
SCALE: NTS

DEPARTMENT OF ECOLOGY
State of Washington

SITE: CIRCLE K 1461, CSID #5089

PROJECT: ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION

LOCATION: 2350 24TH AVE E,
SEATTLE, KING COUNTY, WASHINGTON 98112

BUILDING	CODE SUMMARY - 2018 SBC (SEATTLE BUILDING CODE)	
FILTRATION SEABOX	2018 SEBC (SEATTLE EXISTING BUILDING CODE)	
	HISTORIC PERMIT NUMBER	674948
	PROJECT DESCRIPTION	A TEMPORARY TREATMENT SYSTEM ENCLOSURE, ALONG WITH ACCESSORY EQUIPMENT FOR REMEDIATION OF ON-SITE GROUNDWATER CONTAMINATION, WILL BE PLACED IN THE PARKING LOT OF AN EXISTING RETAIL BUSINESS. TEMPORARY FENCING TO BE PLACED AROUND THE ENCLOSURE AND ACCESSORY EQUIPMENT.
	CONSTRUCTION TYPE	TYPE V-B PER SBC 602.5
		MODIFIED METAL SHIPPING CONTAINER TO HOUSE
		REMEDIATION PROCESSING EQUIPMENT AND SUPPLIES
	BUILDING ELEMENT FIRE RESISTANCE	0-HOUR RATING AS PER SBC TABLE 601 FOR TYPE V-B CONSTRUCTION.
	EXTERIOR WALL FIRE RESISTANCE	0-HOUR RATING AS PER CBC TABLE 602 FOR TYPE V-B CONSTRUCTION.
	(BASED ON SEPARATION DISTANCE)	
	ALLOWABLE AREA	13,000 SF PER SBC TABLE 506.2
	ACTUAL AREA	160 SF
	ALLOWABLE HEIGHT	40'-0" FEET / 1-STORY PER SBC TABLES 504.3 AND 504.4
	ACTUAL HEIGHT / STORY	9'-0"+/- FEET / 1-STORY
	OCCUPANCY CLASSIFICATIONS	F-2 LOW HAZARD INDUSTRIAL PER SBC 306.3
	OCCUPANCY SEPARATIONS	NOT APPLICABLE
	OCCUPANT LOAD	2 PER SBC TABLE 1004.5
	HVAC	CONDITIONED FOR FREEZE PROTECTION
	VENTILATION	PROVIDED PER SBC SECTION 1202.1
	ALLOWABLE OPENING AREA	10% PER SBC TABLE 705.8
	ENERGY CODE	
	INSULATION - ROOF	R-10 RIGID INSULATION
	INSULATION - ABOVE GRADE WALLS	R-13 RIGID INSULATION
	ACCESSIBILITY	NOT REQUIRED PER SBC SECTION 1103.2.9
	CHEMICAL STORAGE	NON-HAZARDOUS; SEE ATTACHED CHEMICAL LIST
	SPRINKLER SYSTEM	NOT REQUIRED PER SBC SECTION 903.2.4
	SMOKE DETECTION	NOT REQUIRED PER SBC SECTION 909
	SMOKE AND HEAT VENTS	NOT REQUIRED PER SBC SECTION 910
	FIRE ALARM	NOT REQUIRED PER SBC SECTION 907.2.4
	FIRE PROTECTION REQUIREMENTS	1 HYDRANT WITHIN 250' OF STRUCTURE
	FIRE FLOW	1,500 GPM FOR 2 HOURS PER SFC TABLE B105.1(2)
APPLICABLE CODES	2018 SEATTLE BUILDING CODE (SBC)	
	2018 SEATTLE EXISTING BUILDING CODE (SEBC)	
	2020 NATIONAL ELECTRICAL CODE (NEC)	
	WITH 2020 SEATTLE ELECTRICAL CODE REPLACEMENT PAGES	
	2018 SEATTLE ENERGY CODE	
	2018 SEATTLE FIRE CODE	
	2024 SEATTLE MUNICIPAL CODE, TITLE 23 - LAND USE CODE	
	2018 SEATTLE MECHANICAL CODE	
	2018 SEATTLE PLUMBING CODE	

4455 REGISTERED ARCHITECT MARK W. RESTEN STATE OF WASHINGTON

DRAWING INDEX

SHEET NO.	DWG. NO.	DRAWING TITLE
GENERAL		
1	G-01	TITLE SHEET, VICINITY AND LOCATION MAPS, AND DRAWING INDEX
2	G-02	NOTES AND ABBREVIATIONS
3	G-03	LEGEND AND SYMBOLS
4	G-04	TREATMENT SYSTEM SCHEMATIC
5	G-05	PROCESS FLOW DIAGRAM
CIVIL		
6	C-01	OVERALL SITE PLAN AND SYSTEM LAYOUT
7	C-02	SITE PLAN STAGING AREAS
8	C-03	REMEDIATION SYSTEM LAYOUT
9	C-04	CIVIL SECTIONS AND DETAILS - I
10	C-05	CIVIL SECTIONS AND DETAILS - II
11	C-06	SITE PLAN PARKING AREAS
12	C-07	CONTAINER ELEVATION VIEWS
ELECTRICAL		
13	E-01	GENERAL ELECTRICAL ABBREVIATIONS AND NOTES
14	E-02	GENERAL ELECTRICAL LEGEND - I
15	E-03	GENERAL ELECTRICAL LEGEND - II
16	E-04	ELECTRICAL PANEL SCHEDULE AND THREE LINE DIAGRAM
17	E-05	ELECTRICAL SITE PLAN
INSTRUMENTATION		
18	I-01	P&ID LEGEND
19	I-02	P&ID - I
20	I-03	P&ID - II
21	I-04	P&ID - III
STORMWATER, DRAINAGE, AND WASTEWATER CONTROL		
22	SDW-01	CONSTRUCTION STORMWATER CONTROL AND POST CONSTRUCTION SOIL MANAGEMENT (CSC/SOIL) PLAN
23	SDW-02	DRAINAGE AND WASTEWATER CONTROL (DWC) PLAN
STRUCTURAL		
24	S-1.10	GENERAL STRUCTURAL NOTES, FRAMING PLANS, AND DETAILS

AS BUILT DRAWINGS PREPARED BY
GLACIER ENVIRONMENTAL SERVICES INC.

LEGEND

As-Built Conditions/Changes to New Work
Found Pipes (Old)

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

ISSUED FOR PERMIT

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NO	REVISION	DATE	BY

BENJAMIN EDWARD GUNTES, STATE OF WASHINGTON, 88495, REGISTERED PROFESSIONAL ENGINEER, 4/16/2024

DESIGNED CMW
DRAWN RLH
CHECKED BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

TITLE SHEET, VICINITY AND LOCATION MAPS, AND DRAWING INDEX

SCALE AS SHOWN
JOB NO 2196008.00
DATE APRIL 2024
SHEET 1 OF 24
G-01

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ABBREVIATIONS

'	FOOT, FEET
"	INCH, INCHES
&	AND
AC	ASPHALTIC CONCRETE, ALTERNATING CURRENT
ACFM	ACTUAL CUBIC FEET PER MINUTE
AW	ASPHALT WALK
BGS	BELOW GROUND SURFACE
BLRD	BOLLARD
CB	CATCH BASIN, CIRCUIT BREAKER
CFM	CUBIC FEET PER MINUTE
CLR	CLEARANCE
CONC	CONCRETE
CRZ	CRITICAL ROOT ZONE
CSBC	CRUSHED SURFACING BASE COURSE
CW	CONCRETE WALK
DO	DISSOLVED OXYGEN
DRWY	DRIVEWAY
DS	DOWN SPOUT
ECAB	ELECTRICAL CABINET
EHH	ELECTRIC HANDHOLE
EM	ELECTRIC METER
EXIST	EXISTING
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FLT	FILTER
FT	FEET
G	GAS
GAC	GRANULAR ACTIVATED CARBON
GAL	GALLON(-S)
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
HG	MERCURY
HP	HIGH-PERFORMANCE POLYPROPYLENE
HYD	HYDRANT
IBC	INTERNATIONAL BUILDING CODE
IE	INVERT ELEVATION
LB(-S)	POUND(-S)
MAX	MAXIMUM
MIC	MONUMENT IN CASE
MIL(-S)	ONE-THOUSANDTH OF AN INCH
MIN	MINIMUM
MPT	MALE PIPE THREAD
MW	MONITORING WELL
(N)	NEW
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NTS	NOT TO SCALE
OP	OVERHEAD POWER
O2	OXYGEN
OX	OXIDIZER
P	UNDERGROUND POWER
PED SIG	PEDESTRIAN SIGNAL
PLC	PROGRAMMABLE LOGIC CONTROLLER
PSE	PUGET SOUND ENERGY
PPLT	POWER POLE WITH LUMINAIRE
PVC	POLYVINYL CHLORIDE
RW	REMEDIATION WELL
SCADA	SUPERVISORY CONTROL AND DATE ACQUISITION
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SDOT	SEATTLE DEPARTMENT OF TRANSPORTATION
SS	SANITARY SEWER
SSD	SUB-SLAB DEPRESSURIZATION
SW	SLANT WELL
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE (AC)
VP	VAPOR PIN
W	WATER, WIDE, WIDTH, WIRE
WM	WATER METER
WV	WATER VALVE
YD	YARD DRAIN

NOTES

GENERAL

1. PORTIONS OF THIS PROJECT ARE WITHIN CITY OF SEATTLE RIGHT OF WAY. CONTRACTOR SHALL CONFORM TO CITY OF SEATTLE ENCROACHMENT PERMIT REQUIREMENTS.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH WSDOT STANDARDS.
3. ALL WORK SHALL CONFORM TO THE 2023 EDITION OF THE CITY OF SEATTLE STANDARD SPECIFICATIONS, THE 2023 EDITION OF THE CITY OF SEATTLE STANDARD PLANS; AND SEATTLE DEPARTMENT OF TRANSPORTATION DIRECTOR'S RULE 01-2017 RIGHT-OF-WAY OPENING AND RESTORATION RULES. A COPY OF THESE DOCUMENTS SHALL BE ON SITE DURING CONSTRUCTION.
4. THESE DESIGN DOCUMENTS HAVE BEEN PREPARED BASED ON INFORMATION PRESENTED IN THE REPORT TITLED "GEOTECHNICAL ENGINEERING SERVICES" PREPARED BY HWA GEOSCIENCES DATED 15 JULY 2021 (GEOTECHNICAL REPORT). CONTRACTOR SHALL COMPLY WITH THE RECOMMENDATIONS INCLUDED IN THIS REPORT.
5. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE FROM DAMAGE. ALL IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED AT THE CONTRACTOR'S EXPENSE WITHOUT ADDITIONAL COMPENSATION.
6. ALL BUILDING COORDINATES ARE TO OUTSIDE CORNER OF COLUMN OR BUILDING.
7. CONTRACTOR SHALL RESTORE ALL SURVEY MONUMENTS THAT ARE DAMAGED OR DESTROYED DURING CONSTRUCTION.
8. PROJECT WORK OCCURS IN A STORE PARKING LOT AND ADJACENT SIDEWALK. CONTRACTOR SHALL PROVIDE SPACE FOR PUBLIC PARKING AND MAINTAIN PEDESTRIAN ACCESS TO THE STORES AT ALL TIMES DURING CONSTRUCTION. SEE SHEET C-02 FOR FURTHER DETAIL.

UTILITIES

1. LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN IN THEIR APPROXIMATE LOCATION. THERE IS NO GUARANTEE THAT ALL EXISTING PIPELINES AND OBSTRUCTIONS ARE SHOWN OR THAT LOCATIONS INDICATED ARE ACCURATE. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL POTHOLE TO DETERMINE ACTUAL LOCATION AND ELEVATION OF ALL EXISTING UTILITIES IN AND AROUND THE AREAS OF NEW CONSTRUCTION.
2. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT ALL REMAINING EXISTING UTILITIES WHETHER SHOWN OR NOT SHOWN.
3. PRIOR TO ANY CONNECTION TO AN EXISTING UTILITY, THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER.
4. PRIOR TO ANY EXCAVATION IN THE VICINITY OF ANY EXISTING UNDERGROUND FACILITIES, INCLUDING ALL WATER, SEWER, STORM DRAIN, GAS, PETROLEUM PRODUCTS, OR OTHER PIPELINES; ALL BURIED ELECTRIC POWER, COMMUNICATIONS, OR TELEVISION CABLES; ALL TRAFFIC SIGNAL AND STREET LIGHTING FACILITIES; AND ALL ROADWAY, STATE HIGHWAY, AND RAILROAD RIGHTS-OF-WAY, THE CONTRACTOR SHALL NOTIFY THE RESPECTIVE AUTHORITIES REPRESENTING THE OWNERS OR AGENCIES RESPONSIBLE FOR SUCH FACILITIES TO FACILITATE A TIMELY MANNER OF WORK SO THAT A REPRESENTATIVE OF SAID OWNERS OR AGENCIES CAN BE PRESENT DURING SUCH WORK IF THEY SO DESIRE. IN THE CASE OF THE UNDERGROUND UTILITY SERVICE ALERT CENTER, THIS NOTICE WILL GIVE THEM TIME TO MARK THE LOCATION OF THE UTILITIES. THE CONTRACTOR SHALL ALSO NOTIFY UNDERGROUND SERVICES ALERT (USA) AT (811) IN ACCORDANCE WITH THE SPECIFICATIONS TO FACILITATE A TIMELY MANNER OF WORK, PRIOR TO SUCH EXCAVATION.
5. MAINTAIN A MINIMUM OF 1' VERTICAL SEPARATION WHEN CROSSING GAS MAINS OR SERVICES. MAINTAIN A MINIMUM OF 3' HORIZONTAL SEPARATION WHEN RUNNING PARALLEL TO GAS MAINS OR SERVICES.
6. IF HP PIPE OR GREATER THAN 4 INCH DIAMETER PIPE IS ENCOUNTERED, PLEASE CONTACT PSE INSPECTOR PRIOR TO WORKING NEAR THE ENCOUNTERED PIPES. PSE PI INSPECTOR CONTACT INFORMATION:
   GLENN HUDEN: 206-396-4159, GLENN.HUDEN@PSE.COM.
7. COORDINATE WITH PSE CUSTOMER CONSTRUCTION SERVICES (1-888-321-7779) AND A PSE PROJECT MANAGER FOR RELOCATION OF GAS MAINS AND SERVICES AS NEEDED.
8. WORK WITHIN 10 FEET OF ACTIVE TROLLEY LINES OR WHERE WORK IMPACTS THE TROLLEY ROUTE REQUIRES DEACTIVATION OF TROLLEY LINES. CONTRACTOR SHALL COORDINATE WITH KING COUNTY FOR DEACTIVATION. TROLLEY IMPACTS CONTACT INFORMATION:
   PHONE: 206-477-1150, EMAIL: TROLLEY.IMPACTS@KINGCOUNTY.GOV

PERMITTING

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF ALL PERMITS OBTAINED FOR THE PROJECT.
2. THE FOLLOWING PERMITS HAVE BEEN OBTAINED BY ECOLOGY AND ARE INCORPORATED INTO THE CONTRACT:
   A. UNDERGROUND INJECTION CONTROL PERMIT.
   B. STATE ENVIRONMENTAL POLICY ACT REVIEW.
3. THE FOLLOWING PERMITS HAVE BEEN OBTAINED BY ECOLOGY AND WILL BE TRANSFERRED OVER TO THE CONTRACTOR:
   A. CITY OF SEATTLE DEPARTMENT OF TRANSPORTATION STREET-USE PERMIT.
   B. KING COUNTY METRO TRANSIT OVERHEAD BUS POWER SHUTDOWN.
4. THIS PROJECT IS EXEMPT FROM THE AIR DISCHARGE PERMIT FROM THE PUGET SOUND CLEAN AIR AGENCY. THE CONTRACTOR DOES NOT HAVE TO APPLY FOR THIS PERMIT BUT MUST COMPLY WITH THE SUBSTANTIVE REQUIREMENTS OF THE PERMIT.
5. THE FOLLOWING PERMITS SHALL BE OBTAINED DIRECTLY BY THE CONTRACTOR. THIS LIST IS NOT ALL-INCLUSIVE. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING WHAT PERMITS APPLY TO THE WORK AND OBTAINING THEM IN A TIMELY MANNER TO SUPPORT THE OVERALL PROJECT SCHEDULE.
   A. NOTIFICATION OF WELL CONSTRUCTION.
   B. DISCHARGE PERMITS.
   C. CITY OF SEATTLE BUILDING PERMITS.
   D. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM CONSTRUCTION STORMWATER GENERAL PERMIT.
   E. CITY OF SEATTLE DEPARTMENT OF TRANSPORTATION PARKING PERMITS.

NOISE CONTROL

1. SEE SPECIFICATION 01 57 19.12 NOISE CONTROL FOR NOISE LIMITATIONS DETAILS. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE NOISE LIMITATIONS INCLUDED IN THIS SPECIFICATION.
2. CONSTRUCTION NOISE SHALL BE LIMITED TO THE FOLLOWING TIMES:
   7:00 AM TO 10:00PM, WEEKDAYS
   9:00 AM TO 10:00PM, WEEKENDS AND HOLIDAYS.
3. CONTRACTOR SHALL SUBMIT A NOISE CONTROL WORK PLAN MEETING THE REQUIREMENTS SPECIFIED IN SPECIFICATIONS 01 57 19.12.

TREE PROTECTION NOTES

1. CONTRACTOR SHALL PREPARE A TREE, VEGETATION AND SOIL PROTECTION PLAN (TVSPP), IF WORK FALLS WITHIN CRITICAL ROOT ZONE A. NOTE AND PHOTOGRAPH CONDITIONS AND MATERIALS IN EXISTING TREE PITS INCLUDING PAVERS FOR REVIEW BY SDOT URBAN FORESTRY.
2. CONTRACTOR SHALL NOTIFY THE ENGINEER AND SDOT URBAN FORESTRY 72 HOURS MIN. PRIOR TO BOTH DEMOLITION AND EXCAVATION WITHIN THE TREE DRIP LINE.
3. AIR SPADING REQUIRED
   ALL TRENCH EXCAVATION IN THE TREE DRIPLINE SHALL BE PERFORMED TO FULL DEPTH AND WIDTH OF EXCAVATION WITH AN AIRSPADE UNDER THE SUPERVISION OF SDOT URBAN FORESTRY ARBORIST. WATER SLUICING IS NOT ALLOWED. RETAIN ALL STRUCTURAL ROOTS (1 INCH OR GREATER) ACROSS TRENCHES. SDOT URBAN FORESTRY ARBORIST TO DIRECT ROOT PRUNING IF NECESSARY.
4. AVOID DAMAGE TO ROOTS DURING CONCRETE SAWCUTTING, DEMOLITION, EXCAVATION AND TRENCHING.
5. REMOVE PAVEMENT WITHIN TREE DRIPLINE BY SAWCUTTING FREQUENTLY (12 TO 18-INCHES O.C.) TO ALLOW SMALL PIECES TO BREAK OUT. IF PART OF PAVEMENT IS FIRMLY ATTACHED TO ROOTS GREATER THAN 1-INCH, PRUNE ROOTS UNDER SUPERVISION OF SDOT URBAN FORESTRY ARBORIST.
6. PROTECT TREE ROOTS AFTER EXPOSURE DUE TO CONCRETE REMOVAL, AIRSPADING AND OTHER CONSTRUCTION ACTIVITY. ONLY EXCAVATE AND EXPOSE AREAS OF ROOTS THAT CAN BE BACKFILLED AND COVERED WITHIN ONE WORKING DAY. MAINTAIN MOIST SUBGRADE CONDITIONS UNTIL NEW CONCRETE IS INSTALLED.
7. TRENCH BACKFILL IN CRITICAL ROOT ZONE SHALL BE COS MINERAL AGGREGATE TYPE 24 OR 22. USE OF BACKHOE IN TREE DRIPLINE IS PROHIBITED.
8. KEEP TREE ADEQUATELY WATERED UNTIL SIDEWALK IS REPLACED.

GENERAL NOTES FOR SDOT STREET IMPROVEMENT PLANS

1. ALL WORK SHALL CONFORM TO THE 2023 EDITION OF CITY OF SEATTLE STANDARD SPECIFICATIONS, THE 2023 EDITION OF THE CITY OF SEATTLE STANDARD PLANS; AND SEATTLE DEPARTMENT OF TRANSPORTATION DIRECTOR'S RULE 01-2017 RIGHT-OF-WAY OPENING AND RESTORATION RULES. A COPY OF THESE DOCUMENTS SHALL BE ON SITE DURING CONSTRUCTION.
2. A COPY OF THE APPROVED PLAN MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
3. ERRORS AND OMISSIONS ON THE PERMITTED PLANS MUST BE CORRECTED BY THE ENGINEER AND APPROVED BY THE CITY OF SEATTLE.
4. ALL PERMITS REQUIRED FOR WORK WITHIN THE PUBLIC RIGHT OF WAY MUST BE OBTAINED PRIOR TO THE START OF CONSTRUCTION.
5. PRIOR TO THE START OF CONSTRUCTION WITHIN THE RIGHT OF WAY, THE PERMITTEE SHALL SCHEDULE AND ATTEND A PRECONSTRUCTION MEETING WITH THE CITY OF SEATTLE DEPARTMENT OF TRANSPORTATION.
6. PERMITTEE SHALL CONTACT SEATTLE DEPARTMENT OF TRANSPORTATION, STREET USE INSPECTOR A MINIMUM OF 2 BUSINESS DAYS PRIOR TO NEEDING AN INSPECTION.
7. ALL DAMAGE TO CITY INFRASTRUCTURE CAUSED BY THE CONSTRUCTION SHALL BE IMMEDIATELY REPORTED AND REPAIRED AS REQUIRED BY THE SEATTLE DEPARTMENT OF TRANSPORTATION. TO REPORT DAMAGE TO SPU INFRASTRUCTURE, INCLUDING ANY SEWAGE RELEASE OR BLOCKAGE, CALL 206-386-1800.
8. THE APPROVED PLANS SHALL SHOW THE APPROXIMATE AREA OF PAVEMENT RESTORATION BASED ON THE DEPTH OF UTILITY CUTS AND/OR THE AREA OF CURB AND/OR PAVEMENT TO BE REMOVED AND REPLACED. THE ACTUAL LIMITS OF THE PAVEMENT RESTORATION SHALL BE PER THE DIRECTOR'S RULE 01-2017, RIGHT-OF-WAY OPENING AND RESTORATION RULE AND WILL BE DETERMINED IN THE FIELD BY THE SEATTLE DEPARTMENT OF TRANSPORTATION STREET USE INSPECTOR PRIOR TO THE PAVEMENT RESTORATION. FOR SPU WATER SERVICES, APPLICANT MUST SHOW THE PAVEMENT RESTORATION LIMITS FOR THE PROPOSED AND THE EXISTING WATER SERVICES TO BE RETIRED, INCLUDING SERVICES THAT ARE OUTSIDE THE PROJECT AREA, BUT SERVE THE PARCEL.
9. DATUM: NAVD88 AND NAD 83 (2011) 2010.00 EPOCH.
10. SURVEYING AND STAKING OF ALL IMPROVEMENTS IN THE PUBLIC RIGHT OF WAY SHALL BE COMPLETED PRIOR TO CONSTRUCTION. PERMITTEE TO STAKE THE CURB AT THE CENTERLINE OF DRAINAGE GRATES PER STANDARD PLAN 260A. SURVEY GRADE SHEETS MUST BE SUBMITTED AND APPROVED BY THE SEATTLE DEPARTMENT OF TRANSPORTATION AT LEAST 2 BUSINESS DAYS PRIOR TO CONSTRUCTION.
11. IF AN EXISTING CURB IS TO BE REMOVED AND REPLACED IN THE SAME LOCATION THE PERMITTEE SHALL PROVIDE THE STREET USE INSPECTOR A PLAN WITH EXISTING FLOW LINE AND TOP OF CURB ELEVATIONS IDENTIFIED. PERMITTEE TO STAKE THE LOCATION OF THE EXISTING CURB PRIOR TO DEMOLITION.
12. THE PERMITTEE MUST BE RESPONSIBLE FOR REFERENCING AND REPLACING ALL SURVEY MONUMENTS THAT MAY BE DISTURBED, DESTROYED OR REMOVED BY THE PROJECT AND 2 WORKING DAYS, PRIOR TO THE WORK, MUST FILE AN APPLICATION FOR PERMIT TO REMOVE OR DESTROY A SURVEY MONUMENT WITH THE WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES, PURSUANT TO WAC 332-120. THE PERMITTEE MUST PROVIDE THE ENGINEER AND SPU LAND SURVEY WITH A COPY OF THE APPROVED PERMIT AND COMPLETION REPORT. SEE STANDARD SPECIFICATION 1- 07.28 ITEM 17.
13. THE PERMITTEE SHALL SUBMIT ALL APPLICABLE DOCUMENTS REQUIRED UNDER SECTION 1-05.3 OF THE STANDARD SPECIFICATIONS PRIOR TO CONSTRUCTION. A MATERIAL SOURCE FORM FOR ALL MATERIALS TO BE PLACED IN THE RIGHT OF WAY AND MIX DESIGNS FOR ALL ASPHALT, CONCRETE AND AGGREGATES TO BE PLACED IN THE RIGHT OF WAY MUST BE SUBMITTED TO THE SEATTLE DEPARTMENT OF TRANSPORTATION FOR REVIEW AND APPROVAL PRIOR TO BEGINNING CONSTRUCTION. A REVISED MATERIAL SOURCE FORM AND MIX DESIGNS MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT OF ANY SUBSTITUTE MATERIALS.
14. THE PERMITTEE SHALL NOTIFY THE SEATTLE FIRE DEPARTMENT DISPATCHER (206-386-1495) AT LEAST TWENTY-FOUR (24) HOURS IN ADVANCE OF ALL WATER SERVICE INTERRUPTIONS, HYDRANT SHUTOFFS, AND STREET CLOSURES OR OTHER ACCESS BLOCKAGE. THE PERMITTEE SHALL ALSO NOTIFY THE DISPATCHER OF ALL NEW, RELOCATED, OR ELIMINATED HYDRANTS RESULTING FROM THIS WORK.
15. THE PERMITTEE SHALL LOCATE AND PROTECT ALL CASTINGS AND UTILITIES DURING CONSTRUCTION.
16. THE PERMITTEE SHALL CONTACT THE UNDERGROUND UTILITIES LOCATOR SERVICE (811) AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
17. IT IS THE SOLE RESPONSIBILITY OF THE PERMITTEE TO VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS SHOWN AND TO FURTHER DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.
18. THE PERMITTEE SHALL ADJUST ALL EXISTING MAINTENANCE HOLE RIMS, DRAINAGE STRUCTURE LIDS, VALVE BOXES, AND UTILITY ACCESS STRUCTURES TO FINISH GRADE WITHIN AREAS AFFECTED BY THE PROPOSED IMPROVEMENTS.
19. THE PERMITTEE SHALL FOLLOW SPU CORE TAP PROCEDURES FOR ALL NEW CONNECTIONS TO EXISTING SEWER OR DRAINAGE MAINS OR STRUCTURES. CONTRACTORS ARE NOT ALLOWED TO CORE INTO MAINS OR STRUCTURES WITHOUT PRIOR APPROVAL FROM SPU- DWW. TO SCHEDULE CORE CUT CONTACT SPU-DWW AT 206-615-0511 A MINIMUM OF 2 BUSINESS DAYS IN ADVANCE.
20. ALL UTILITY SERVICE CONNECTIONS SHOWN ON THIS PLAN REQUIRE SEPARATE PERMITS.
21. THE PERMITTEE SHALL PROVIDE FOR ALL TESTING AS REQUIRED BY THE STREET USE INSPECTOR.
22. INSPECTION AND ACCEPTANCE OF ALL WORK IN THE PUBLIC RIGHT-OF-WAY SHALL BE DONE BY REPRESENTATIVES OF THE CITY OF SEATTLE. IT SHALL BE THE PERMITTEE'S RESPONSIBILITY TO COORDINATE AND SCHEDULE APPROPRIATE INSPECTIONS ALLOWING FOR PROPER ADVANCE NOTICE. THE SEATTLE DEPARTMENT OF TRANSPORTATION STREET USE INSPECTOR MAY REQUIRE REMOVAL AND RECONSTRUCTION OF ANY ITEMS PLACED IN THE RIGHT OF WAY THAT DO NOT MEET CITY STANDARDS OR THAT WERE CONSTRUCTED WITHOUT APPROPRIATE INSPECTIONS.
23. THE PERMITTEE SHALL PROVIDE A PLAN FOR STORMWATER AND EROSION CONTROL AND INSTALL, MAINTAIN AND REMOVE TEMPORARY FACILITIES PER SECTION 8-01. AS CONSTRUCTION PROGRESSES AND CONDITIONS DICTATE, ADDITIONAL CONTROL FACILITIES MAY BE REQUIRED. DURING THE COURSE OF CONSTRUCTION IT SHALL BE THE OBLIGATION AND RESPONSIBILITY OF THE PERMITTEE TO ADDRESS ANY NEW CONDITIONS THAT MAY BE CREATED BY THE PERMITTEE'S ACTIVITIES AND TO PROVIDE ADDITIONAL FACILITIES THAT MAY BE NEEDED TO PROTECT ADJACENT PROPERTIES.
24. ALL DISTURBED SOILS MUST BE AMENDED PER STANDARD PLAN 142 AND SECTION 8-02 OF THE STANDARD SPECIFICATIONS UNLESS WITHIN ONE FOOT OF A CURB OR SIDEWALK, THREE FEET OF A UTILITY STRUCTURE (E.G. WATER METER, UTILITY POLE, HAND HOLE, ETC.), OR THE DRIPLINE OF AN EXISTING TREE.
25. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE CITY OF SEATTLE TRAFFIC CONTROL MANUAL FOR IN-STREET WORK. AN APPROVED TRAFFIC CONTROL PLAN WILL BE REQUIRED FOR ALL ARTERIAL STREETS, HIGH IMPACT AREAS AND CONSTRUCTION HUBS PRIOR TO BEGINNING CONSTRUCTION.
26. PERMITTEE SHALL NOTIFY KING COUNTY METRO AT 206- 477-1140 FOURTEEN DAYS IN ADVANCE OF ANY IMPACT TO TRANSIT OPERATIONS. CALL 206-477-1150 FOR ANY COORDINATION RELATED TO KING COUNTRY METRO TROLLEY (INCLUDING SLU AND FIRST HILL STREET CAR). CONTACT KING COUNTY METRO TWO MONTHS PRIOR FOR ANY TROLLEY DE-ENERGIZING REQUESTS.
27. COORDINATE PARKING/LOADING SIGN(S) AND PAY STATION REMOVAL / RELOCATION AND INSTALLATION WITH SEATTLE DEPARTMENT OF TRANSPORTATION CURB SPACE MANAGEMENT AT 206-684-5370 WITH AT LEAST 10 BUSINESS DAYS' NOTICE. SIGNPOSTS ARE TO BE INSTALLED IN ACCORDANCE WITH STANDARD PLANS 616, 620, 621A, 621B, 625, & 626.
28. ALL STREET NAME SIGNS MUST BE INSTALLED BY SEATTLE DEPARTMENT OF TRANSPORTATION AT THE PERMITTEE'S EXPENSE.
29. ALL WORK PERFORMED BY SEATTLE CITY LIGHT, SEATTLE PUBLIC UTILITIES, AND OTHER UTILITIES TO INSTALL, REPAIR, REMOVE OR RELOCATE UTILITIES SHALL BE DONE AT THE PERMITTEE'S EXPENSE.
30. PERMITTEE MUST CONTACT THE SEATTLE DEPARTMENT OF PARKS AND RECREATION TO APPLY FOR A SEPARATE PERMIT IF WORKING WITHIN A DESIGNATED PARK BOULEVARD.
31. CARE SHALL BE EXERCISED WHEN EXCAVATING OR REMOVING PAVEMENT NEAR EXISTING CHARGED WATER MAINS. CAST IRON WATER MAINS ARE KNOWN TO BE SENSITIVE TO EXCESSIVE VIBRATION. COORDINATE PROTECTION METHODS WITH SPU.

EXCAVATION

1. PETROLEUM-IMPACTED SOIL IS PRESENT AT THE SITE. PETROLEUM-IMPACTED SOIL AND OTHER NATIVE MATERIAL GENERATED FROM EXCAVATIONS WILL BE FIELD SCREENED TO CONFIRM THE PRESENCE OF VOLATILE COMPOUNDS IN ACCORDANCE WITH SPECIFICATION 01 75 19. SOIL WILL BE PROFILED AND DISPOSED OF OFFSITE IN ACCORDANCE WITH SPECIFICATION 31 00 00.
2. TRENCH EXCAVATION DEPTHS SHALL BE LESS THAN 3 FEET DEEP IN ALL AREAS. TRENCH SIDES SHALL BE VERTICAL IN PAVED AREAS, IN ACCORDANCE WITH SPECIFICATION 31 00 00. IN ACCORDANCE WITH SPECIFICATION 31 00 00 1.07, IF PEA GRAVEL IS ENCOUNTERED WITHIN TRENCH EXCAVATIONS, CONTRACTOR SHALL SLOPE TRENCH SIDES AT MINIMUM 1.5H:1V TO MAINTAIN SLOPE STABILITY OR USE TRENCH BOXES OR OTHER TEMPORARY SHORING EQUIPMENT, AS NEEDED.
3. BUILDING FOUNDATIONS SHALL BE PROTECTED IN PLACE. CONTRACTOR SHALL STOP WORK IF BUILDING FOUNDATION IS DISCOVERED AND NOTIFY THE ENGINEER.
4. CONTRACTOR SHALL BACKFILL AND COMPACT IN ACCORDANCE WITH SPECIFICATION 31 00 00 AND THE GEOTECHNICAL REPORT.

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

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NO	REVISION	DATE	BY

BENJAMIN E. FRANTES, STATE OF WASHINGTON, 48436, REGISTERED PROFESSIONAL ENGINEER, 4/16/2024

DESIGNED	CMW
DRAWN	RLH
CHECKED	BEF

DEPARTMENT OF ECOLOGY State of Washington

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

NOTES AND ABBREVIATIONS

FOR REFERENCE ONLY

SCALE	AS SHOWN
JOB NO	2196008.00
DATE	APRIL 2024
SHEET	2 OF 24
	G-02

CALLOUTS AND SHORTHAND SYMBOLS

- A — SHEET KEYNOTE
- ℄ — CENTERLINE
- 0 — DIAMETER
- ± — APPROXIMATELY
- ∠ — ANGLE
- 1 — BUILDING GRID LABEL OR ACCESSORY NUMBER
- ##-## — DOOR
- XXX — ROOM
- ## — WALL
- ##-## — WINDOW

REVISION SYMBOLS

1

CLOUDED AREA INDICATES CHANGED INFORMATION; NUMBER IN TRIANGLE INDICATES THE DRAWING VERSION AND MATCHES WITH REVISION INFORMATION IN THE REVISION BLOCK WITHIN THE DRAWING BORDER

PIPING - SINGLE LINE

- OR — CONNECTED
- NOT CONNECTED

VALVES AND GATES

- GATE VALVE (NORMALLY OPEN, NORMALLY CLOSED)
- GLOBE VALVE (NORMALLY OPEN, NORMALLY CLOSED)
- CHECK VALVE
- BUTTERFLY VALVE
- BALL VALVE (NORMALLY OPEN, NORMALLY CLOSED)
- VACUUM RELIEF/AIR INLET VALVE (AV)
- PRESSURE RELIEF VALVE (PREL)
- 3-WAY VALVE
- PNEUMATIC ACTUATOR
- PRESSURE REDUCING VALVE, SELF-CONTAINED

SYMBOLOGY

- NORTH ARROW
- NEW
- EXISTING
- FUTURE
- EXISTING LINEAR ELEMENTS TO BE REMOVED OR DEMOLISHED
- EXISTING NON-LINEAR ELEMENTS TO BE REMOVED OR DEMOLISHED
- BREAK LINE
- NATIVE EARTH (IN SECTION)
- ENGINEERED FILL (IN SECTION)
- SAND OR GROUT (IN PLAN AND SECTION)
- GRAVEL (IN PLAN AND SECTION)
- AGGREGATE BASE (IN PLAN AND SECTION)
- CRUSHED ROCK (IN PLAN AND SECTION)
- CONCRETE (IN PLAN AND SECTION)
- UTILITY CROSSING UNDERNEATH / UTILITY CROSSING OVER — CROSSING UTILITIES

EQUIPMENT

CENTRIFUGAL PUMPS

- M — HORIZONTAL

MIXERS

- M — VERTICAL

CROSS-REFERENCING SYMBOLS

FOUND ON DRAWING WHERE DETAIL, SECTION, OR ELEVATION IS CALLED OUT

- DETAIL NUMBER
- 1 / C-15
- SHEET ON WHICH DETAIL IS DRAWN

FOUND ON DRAWING WHERE DETAIL, SECTION, OR ELEVATION IS DRAWN

- DETAIL NUMBER
- 1 / C-4 — DETAIL TITLE — SCALE
- SHEET ON WHICH DETAIL IS CALLED OUT

- SECTION LETTER
- A / A-13
- SHEET ON WHICH SECTION IS DRAWN

- SECTION LETTER
- A / A-5 — SECTION TITLE — SCALE
- SHEET ON WHICH SECTION IS CUT

PIPING ACCESSORIES AND FITTINGS

- FLANGE
- Y STRAINER
- CHEMICAL PIPING FLEXIBLE CONNECTION/ FLEXIBLE HOSE
- DRAIN

VALVE AND GATE OPERATORS

- S — SOLENOID
- M — MOTOR
- DIAPHRAGM

MISCELLANEOUS

- PLATE AND FRAME HEAT EXCHANGER
- M

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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

LEGEND AND SYMBOLS

SCALE: AS SHOWN
JOB NO: 2196008.00
DATE: APRIL 2024
SHEET 3 OF 24
G-03

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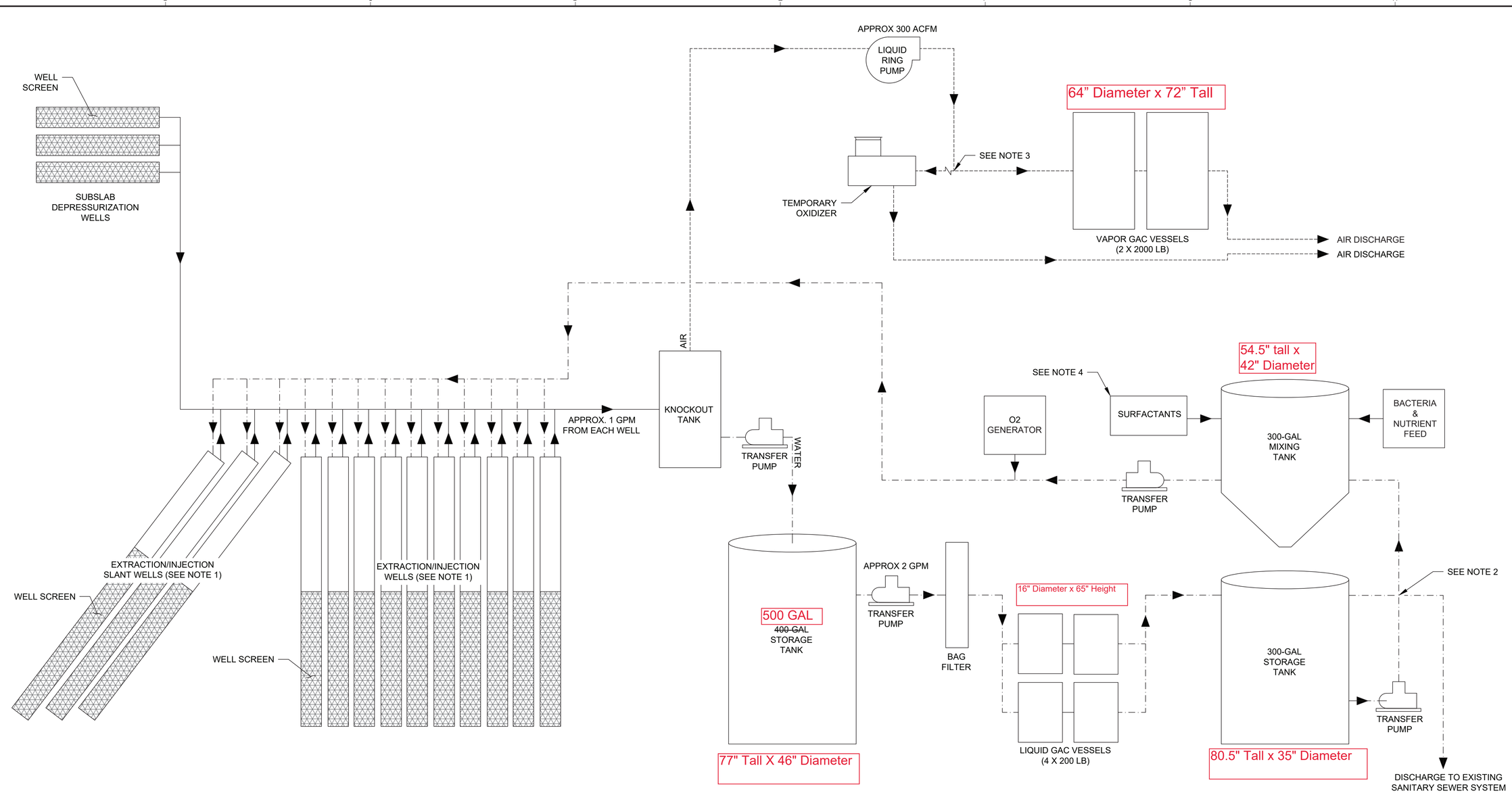

REMEDIATION SYSTEM OPERATION NOTES:

THE FOLLOWING NOTES DESCRIBE SYSTEM OPERATIONS AFTER CONSTRUCTION, AND ARE INTENTED SOLELY TO INFORM THE CONTRACTOR OF DESIGN INTENTIONS AND GUIDE CONSTRUCTION EFFORTS.

1. SYSTEM WILL BE OPERATED TO ALLOW WELLS USED FOR EXTRACTION TO ALSO BE USED FOR REINJECTION AND VICE VERSA. OPERATION OF WELLS FOR EXTRACTION OR REINJECTION WILL BE BASED ON SITE CONDITIONS, WELL LOCATIONS, CONCENTRATIONS OF THE CONTAMINANTS OF CONCERN, AND THE OVERALL REMEDIATION PROGRESS.

2. GROUNDWATER INITIALLY EXTRACTED FROM THE SYSTEM IS EXPECTED TO BE DISCHARGED TO THE SANITARY SEWER VIA GRAVITY. ONCE GROUNDWATER CONCENTRATIONS ARE AMENABLE TO BIOREMEDIATION VIA REINJECTION, WATER WILL BE TRANSFERRED TO MIXING TANK FOR AMENDMENT PRIOR TO REINJECTION. EXCESS WATER WILL GRAVITY FLOW TO THE SANITARY SEWER. VOLUMES AND FLOW RATES WILL BE DETERMINED DURING OPERATION.

3. VAPOR WILL BE DIRECTED THROUGH THE TEMPORARY OXIDIZER FOR THE FIRST SEVERAL MONTHS OF OPERATION UNTIL CONCENTRATIONS OF THE CONTAMINANTS OF CONCERN HAVE DECREASED TO A LEVEL SUITABLE FOR TREATMENT VIA THE VAPOR GAC VESSELS. THE OXIDIZER WILL THEN BE REMOVED AND VAPOR WILL BE DIRECTED THROUGH THE GAC VESSELS PRIOR TO DISCHARGE.

4. SURFACTANTS WILL BE ADDED FIRST TO THE WATER PRIOR TO REINJECTION TO RELEASE ADDITIONAL HYDROCARBONS FROM THE SOIL. THEN BACTERIA AND NUTRIENT FEED WILL BE ADDED TO THE WATER PRIOR TO REINJECTION TO CREATE A MICROBIAL POPULATION TO DEGRADE THE HYDROCARBONS IN SITU.

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BENJAMIN EDWARD WARREN STATE OF WASHINGTON 88495 REGISTERED PROFESSIONAL ENGINEER 4/16/2024

DESIGNED CMW
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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

TREATMENT SYSTEM SCHEMATIC

SCALE AS SHOWN
JOB NO 2196008.00
DATE APRIL 2024
SHEET 4 OF 24
G-04

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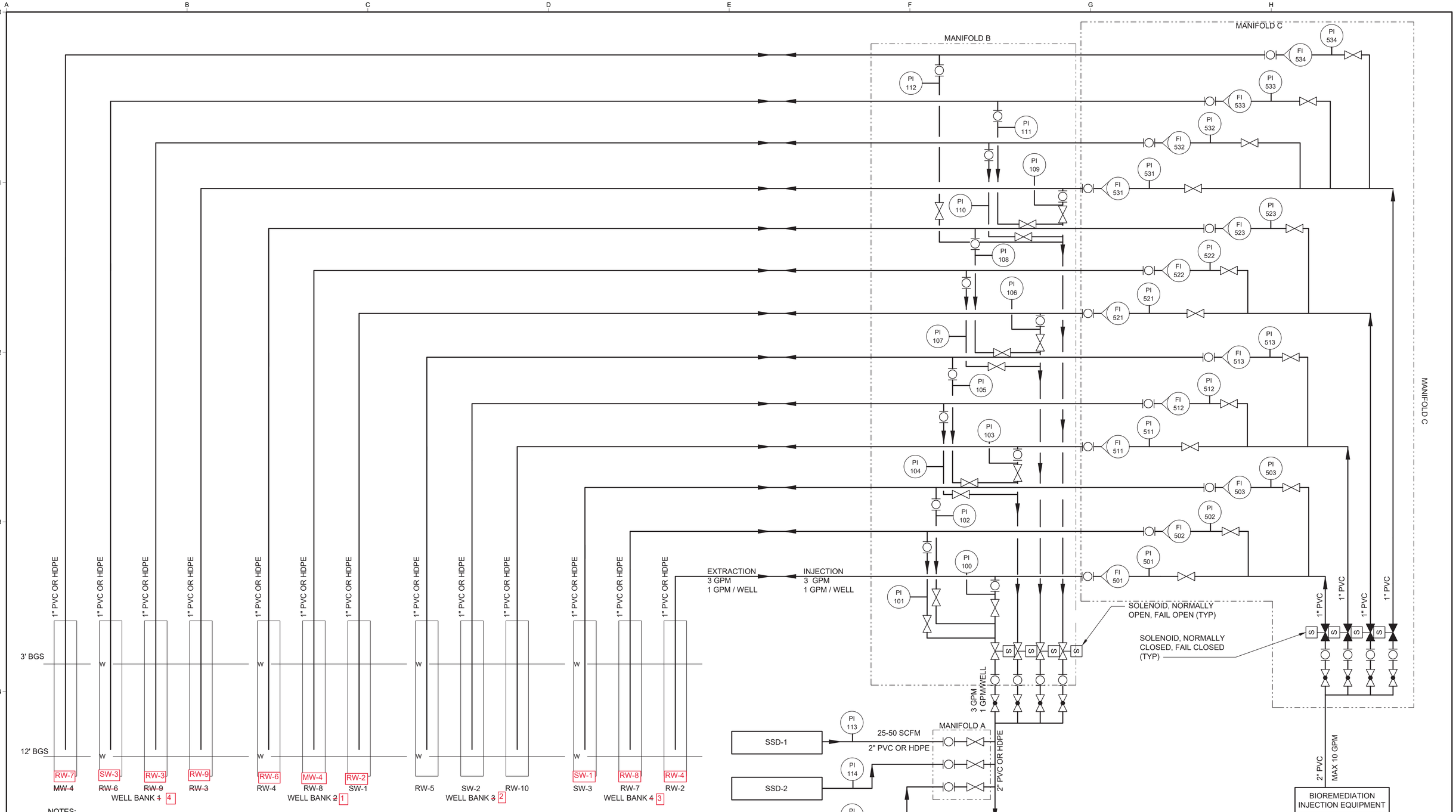

NOTES:
1. SOLENOIDS SHALL BE RATED FOR CONTINUOUS OPERATION.
2. RW-10 GOES TO 16 FEET BGS.

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LAWRENCE G. REISINGER, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER
4/16/2024

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DRAWN JMF
CHECKED LGR

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

PROCESS FLOW DIAGRAM

SCALE AS SHOWN
JOB NO 2196008.00
DATE APRIL 2024
SHEET 5 OF 24
G-05

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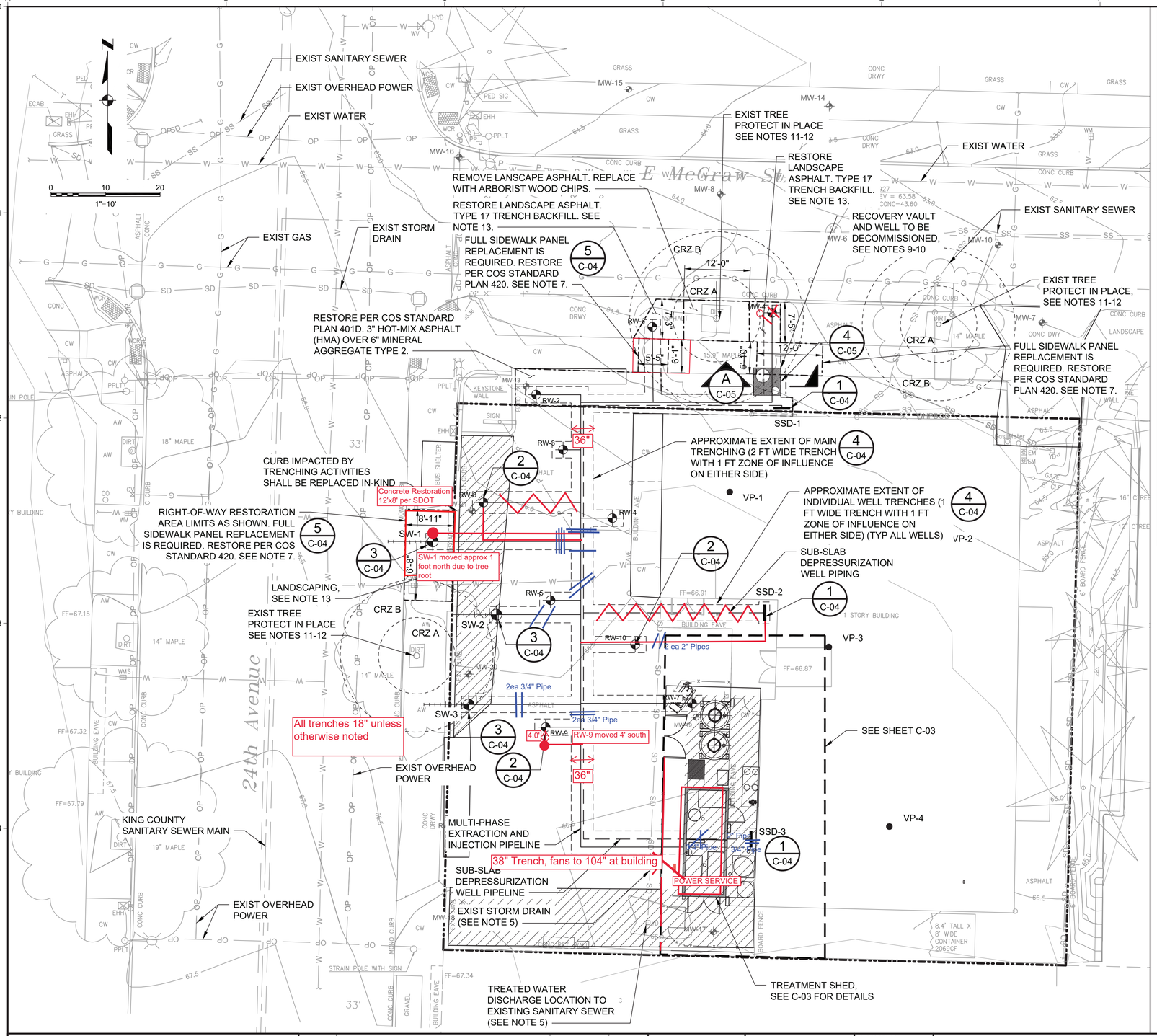

GENERAL SHEET NOTES

1. WELL TERMINOLOGY:
   1A. MW = EXISTING MONITORING WELL
   1B. RW = REMEDIATION WELL (EITHER EXISTING OR TO BE INSTALLED)
   1C. VP = VAPOR MONITORING PIN TO BE INSTALLED
   1D. SW = SLANT WELL TO BE INSTALLED
2. SLANT WELLS SHALL BE INSTALLED AT 30 DEGREES TO A DEPTH OF 20 FEET. HORIZONTAL EXTENT (APPROXIMATELY 10 FEET) SHOWN ON PLAN VIEW. RADIUS OF INFLUENCE OF SLANT WELLS CENTERED OVER MIDPOINT OF WELL CASING SHOWN.
3. VAPOR PINS ARE SHOWN AT APPROXIMATE LOCATIONS. EXACT LOCATIONS SHALL BE COORDINATED WITH ENGINEER AND OWNER.
4. ABOVEGROUND REMEDIATION SYSTEM PIPING IS SHOWN ON SHEET C-02.
5. STORM DRAIN IS CONNECTED TO SANITARY SEWER.
6. CONTRACTOR SHALL RELOCATE ALL EXISTING SIGNAGE TO CHAIN LINK FENCE, OR TO POSTS WEST OF THE FENCE.
7. TRENCHING LIMITS THAT IMPACT CONCRETE SIDEWALK SHALL BE RESTORED PER CITY OF SEATTLE (COS) STANDARD PLAN NO. 420 (SEE DETAIL 5 ON SHEET C-04). ASPHALT WALKWAY AND SIDEWALK PANEL TO BE REPLACED PER SEATTLE DEPARTMENT OF TRANSPORTATION DIRECTOR'S RULE 01-2017. TRENCH BACKFILL SHALL CONSIST OF CONTROL DENSITY FILL PER CITY OF SEATTLE STANDARD SPECIFICATION 2-10.2(3)A2 (EXCEPT WITHIN 10 FEET OF STEAM PIPES PER DIRECTOR'S RULE 01-2017 7.4.2.1) OR MINERAL AGGREGATE TYPE 17 PER STANDARD SPECIFICATION 9-03.14 AND COMPACTED PER STANDARD SPECIFICATION 2.11.3(1).
8. TRENCHING LIMITS SHOWN HEREON WITHIN PROPERTY BOUNDARY ARE APPROXIMATIONS ONLY. TRENCHING LIMITS IN RIGHT-OF-WAY SHALL BE ADHERED TO DURING CONSTRUCTION. EXACT TRENCHING LIMITS SHALL BE AT THE DISCRETION OF THE CONTRACTOR AND MINIMIZED TO THE EXTENT NECESSARY TO COMPLETE THE WORK. TRENCHING SHALL ONLY OCCUR WITHIN THE CIRCLE K PARKING LOT AND SURROUNDING SIDEWALK. TRENCHING SHALL NOT EXTEND INTO THE PAVED ROADWAYS. IF TRENCHING IMPACTS EXTRUDED CURB ON SITE, REPLACE CURBS TO MATCH EXISTING.
9. WELL SHALL BE DECOMMISSIONED IN ACCORDANCE WITH ECOLOGY WAC 173-160-381 BY A DRILLER LICENSED IN THE STATE OF WASHINGTON. DRILLER SHALL FILE A NOTICE OF INTENT TO ECOLOGY TO DECOMMISSION THE WELL AND SUBMIT A DECOMMISSIONING REPORT TO ECOLOGY WITHIN 30 DAYS OF COMPLETION, PER WAC 173-160-141.
10. WITHIN THE VAULT, NEATLY CUT AND REMOVE ANY EQUIPMENT AND PLUG ALL CONNECTIONS (INLETS, OUTLETS, OPENINGS, ETC.) PER DETAIL 4 ON SHEET C-05. FILL VAULT TO GRADE WITH BACKFILL PER DETAIL 4 ON SHEET C-04 ON SHEET C-04 AND SPECIFICATION SECTION 31 00 00. RESURFACE AND PAVE VAULT FOOTPRINT AND IMPACT SURROUNDING AREA IN ACCORDANCE WITH SPECIFICATION SECTION 32 12 16.13.
11. CONTRACTOR SHALL PROTECT TREES AND VEGETATION IN RIGHT-OF-WAY DURING DRILLING AND TRENCHING IN ACCORDANCE WITH CITY OF SEATTLE STANDARD SPECIFICATION 8-01.3(2)B AND STANDARD PLAN 133. EXCAVATION IS NOT ALLOWED IN CRITICAL ROOT ZONE A (CRZ A). FIELD ADJUSTMENTS MAY BE ALLOWED TO MODIFY TRENCH LIMITS AND/OR DRILLING LOCATIONS IF NECESSARY TO PROTECT TREE ROOTS IN PLACE. PROPOSED FIELD ADJUSTMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
12. CONTRACTOR SHALL PROTECT TREES IN ACCORDANCE WITH CITY OF SEATTLE STANDARD PLAN 132A FOR WORK LASTING MORE THAN 30 DAYS AND PLAN 132B FOR WORK LASTING 30 DAYS OR LESS. IF PAVEMENT AROUND TREE IS IMPACTED, RESTORE TREE PIT IN ACCORDANCE WITH CITY OF SEATTLE STANDARD PLAN 424B.
13. ANY LANDSCAPING (PLANTS, SOIL, MULCH, ETC.) IMPACTED BY CONTRACTOR ACTIVITIES SHALL BE RESTORED PER CITY OF SEATTLE STANDARD SPECIFICATION 8-01.3(2)B AND PLAN NO. 142. TRENCH BACKFILL SHALL CONSIST OF MINERAL AGGREGATE TYPE 17 PER CITY OF SEATTLE STANDARD SPECIFICATION 9-03.14 AND COMPACTED PER STANDARD SPECIFICATION 2.11.3(1).
14. CONTRACTOR SHALL MAINTAIN A MINIMUM 4 FOOT WIDE WALKWAY BETWEEN EDGE OF WELLHEAD SKIRT AND FRONT OR BACK OF CURB, AS APPLICABLE.

NEW REMEDIATION WELLS TO BE INSTALLED

RW-8	N:236950.38	E:1278394.71
RW-9	N:236909.25	E:1278406.10
RW-10	N:236924.38	E:1278422.51

NEW SLANT WELLS TO BE INSTALLED

SW-1	N:236943.23	E:1278385.44
SW-2	N:236929.86	E:1278397.11
SW-3	N:236913.40	E:1278392.00

EXISTING MONITORING AND REMEDIATION WELLS

MW-4	N:236985.00	E:1278447.91
RW-2	N:236970.10	E:1278404.38
RW-3	N:236960.04	E:1278409.31
RW-4	N:236947.52	E:1278418.32
RW-5	N:236932.47	E:1278407.00
RW-6	N:236982.51	E:1278425.63
RW-7	N:236913.61	E:1278432.90

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES BELOW)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 2)
- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION PIPING
- SUB-SLAB DEPRESSURIZATION WELL
- APPROXIMATE EXTENT OF TRENCH (SEE NOTE 7 AND 8)
- CHAIN LINK FENCE
- VAPOR MONITORING PIN (SEE NOTE 3)
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- OP — EXISTING OVERHEAD POWER LINE
- SS — EXISTING SANITARY SEWER LINE
- P — EXISTING UNDERGROUND ELECTRICAL LINE
- SD — EXISTING STORM DRAIN
- PROPERTY BOUNDARY
- RIGHT-OF-WAY RESTORATION (SEE NOTES 7, 8, 11, 12 AND 13)
- CRITICAL ROOT ZONE EXTENTS

ISSUED FOR PERMIT

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NO	REVISION	DATE	BY
2	SEATTLE BUILDING PERMIT	01/22/2024	CMW
1	SEATTLE DEPARTMENT OF TRANSPORTATION PERMIT	01/02/2024	CMW

SCALES 0 — 10"

BENJAMIN EDWARD GATES, STATE OF WASHINGTON, 38495, REGISTERED PROFESSIONAL ENGINEER
4/16/2024

DESIGNED CMW
DRAWN CMW
CHECKED BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

OVERALL SITE PLAN AND SYSTEM LAYOUT

SCALE 1" = 10'
JOB NO 2196008.00
DATE APRIL 2024
SHEET 6 OF 24
C-01

Plot Date: 4/16/2024 1:57 PM
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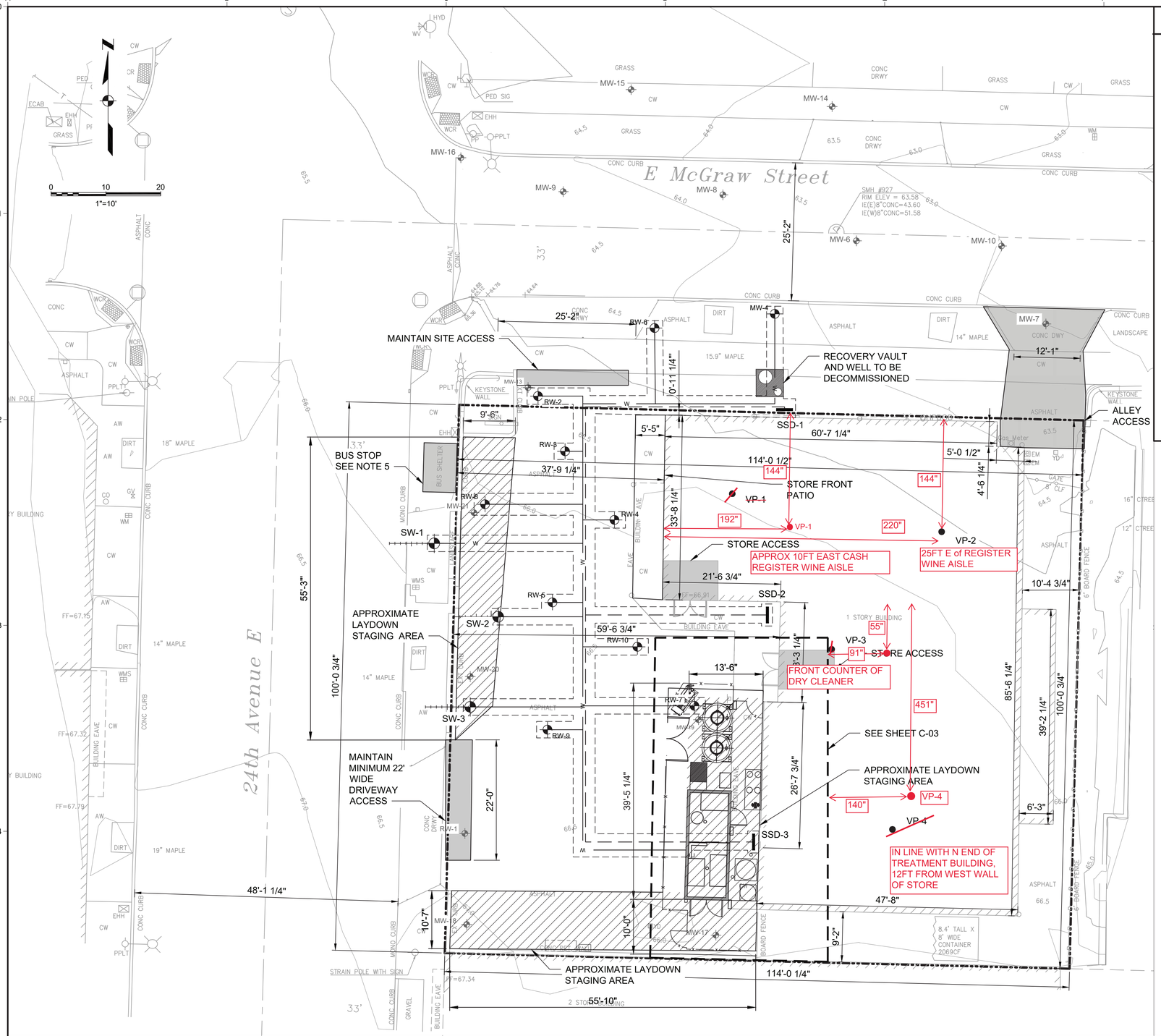

SITE PLAN INFORMATION

ADDRESS: 2350 24TH AVE E, SEATTLE, WA 98112; INTERSECTION OF 24TH AVE E AND E MCGRAW ST. (ADDRESS ALSO IDENTIFIED AS 2401 E MCGRAW ST, SEATTLE, WA 98112).

OWNER'S NAME: CHOUNG KUK JIN AND KATHY KYUNG
PROPERTY NAME: JAY'S DRY CLEANERS

LEGAL DESCRIPTION: PIKES 2ND ADD TO UNION CITY 1 & 2 LESS E 6 FT
PLAT BLACK: 29
PLAT LOT: 1-2
QUARTER-SECTION-TOWNSHIP-RANGE: NW-21-25-4
KING COUNTY ASSESSOR'S PARCEL NUMBER: 678820-1335

HISTORIC RELATED PERMIT NUMBERS:
674948

TOTAL RESTORATION SURFACE AREA: 1,215 SF
TOTAL VOLUME OF EXCAVATION AND BACKFILL: 160 CY

DISCHARGE AUTHORIZATION:
KING COUNTY INDUSTRIAL WASTE (KCIW) WASTEWATER DISCHARGE AUTHORIZATION (WDA) NO. 4614-01 TO JAY'S CLEANERS - CIRCLE K 1461 TREATMENT SYSTEM. ISSUED MARCH 31, 2023.
EFFECTIVE DATE: APRIL 7, 2023
EXPIRATION DATE: APRIL 6, 2028

GENERAL SHEET NOTES

1. DIMENSIONS SHOWN ARE THE MAXIMUM ALLOWABLE FOR LAYDOWN STAGING AREAS. AREAS MAY NEED TO BE REDUCED TO ALIGN WITH EXISTING FEATURES SUCH AS CURBS OR ALLOW FOR VEHICLE AND PEDESTRIAN TRAFFIC AND SHALL BE SECURED BY TEMPORARY FENCING.
2. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL USING CONTRACTOR MEANS AND METHODS SUCH AS PHASED CONSTRUCTION, TRAFFIC RATED TRENCH LIDS, SIGNAGE, TEMPORARY FENCING, AND OTHER, AS NEEDED TO MAINTAIN VEHICLE AND PEDESTRIAN ACCESS TO THE STORES.
3. CONTRACTOR WORK AREA SHALL BE CLEARLY DELINEATED AND FENCED OFF TO PREVENT PUBLIC ENTRANCE, WHILE STILL MAINTAINING STORE ACCESS AT ALL TIMES DURING CONSTRUCTION.
4. CONTRACTOR SHALL SECURE ANY CITY PERMITTING RELATED TO TRAFFIC CONTROL INCLUDING PROVIDING TRAFFIC CONTROL PLANS, CITY RIGHT OF WAY WORK, AND KING METRO FOR WORK NEAR THE BUS STOP WHICH MAY REQUIRE WEEKEND WORK.
5. CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY FOR CONSTRUCTION WITHIN THE RIGHT-OF-WAY AND MAINTAIN FULL ACCESS TO THE BUS STOP AT ALL TIMES DURING CONSTRUCTION.
6. PIPE ROUTING IS APPROXIMATE. CONTRACTOR SHALL PROVIDE INDIVIDUAL LINES TO EACH WELL PER P&ID DRAWINGS.
7. CONTRACTOR SHALL SUBMIT A WORK SEQUENCING PLAN DESCRIBING THE METHOD IN WHICH ALL REQUIRED ACCESS POINTS SHALL BE PROPERLY MAINTAINED. DETAILS ON THE WORK SEQUENCING PLAN REQUIREMENTS ARE INCLUDED IN SPECIFICATION SECTION 01 33 00.
8. CONTRACTOR SHALL NOT PLACE HEAVY EQUIPMENT IN LAYDOWN STAGING AREA ALONG SOUTH SIDE OF THE PROPERTY BOUNDARY.

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-01)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 2)
- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION PIPING
- SUB-SLAB DEPRESSURIZATION WELL
- APPROXIMATE EXTENT OF TRENCH
- CHAIN LINK FENCE
- VAPOR MONITORING PIN (SEE NOTE 3)
- SITE AND STORE ACCESS AREAS
- APPROXIMATE LOCATION OF STAGING AREA
- PROPERTY LINE

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

ISSUED FOR PERMIT

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NO	REVISION	DATE	BY

SCALES 0 — 10"

BENJAMIN EDWARD WATES, STATE OF WASHINGTON, 38425, REGISTERED PROFESSIONAL ENGINEER, 4/16/2024

DESIGNED	CMW
DRAWN	CMW
CHECKED	BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

SITE PLAN STAGING AREAS

FOR REFERENCE ONLY

SCALE	1" = 10'
JOB NO	2196008.00
DATE	APRIL 2024
SHEET	7 OF 24
	C-02

Plot Date: 4/16/2024 1:58 PM
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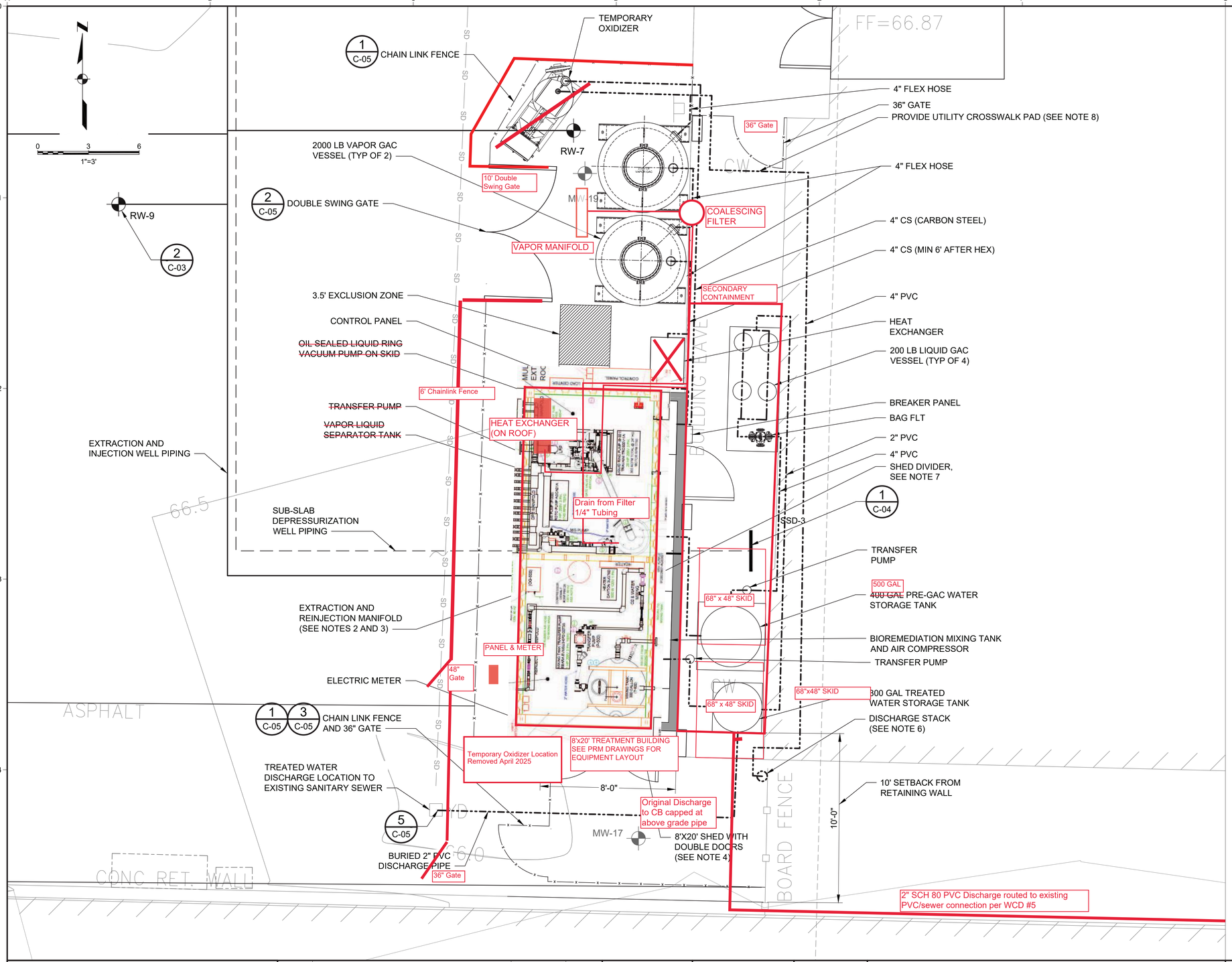

GENERAL SHEET NOTES

1. WELL TERMINOLOGY:
   1A. MW = EXISTING MONITORING WELL
   1B. RW = REMEDIATION WELL (EITHER EXISTING OR TO BE INSTALLED
2. ALL MANIFOLDS SHALL BE EQUIPPED WITH GATE VALVE, SAMPLE PORTS, AND 1/4" TAP FOR FLOW INSERTION.
3. EXTRACTION AND REINJECTION MANIFOLDS SHALL BE EQUIPPED WITH CONTROL VALVES AND FLOW METER FOR EACH WELL.
4. PIPING AND VALVES SHALL BE STACKED VERTICALLY ALONG EQUIPMENT ENCLOSURE WALL FOR ACCESS TO FLOW PATH AND MEASUREMENTS.
5. CONTRACTOR SHALL RECREATE ALL PARKING SPACES AFFECTED BY THE REMEDIATION SYSTEM AS SHOWN ON SHEET C-06 INCLUDING REPAINTING PARKING LOT STRIPING AND HANDICAP SYMBOLS, AND REPLACING EXISTING CURBS WITH NEW CURBS.
6. INSTALL ANY NECESSARY PIPE SUPPORTS TO DISCHARGE STACK TO EXTEND TOP OF STACK TO 3 FEET ABOVE THE ROOF. DISCHARGE STACK PIPE SUPPORTS SHALL BE CONTRACTOR DESIGNED AND SUBMITTED TO THE ENGINEER FOR APPROVAL.
7. DIVIDER AND SHED CONSTRUCTION SHALL MEET IBC AND NFPA REQUIREMENTS TO SEPARATE ZONES. SHED CONSTRUCTION SHALL INCLUDE DIVIDER TO SEPARATE UNCLASSIFIED AND CLASS 1, DIVISION 2 RATED EQUIPMENT OR CONTRACTOR SHALL PROVIDE TWO SEPARATE SHEDS INSTALLED ADJACENT TO EACH OTHER.
8. PIPE ROUTING IS APPROXIMATE. FIELD ROUTE AS NEEDED TO MAINTAIN PATHWAYS AND ACCESS TO EQUIPMENT AND VALVES. PROVIDE STEP OVERS/RAMPS WHERE REQUIRED OR ELEVATE TO MINIMUM 7 FEET ABOVE GROUND TO MAINTAIN ACCESS PER SPECIFICATIONS. PROVIDE LOW POINT DRAINS AND HIGH POINT VENTS AS NEEDED. CONTRACTOR DESIGNED SUPPORTS SHALL BE FAVORABLY APPROVED BY ENGINEER. EXCEPT AS MAY BE REQUIRED FOR THE DISCHARGE STACK, SUPPORTS SHALL NOT BE ANCHORED TO THE BUILDING WALL, AWNING, ROOF, OR COLUMNS.
9. TREATMENT SYSTEM SHALL BE COMMISSIONED IN ACCORDANCE WITH SPECIFICATION SECTION 01 77 00.
10. EQUIPMENT AND PIPING LOCATIONS ARE SHOWN FOR CONCEPTUAL PURPOSES ONLY. ACTUAL EQUIPMENT AND PIPING LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR.

LEGEND

- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION WELL PIPING
- REMEDIATION SYSTEM PROCESS PIPING (SEE NOTE 4)
- CHAIN LINK FENCE
- SUB-SLAB DEPRESSURIZATION WELL
- VAPOR MONITORING PIN
- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-01)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
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NO	REVISION	DATE	BY
1	SEATTLE DEPARTMENT OF TRANSPORTATION PERMIT	10/09/2023	CMW

SCALES 0 — 10"

BENJAMIN EDWARD GATES — STATE OF WASHINGTON — 88495 — REGISTERED PROFESSIONAL ENGINEER — 4/16/2024

DESIGNED CMW
DRAWN CMW
CHECKED BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

REMEDIATION SYSTEM LAYOUT

SCALE 1" = 10'
JOB NO 2196008.00
DATE APRIL 2024
SHEET 8 OF 24
C-03

Plot Date: 4/16/2024 1:58 PM
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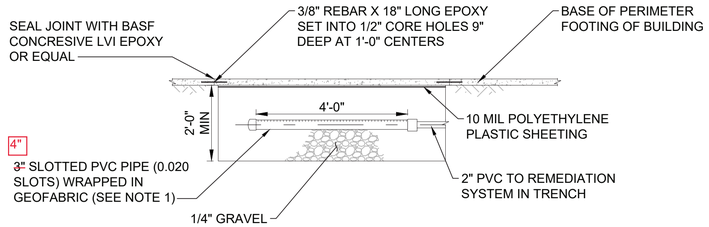
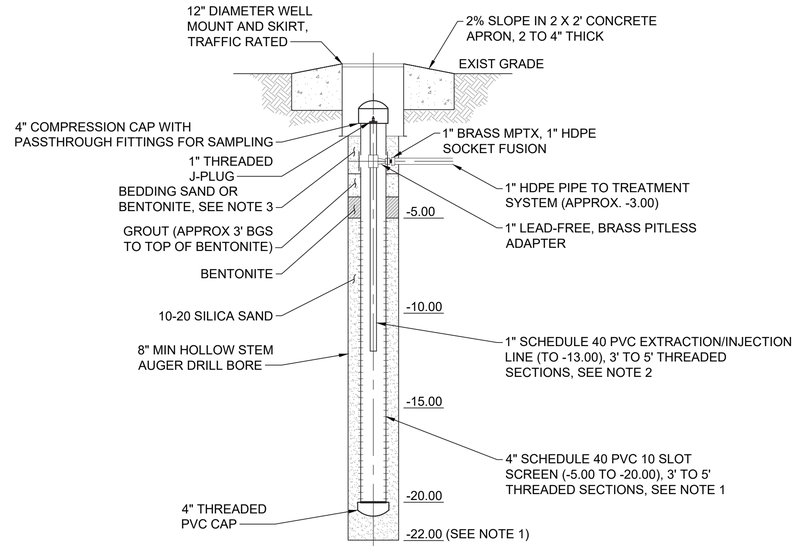


NOTES:

1. GEOFABRIC SHALL BE NONWOVEN POLYPROPYLENE GEOTEXTILE, SUCH AS MIRAFI 140N, OR EQUAL.
2. SUB-SLAB DEPRESSURIZATION (SSD) WELL SHALL BE INSTALLED AT LEAST 1 FOOT BELOW THE BOTTOM OF ANY PERIMETER FOOTING OF THE BUILDING.

1 C-01 SUB-SLAB DEPRESSURIZATION WELL

SCALE: 1/2" = 1'



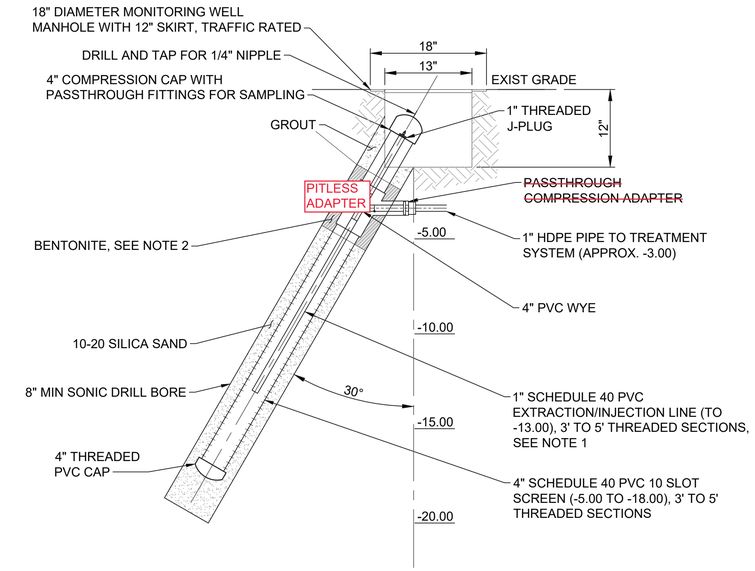
NOTES:

1. WELL RW-10 SHALL BE DRILLED TO 30 FT BGS WITH A SCREEN INTERVAL FROM 23 TO 28 FT BGS. IN RW-10 THE EXTRACTION/INJECTION LINE SHALL EXTEND TO - 16 FT BGS.
2. PIPING SHALL EXTEND TO LOW GROUND WATER ELEVATION OR A MINIMUM OF 13' BGS.
3. AFTER INSTALLATION OF COUPLING AND PITLESS ADAPTER, CONTRACTOR SHALL BACKFILL WITH MINIMUM 3" BENTONITE AND THEN COMPACT PER SPECIFICATIONS.

RW-10 SCREEN FROM 25 TO 30 FT BGS

2 C-01 VERTICAL WELL

SCALE: NTS

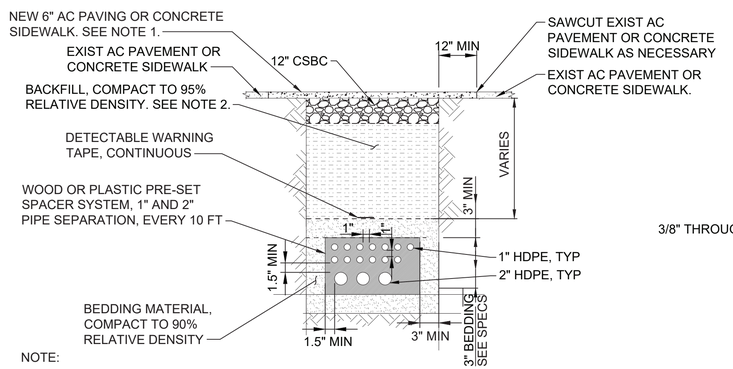


NOTES:

1. PIPING SHALL EXTEND TO LOW GROUND WATER ELEVATION OR A MINIMUM OF 13' BGS.
2. AFTER INSTALLATION OF WYE, CONTRACTOR SHALL BACKFILL WITH MINIMUM 3" BENTONITE AND THEN COMPACT PER SPECIFICATIONS.

3 C-01 SLANT WELL

SCALE: NTS

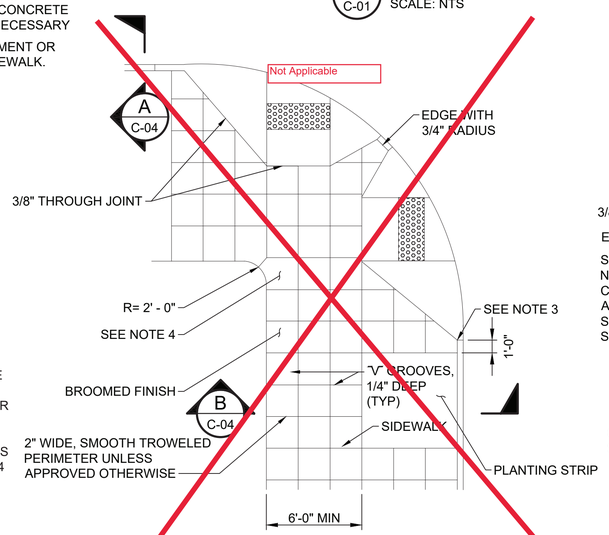


NOTE:

1. NEW AC PAVING OVER CRUSHED SURFACING BASE COURSE COMPACTED TO 95% RELATIVE DENSITY. AC PAVING SHALL BE MINIMUM OF 6" THICK. REMOVE EXISTING PAVEMENT AND BASE FOR THE FULL WIDTH OF THE TRENCH. RESTORE SIDEWALK PER CITY OF SEATTLE STANDARD PLAN 420 (SEE DETAIL 5 ON THIS SHEET). FULL SIDEWALK PANEL REPLACEMENT REQUIRED PER SEATTLE DEPARTMENT OF TRANSPORTATION DIRECTOR'S RULE 01-2017.
2. TRENCH BACKFILL SHALL CONSIST OF CONTROL DENSITY FILL PER CITY OF SEATTLE STANDARD SPECIFICATION 2-10.2(3)A2 (EXCEPT WITHIN 10-FT OF STEAM PIPES PER DIRECTOR'S RULE 01-2017 7.4.2.1) OR MINERAL AGGREGATE TYPE 17 PER STANDARD SPECIFICATION 9-03.14 AND COMPACTED PER STANDARD SPECIFICATION 2.11.3(1).
3. ARRANGEMENT OF 1" HDPE AND 2" PVC PIPES IN PRE-SET SPACER SYSTEM SHALL BE AT THE DISCRETION OF THE CONTRACTOR. SEPARATION AROUND 1" PIPE SHALL BE 1" MINIMUM. SEPARATION AROUND 2" PIPE SHALL BE 1.5" MINIMUM.

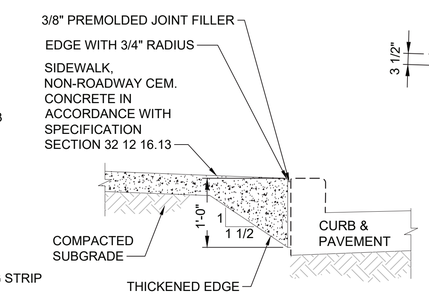
4 C-01 TRENCH SECTION

SCALE: NTS



5 C-01 TYPICAL SIDEWALK & CURB RAMP

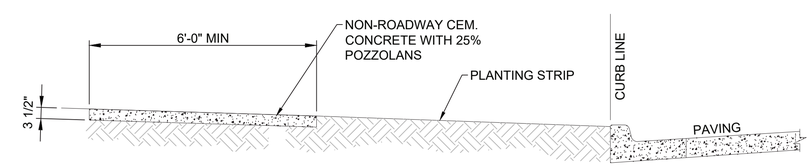
SCALE: NTS



CURB ON 24th AVE E IS MONOLITHIC

A C-04 THROUGH JOINT AT SECTION

SCALE: NTS UNLESS CURB IS MONOLITHIC WITH SIDEWALK



NOTES:

1. 3/8" THROUGH AND CONTRACTION JOINTS MUST BE LOCATED AS REQUIRED BY SPECIFICATION 32 12 16.
2. SAWCUT SCORING MUST MATCH PATTERN IN ADJACENT EXISTING SIDEWALK OR MUST BE A 2' SQUARE SCORING PATTERN UNLESS OTHERWISE APPROVED BY THE ENGINEER.
3. 12" MINIMUM BETWEEN EDGE OF RAMP WING AND PLANTING STRIP IS DESIRABLE.
4. 6'-0" MINIMUM CONTINUOUS SIDEWALK MUST BE MAINTAINED AROUND CORNERS.

B C-04 SECTION

SCALE: NTS

THE CITY OF SEATTLE DEPARTMENT OF CONSTRUCTION & INSPECTIONS
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NO	REVISION	DATE	BY

BENJAMIN EDWARD FRANTES, STATE OF WASHINGTON, 88495, REGISTERED PROFESSIONAL ENGINEER, 4/16/2024

DESIGNED RJA
DRAWN RJA
CHECKED BEF

DEPARTMENT OF ECOLOGY State of Washington

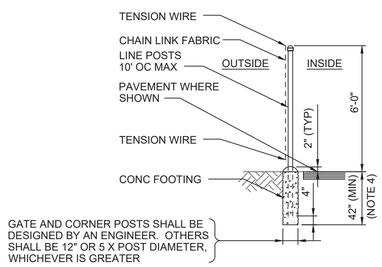
WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

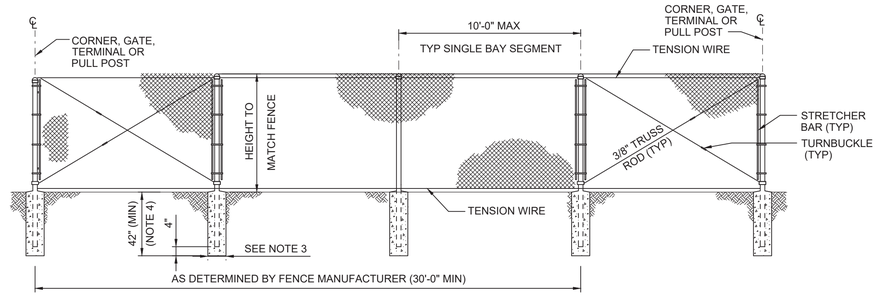
Kennedy Jenks

CIVIL SECTIONS AND DETAILS - I

SCALE AS SHOWN
JOB NO 2196008.00
DATE APRIL 2024
SHEET 9 OF 24
C-04

Plot Date: 4/16/2024 2:17 PM
User: RICHARD HILLS
File:\\Cdk-pw\Open\Dwy\ck1461\Sites\WA Department of Ecology\Projects\Circle K Cleanup_2196008.00\10-Design\10.06-Drawings\Civil\2196008-C-04

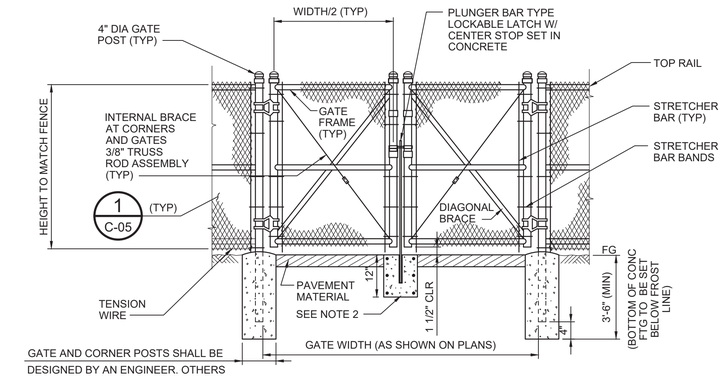




NOTES:

1. SEE SPECIFICATIONS FOR FENCE MATERIAL, COATINGS, AND INSTALLATION REQUIREMENTS.
2. EXTENSION ARM MAY BE TURNED IN AT OPTION OF OWNER.
3. LINE POSTS FOOTINGS SHALL BE 12" OR 5 X POST DIAMETER, WHICHEVER IS GREATER.
4. BOTTOM OF CONC FTG TO BE SET BELOW FROST LINE.
5. FENCE SHALL INCLUDE PRIVACY SCREEN MATERIAL WOVEN INTO CHAIN LINK FENCE. PRIVACY SCREEN MATERIAL SHALL BE DARK GREY COLOR OR OTHER COLOR AGREED UPON WITH THE OWNER.
6. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI AS MEASURED IN ACCORDANCE WITH ASTM C39.
7. MIX DESIGN
   7.1 FIELD TEST RECORDS: SUBMIT IN ACCORDANCE WITH ACI 318 CHAPTER 5.3
   7.2 WATER/CEMENT RATIO: 0.5 MAX
   7.3 AIR CONTENT: 4% +/- 1% IN ACCORDANCE WITH ASTM C231
8. CEMENTITIOUS MATERIALS
   8.1 MINIMUM CONTENT: 570 LBS/CU YD
   8.2 PORTLAND CEMENT: ASTM C150, TYPE II LOW ALKALI
   8.3 FLYASH: ASTM C618, CLASS F, NOT TO EXCEED 20% OF TOTAL CEMENTITIOUS MATERIALS.
9. AGGREGATE
   9.1 COARSE: CONFORM TO ASTM C33, 1-INCH MAX AGGREGATE
   9.2 FINE: CONFORM TO TABLE 1 OF ASTM C33
10. ADMIXTURES
   10.1 AIR ENTRAINING: ASTM C260
   10.2 WATER REDUCING: ASTM C494, TYPE A
11. CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 301-10, 318-11, AND ACI 347.
12. CONCRETE SHALL BE PLACED AND CURED BETWEEN 50 AND 90 DEGREES F.
13. PROVIDE SF-2.0 FINISH AT FORMED SURFACES IN ACCORDANCE WITH ACI 301.
14. PROVIDE TROWEL FINISH AT HORIZONTAL SURFACES IN ACCORDANCE WITH ACI 301.
15. UNLESS OTHERWISE NOTED, ALL EXPOSED EDGES AND CORNERS SHALL BE CHAMFERED 3/4-INCH.
16. REINFORCING BARS SHALL BE ASTM A615-GRADE 60.
17. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
18. ARRANGEMENT AND DETAINING OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI 315 DETAILING MANUAL.
19. REINFORCING SHALL LAP IN ACCORDANCE WITH ACI 318-11.
20. DIMENSIONS TO REINFORCING ARE TO BAR CENTERLINES, UNLESS NOTED OTHERWISE BAR COVER IS CLEAR DISTANCE BETWEEN THE BAR AND THE CONCRETE SURFACE. UNLESS SHOWN OTHERWISE, BAR COVER SHALL NOT BE LESS THE 1 1/2 INCH.
21. POST DIAMETER SHALL BE DEFERRED SUBMITTAL BY THE CONTRACTOR.

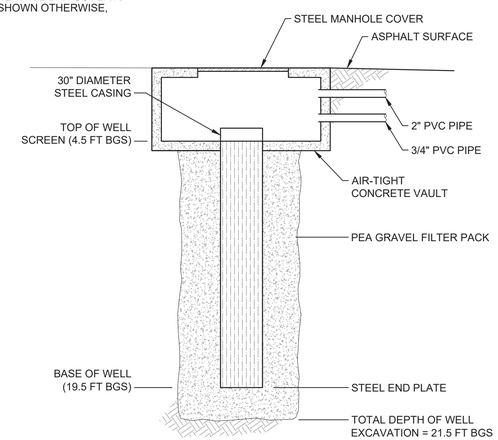
1 C-03 CHAIN LINK FENCE
SCALE: NTS



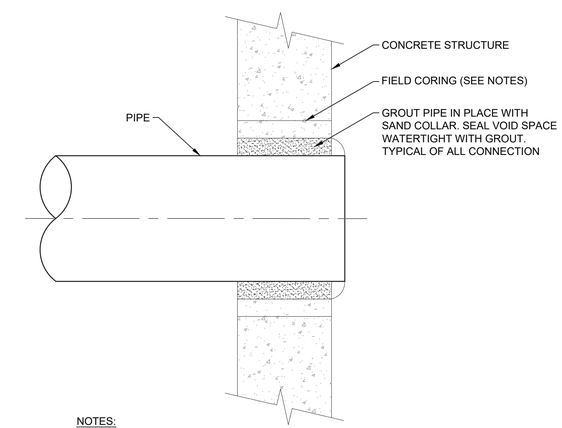
NOTES:

1. SEE SPECIFICATIONS FOR FENCE MATERIAL, COATINGS, AND INSTALLATION REQUIREMENTS.
2. 12" DIAMETER X 18" DEEP CONCRETE STOP W/ 20 GA STEEL PLUNGER SLEEVE, DIA = ROD OD +1/2".
3. POST DIAMETER SHALL BE DEFERRED SUBMITTAL BY THE CONTRACTOR.

2 C-03 DOUBLE LEAF SWING GATE
SCALE: NTS



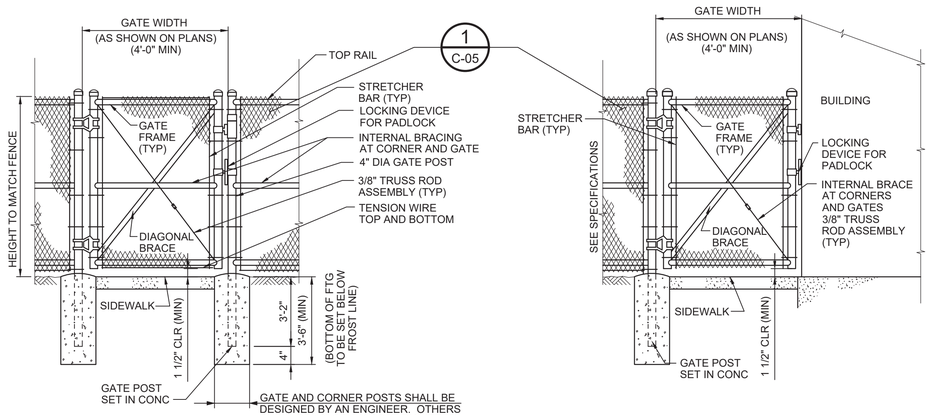
A C-01 RECOVERY WELL AND VAULT
SCALE: NTS



NOTES:

1. CONTRACTOR SHALL NEATLY CORE DRILL OPENINGS FOR THESE UTILITY CONNECTION IN THE FIELD BASED ON SPECIFIC UTILITY SIZE AND LOCATION. CORE DRILL OPENING SIZES SHALL BE MINIMIZED AS NECESSARY TO MAKE THE UTILITY CONNECTION.
2. CONTRACTOR SHALL MAKE ALL CORE DRILLED OPENINGS WATERTIGHT WITH NON-SHRINK GROUT.
3. GROUT SHALL MEET THE REQUIREMENTS OF ASTM C 1107 FOR HYDRAULIC-CEMENT NON-SHRINK GROUT, HAVE A 25 TO 30 SECOND FLUID CONSISTENCY ACCORDING TO ASTM C 939, HAVE A MINIMUM WORKING TIME OF 30 MINUTES, HAVE MINIMUM COMPRESSIVE STRENGTH OF 7,500 PSI @ 28 DAYS WHEN PREPARED IN FLUID CONSISTENCY, AND NOT CONTAIN POWDERED ALUMINUM.

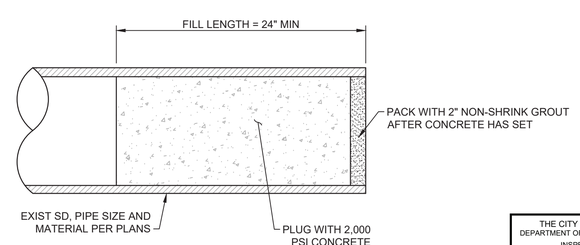
5 C-03 PIPE TO CATCH BASIN CONNECTOR
SCALE: NTS



NOTES:

1. SEE SPECS FOR FENCE MATERIAL, COATINGS, AND INSTALLATION REQUIREMENTS.
2. GATE TO BE INSTALLED WITH KEEPER TO SECURE IN OPEN POSITION.
3. GATES LESS THAN 8'-0" IN WIDTH SHALL BE SINGLE LEAF.
4. POST DIAMETER SHALL BE DEFERRED SUBMITTAL BY THE CONTRACTOR.

3 C-03 SINGLE LEAF SWING GATE
SCALE: NTS



4 C-01 PIPE PLUG
SCALE: NTS

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NO	REVISION	DATE	BY

SCALES
0 1"
0 25mm
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

BENJAMIN EDWARD FOSTES — STATE OF WASHINGTON — 88495 — REGISTERED PROFESSIONAL ENGINEER — 4/16/2024

DESIGNED RJA
DRAWN RJA
CHECKED BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

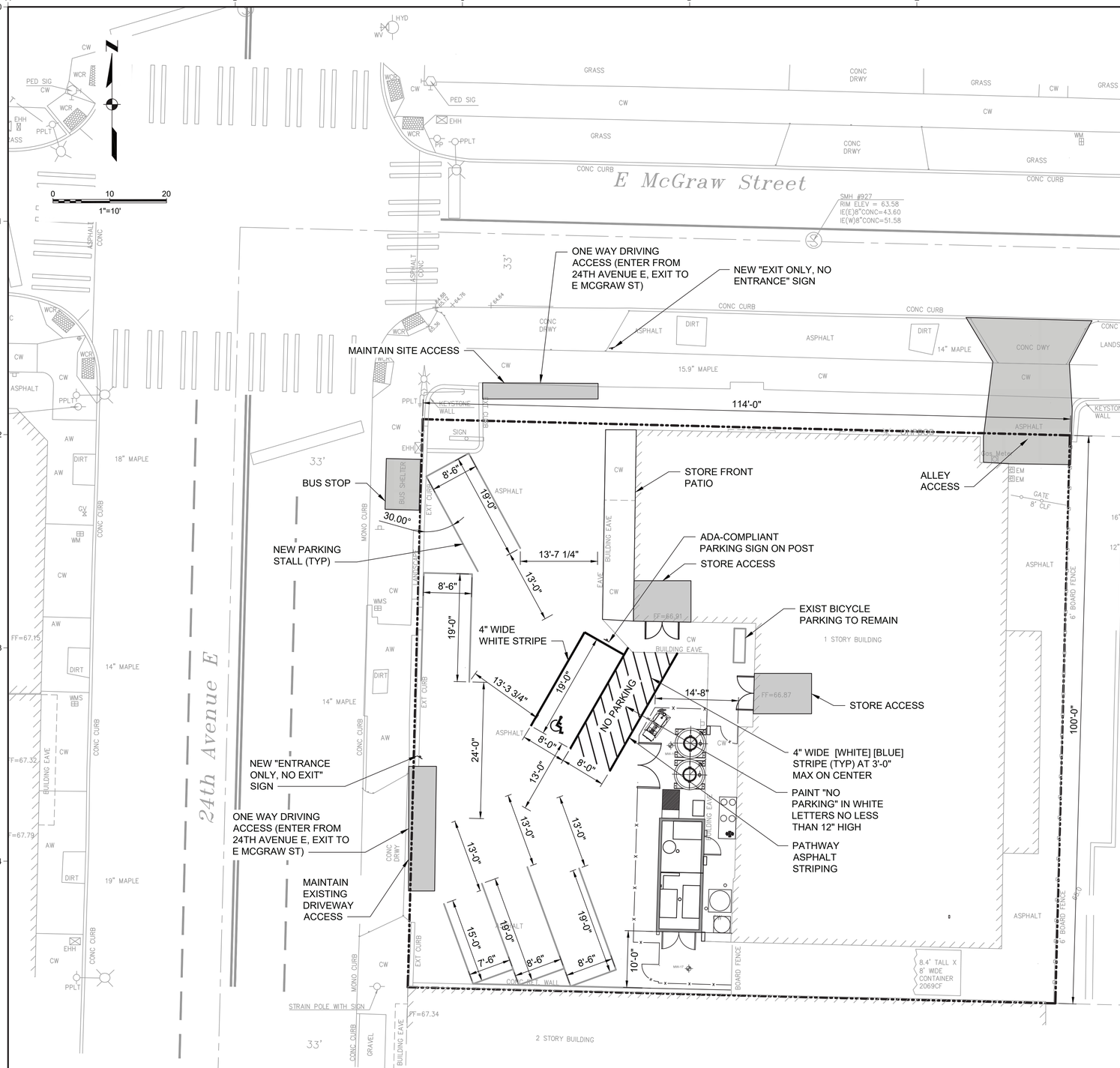
Kennedy Jenks

CIVIL SECTIONS AND DETAILS - II

FOR REFERENCE ONLY

SCALE
JOB NO 2196008.00
DATE APRIL 2024
SHEET 10 OF 24
C-05

Plot Date: 4/16/2024 2:18 PM
User: RICHARD HILLS
File: \\Cdprpub\projects\wa\dOH\61\5\24\A\B\B\2196008-05\Civil\WA Department of Ecology\Projects\Circle K Cleanup_2196008.00\10-Design\10.06-Drawings\Civil\2196008-00-C-05



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DEPARTMENT OF CONSTRUCTION & INSPECTIONS
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Subject to Errors and Omissions
05/17/2024

GENERAL SHEET NOTES

FLOOR AREA RATIO PER SMC 23.47A.013:
SITE AREA: 11,400 S.F.
EXISTING BUILDING AREA: 4,770 S.F.
NEW CONTAINER AREA: 160 S.F.
TOTAL FLOOR AREA: 4,930 S.F.
BUILDING HEIGHT: 16'± (LESS THAN 30')

FAR PER TABLE A, SMC 23.47.013: 2.5
FAR RATIO: 4,930 / 11,400 = .433 < 2.5 - COMPLIES

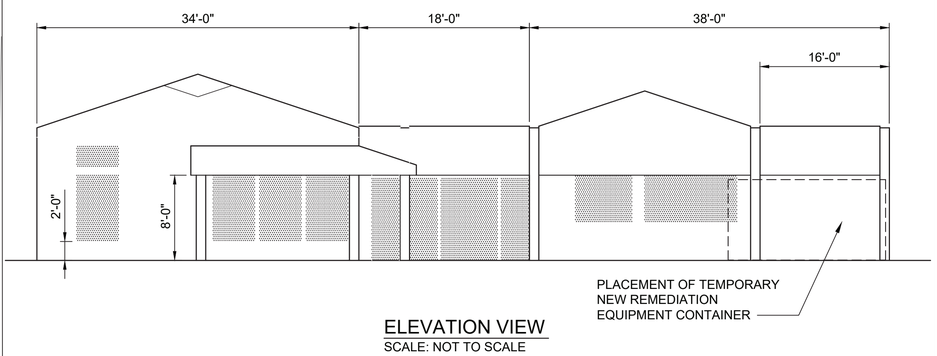
PARKING PER SMC 23.54.015
TOTAL FLOOR AREA: 4,930 S.F.
(LESS FLOOR AREA DISCOUNT PER SMC 23.54.015.D.1 OF 1,500 S.F.)
CALCULATED FLOOR AREA: 3,430 S.F.

REQUIRED PARKING PER TABLE A, SMC 23.54.015, USE B.10:
(1) SPACE PER 500 SQUARE FEET.
CALCULATED PARKING: 6.86; USE (7) STALLS
50% PARKING STALL REDUCTION PER SMC 23.54.020.F.2 = 3.5; USE (6) STALLS.

EXISTING NON-CONFORMING PARKING LOCATION PERMITTED UNDER 674948

EXISTING (1) LONG-TERM AND (1) SHORT-TERM BICYCLE PARKING AT BUILDING ENTRANCE TO REMAIN UNCHANGED. (SMC 23.54.015 TAB LE D, USE A.6)

SEATTLE ENERGY CODE (SEC):
PER SEC C402.1.2 EQUIPMENT BUILDINGS:
NEW CONTAINER IS TO BE CONDITIONED (HEAT ONLY, NO COOLING)
NEW CONTAINER AREA: 160 S.F.
NOT INTENDED FOR HUMAN OCCUPANCY
HEATING SYSTEM: 0.5 KW
HEATING THERMOSTAT SET POINT: NOT MORE THAN 50 DEGREES F.
AVERAGE WALL AND ROOF U-FACTOR: LESS THAN 0.200



ELEVATION VIEW
SCALE: NOT TO SCALE

SBC: 503.1.2 - BUILDINGS ON THE SAME LOT

THESE STRUCTURES WILL BE CONSIDERED AS PORTIONS OF ONE BUILDING PER 503.1.2.

AGGREGATE AREA OF ALL OCCUPANCIES (F-2, B, AND M): 4,930 SF
MINIMUM ALLOWABLE AREA PER TABLE 506.2 (NS, TYPE V B, F-2 OCCUPANCY): 13,000 SF
MINIMUM ALLOWABLE AREA PER TABLE 506.2 (NS, TYPE V B, B OCCUPANCY): 9,000 SF
MINIMUM ALLOWABLE AREA PER TABLE 506.2 (NS, TYPE V B, M OCCUPANCY): 9,000 SF

REQUIRED SEPARATION OF OCCUPANCIES PER TABLE 508.4:
F-2 AND B OCCUPANCIES - NO SEPARATION REQUIREMENT
B AND M OCCUPANCIES - NO SEPARATION REQUIREMENT
M AND F-2 OCCUPANCIES - NOT APPLICABLE AT THIS BUILDING

STREET LEVEL DEVELOPMENT STANDARDS PER SMC 23.47A.008:

A.2A ALL BUILDING STREET-FACING FACADES HAVE WINDOWS AND ENTRYWAYS.

A.2B SINGLE BLANK SEGMENT OF 16' LENGTH AT SOUTH END OF FACADE. NEW TEMPORARY CONTAINER TO BE PLACED IN THIS LOCATON.

A.2C BLANK FACADE SEGMENTS EQUAL 38.8 PERCENT OF THE WIDTH OF THE STRUCTURE FACADE ALONG THE STREET.

B.2A TRANSPARENT STREET FACING FACADE EQUALS 61.2 PERCENT.

B.3A NEW NON-RESIDENTIAL STRUCTURE (TEMPORARY CONTAINER) OF 160 S.F. IS LESS THAN 600 S.F. THRESHOLD FOR DEPTH PROVISION REQUIREMETS.

C.1 CURRENT BUILDING USE IS MINI-MARKET AND LAUNDRY.

C.4 OVERHEAD WEATHER PROTECTION IS PROVIDED ALONG 80 PERCENT OF THE STREET FRONTAGE OF THE STRUCTURE.

TABLE A FOR 23.471.008.C: TWO (2) SMALL COMMERCIAL SPACES ARE PROVIDED IN THE EXISTING 4,770 S.F. STRUCTURE

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NO	REVISION	DATE	BY
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SCALES 0 — 10"

BENJAMIN EDWARD BENTES, STATE OF WASHINGTON, 88495, REGISTERED PROFESSIONAL ENGINEER, 4/16/2024

DESIGNED CMW
DRAWN CMW
CHECKED BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

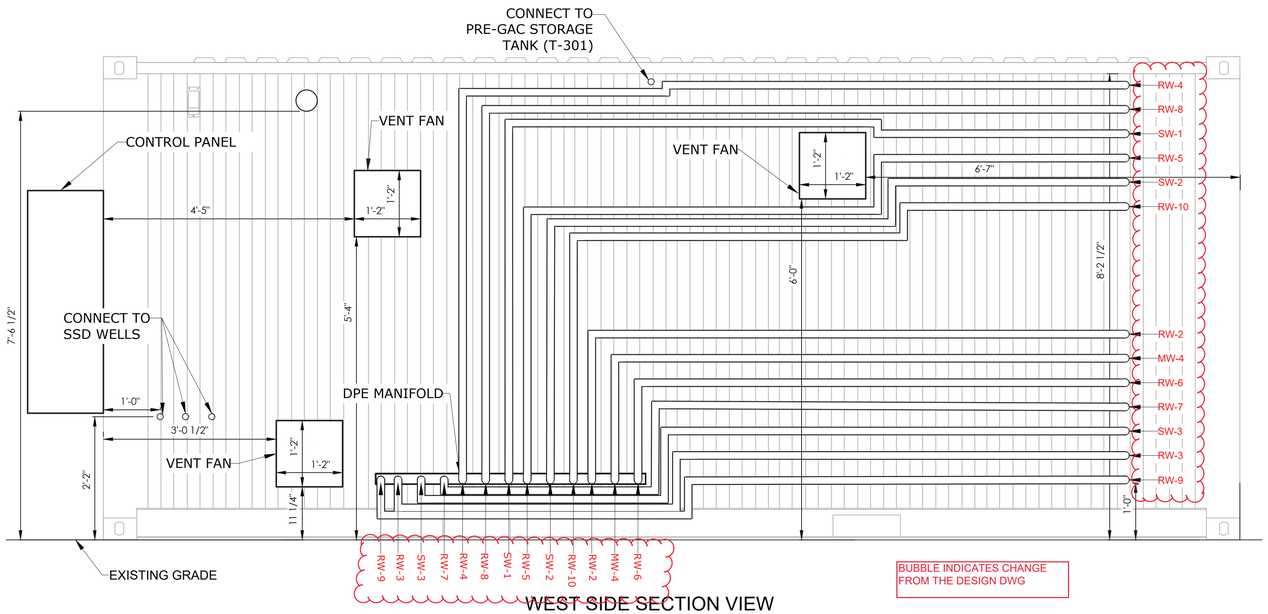
Kennedy Jenks

SITE PLAN PARKING AREAS

FOR REFERENCE ONLY

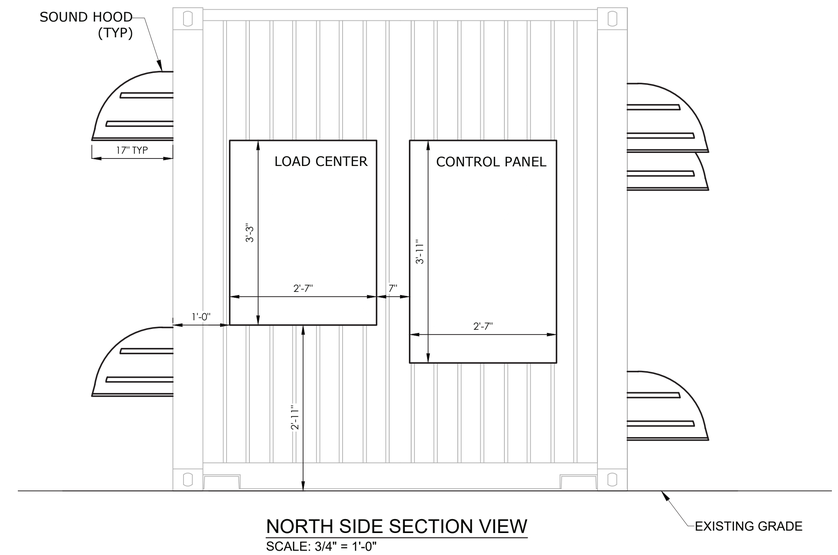
SCALE 1" = 10'
JOB NO 2196008.00
DATE APRIL 2024
SHEET 11 OF 24
C-06

Plot Date: 4/16/2024 2:00 PM
User: RICHARD HILLS
File: C:\bms\kjce-pw\d0181574\2196008\00-C-06.dwg

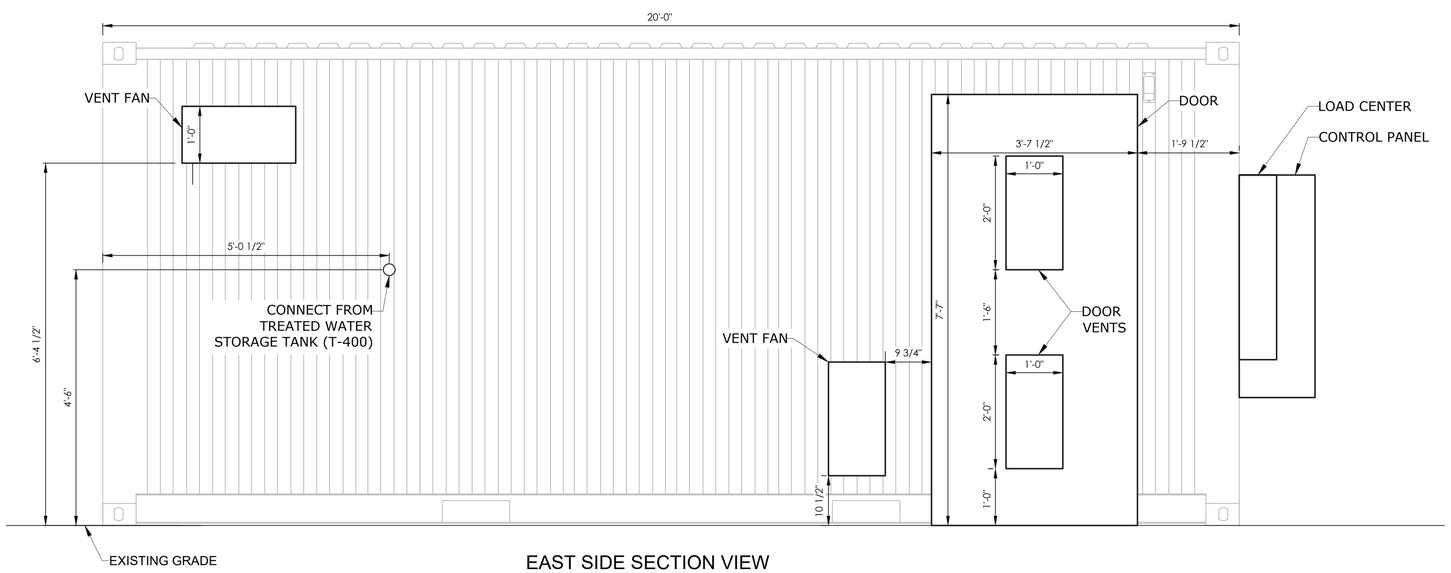


BUBBLE INDICATES CHANGE FROM THE DESIGN DWG

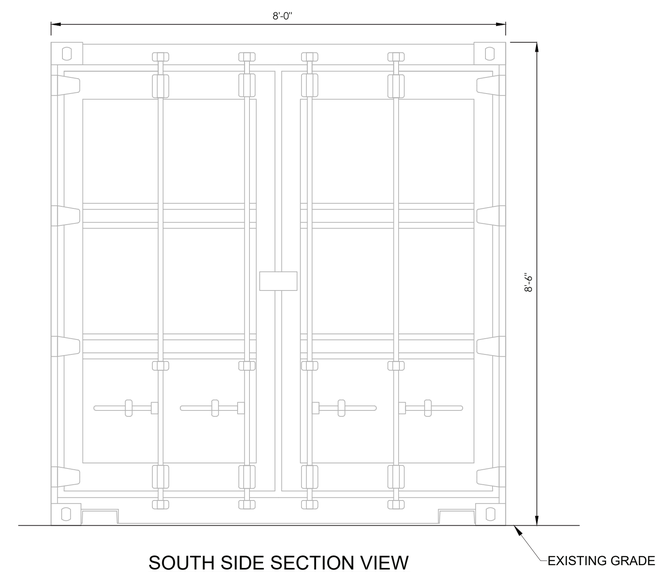
WEST SIDE SECTION VIEW
SCALE: 3/4" = 1'-0"



NORTH SIDE SECTION VIEW
SCALE: 3/4" = 1'-0"



EAST SIDE SECTION VIEW
SCALE: 3/4" = 1'-0"



SOUTH SIDE SECTION VIEW
SCALE: 3/4" = 1'-0"

THE CITY OF SEATTLE
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4455 REGISTERED ARCHITECT MARK PRESTON STATE OF WASHINGTON

Plot Date: 4/16/2024 2:20 PM
User: RICHARD HILLS
File: C:\bms\kjce-pw\d0181574\219600800-C-07.dwg

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NO	REVISION	DATE	BY
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SCALES
0 10"

BENJAMIN EDWARD FRENTES STATE OF WASHINGTON 88495 REGISTERED PROFESSIONAL ENGINEER
4/16/2024

DESIGNED CMW
DRAWN CMW
CHECKED BEF

DEPARTMENT OF ECOLOGY State of Washington

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

CONTAINER ELEVATION VIEWS

SCALE 1" = 10'
JOB NO 2196008.00
DATE APRIL 2024
SHEET 12 OF 24
C-07

Plot Date: 4/16/2024 2:23 PM
User: RICHARD HILLS
pw:\\kjce-pw.bentley.com:kjce-pw\Documents\Clients\WA Department of Ecology\Projects\Circle K Cleanup_2196008.00\10-Design\10.06-Drawings\Electrical\219600800-E-01

ABBREVIATIONS

'	FOOT, FEET
"	INCH, INCHES
#	NUMBER
%	PERCENT
&	AND
@	AT
±	APPROXIMATELY
<	LESS THAN
=	EQUALS
>	GREATER THAN
A	AMPERE(-S)
A/C	AIR CONDITIONING
A/D	ANALOG TO DIGITAL
A/M	AUTO/MANUAL
ABAN(-D)	ABANDON(-ED)
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFCI	ARC-FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AI	ANALOG INPUT
AIC	AMPERES INTERRUPTING CAPACITY
ANN	ANNUNCIATOR
ANT	ANTENNA
AO	ANALOG OUTPUT
APPROX	APPROXIMATE(-LY)
ARCH	ARCHITECT(-URAL)
AS	AMMETER SWITCH
ASD	ADJUSTABLE SPEED DRIVE (DC)
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAGE
BATT	BATTERY
BC	BARE COPPER
BKR	BREAKER
C	CONDUCTOR, CONTACT
C/S	CONSTANT SPEED
CAB	CABINET
CALC(S)	CALCULATION(S)
CAT	CATEGORY
CB	CATCH BASIN
CCTV	CLOSED-CIRCUIT TELEVISION
CHEM	CHEMI(-CAL, -STRY)
CID1	CLASSIFICATION I, DIVISION 1
CID2	CLASSIFICATION I, DIVISION 2
CKT	CIRCUIT
CLR	CLEAR(-ANCE)
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CO	CONDUIT ONLY
COAX	COAXIAL
COM	COMMON
COMM	COMMUNICATION
COND	CONDUIT
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
CTRL	CONTROL
CU IN	CUBIC INCH(-ES)
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DEG	DEGREE(-S)
DEG C	DEGREES CELSIUS
DEG F	DEGREES FARENHEIT
DEMO	DEMOLISH
DI	DISCRETE INPUT
DIA	DIAMETER
DIAG	DIAGRAM
DISC	DISCONNECT
DISTR	DISTRIBUTION
DO	DISCRETE OUTPUT
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DR	DOOR
DTL(-S)	DETAIL(-S)
DUP	DUPLEX
EFFIC	EFFICIENCY
EFFL	EFFLUENT
ELEC	ELECTRIC(-AL)
ELEM	ELEMENTARY
EMERG	EMERGENCY
ENCL	ENCLOSURE
ENET	ETHERNET
ENGR	ENGINEER
EPA	ENVIRONMENTAL PROTECTION AGENCY
EQPM	EQUIPMENT
EST	ESTIMATE(-D)
E-STOP	EMERGENCY STOP
ETC	ET CETERA
ETM	ELAPSED TIME METER
EUSERC	ELECTRIC UTILITY SERVICE EQUIPMENT REQUIREMENTS COMMITTEE
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERNAL
FA	FIRE ALARM
FACIL	FACILIT(-Y, -IES)
FC	FAIL CLOSED
FDR	FEEDER
FIG	FIGURE
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FO	FIBER OPTIC, FAIL OPEN
FREQ	FREQUENCY
FT	FOOT, FEET
FU	FUSE
FUT	FUTURE
FVNR	FULL VOLTAGE, NON REVERSING
FVR	FULL VOLTAGE, REVERSING
FWD	FORWARD
G	GROUND (ELECTRICAL)
GAC	GRANULAR ACTIVATED CARBON
GAL	GALLON(-S)
GFCI	GROUND-FAULT CIRCUIT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
H	HIGH, HEIGHT
HD	HEAT DETECTOR
HDPE	HIGH DENSITY POLYETHYLENE
HGR	HANGER
HH	HANDHOLE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTOMATIC
HOR	HAND-OFF-REMOTE
HP	HORSEPOWER
HR(S)	HOUR(-S)
HTR	HEATER
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HZ	HERTZ (CYCLES PER SECOND)
I&C	INSTRUMENTATION AND CONTROL
I/O	INPUT/OUTPUT
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IL	INDICATING LIGHT
IN	INCH(-ES)
INST	INSTANTANEOUS
INSTR	INSTRUMENT(-ATION)
IP	INTERNET PROTOCOL
IR	INFRARED
IS	INTRINSICALLY SAFE
ISA	INTERNATIONAL SOCIETY OF AUTOMATION
ISO	ISOLAT(-E, -ION)
ISR	INTRINSICALLY SAFE RELAY
JB	JUNCTION BOX
KA	KILOAMPERE(-S)
KCMIL	THOUSANDS OF CIRCULAR MILS
KHZ	KILOHERTZ
KV	KILOVOLT(-S)
KVA	KILOVOLT-AMPERE(-S)
KVAR	KILOVOLT-AMPERE(-S) REACTIVE
KVARH	KILOVOLT-AMPERE REACTIVE HOUR(-S)
KW	KILOWATT(-S)
KWH	KILOWATT HOUR(-S)
L	LENGTH, LINE
LA	LIGHTNING ARRESTER
LAN	LOCAL AREA NETWORK
LB(-S)	POUND(-S)
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LEL	LOWER EXPLOSIVE LIMIT
LOC	LOCATION
LOR	LOCAL-OFF-REMOTE
LOTO	LOCK-OUT, TAG-OUT
LP	LIGHTING PANELBOARD
L-R	LOCAL-REMOTE
LS	LIMIT SWITCH
LT	LIGHT
LTG	LIGHTING
LV	LOW VOLTAGE
mA	MILLIAMPERE(-S)
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MHZ	MEGAHERTZ
MIL(-S)	ONE-THOUSANDTH OF AN INCH
MIN	MINIMUM, MINUTE(-S)
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MM	MULTIMODE
MOCP	MAXIMUM OVERCURRENT PROTECTION
MOD(-S)	MODIF(-Y, -ICATIONS)
MOV	MOTOR OPERATED VALVE
MT(-D, -G)	MOUNT(-ED, -ING)
MTR	MOTOR
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
N	NORTH, NEUTRAL
N/A	NOT APPLICABLE
NAOCL	SODIUM HYPOCHLORITE
NAOH	SODIUM HYDROXIDE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NECA	NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NETA	INTERNATIONAL ELECTRICAL TESTING ASSOCIATION
NFC	NOT FOR CONSTRUCTION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NH3	AMMONIA
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NORM	NORMAL
NTS	NOT TO SCALE
O/C	OPEN/CLOSE
O3	OZONE
ODP	OPEN DRIP PROOF
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OIT	OPERATOR INTERFACE TERMINAL
OL	THERMAL OVERLOAD RELAY
ORIG	ORIGINAL
OSC	OPEN/STOP/CLOSE
OT	OVER TEMPERATURE
P	POLE
PA	PUBLIC ADDRESS
PB	PULLBOX, PUSHBUTTON
PC(-S)	PIECE(-S), PHOTOCELL
PCC	POINT OF COMMON COUPLING
PE	PHOTOELECTRIC
PF	POWER FACTOR
PFR	POWER FACTOR RELAY
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PNL	PANEL
PNLBD	PANELBOARD
POE	POWER OVER ETHERNET
PP	POWER POLE
PRI	PRIMARY
PRV	PRESSURE RELIEF VALVE, PRESSURE REDUCING VALVE
PS	POWER SUPPLY
PT(-S)	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
R, RAD	RADIUS
RCPT	RECEPTACLE
RCT	REPEAT CYCLE TIMER
RIO	REMOTE INPUT/OUTPUT
RM	ROOM
RMT	REMOTE
RPM	REVOLUTIONS PER MINUTE
RST	RESET
RT	RESET TIMER
RTU	REMOTE TELEMETRY UNIT
RVSS	REDUCED VOLTAGE, SOLID STATE
S/S	START/STOP
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
SEC	SECONDARY
SER	SERVICE ENTRANCE RATED
SGNL	SIGNAL
(SH)	SHIELDED
SHT	SHEET
SM	SINGLEMODE
SP	SET POINT
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
SPEC(-S)	SPECIFICATION(-S)
SS	STAINLESS STEEL, SOLID STATE
STB	SHORTING TERMINAL BLOCK
STD(-S)	STANDARD(-S)
STL	STEEL
STP	SHIELDED TWISTED PAIR
STRC	STRUCTUR(-E, -AL)
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYNC	SYNCHRONIZING
T	TIME(-R)
TB	TERMINAL BLOCK
TC	TRAY CABLE
TCP	TRANSMISSION CONTROL PROTOCOL
TEFC	TOTALLY ENCLOSED FAN COOLED
TEL	TELEPHONE
TEMP	TEMPERATURE, TEMPORARY
TENV	TOTALLY ENCLOSED NON-VENTILATED
THRU	THROUGH
TOT	TOTAL, TOTALIZE(R)
TSTAT	THERMOSTAT
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UNKN	UNKNOWN
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
UV	ULTRAVIOLET
V	VOLTS
V/S	VARIABLE SPEED
VA	VOLT-AMPERES
VAR	VARIES, VARIABLE, VOLT-AMPERES REACTIVE
VCP	VENDOR CONTROL PANEL
VFD	VARIABLE FREQUENCY DRIVE (AC)
VFI	VACUUM FAULT INTERRUPTER
VS	VOLTMETER SWITCH
W	WIDE, WIDTH, WIRE, WATTS, WEST
W/	WITH
W/O	WITHOUT
WAN	WIDE AREA NETWORK
WHDM	WATT-HOUR DEMAND METER
WHM	WATT-HOUR METER
WP	WEATHERPROOF, WEATHER PROTECTED
WR	WEATHER RESISTANT
WTP	WATER TREATMENT PLANT
WTR	WATER
WW	WASTEWATER
WWTP	WASTEWATER TREATMENT PLANT
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

ELECTRICAL NOTES

1. THIS IS A GENERALIZED LEGEND SHEET. THIS CONTRACT MAY NOT USE ALL INFORMATION SHOWN.
2. THE INSTALLATION OF ALL EQUIPMENT, RACEWAYS, CONDUCTORS, AND CABLES SHOWN ON THESE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL CODES AND UTILITY COMPANY STANDARDS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE UTILITY COMPANY AND VERIFY THEIR REQUIREMENTS.
3. ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY THE SCOPE OF WORK WITH FIELD CONDITIONS. PARTICULAR ATTENTION SHOULD BE GIVEN TO NEW CONDUIT RUNS IN EXISTING BUILDINGS.
4. NOTIFY THE ENGINEER IMMEDIATELY IN WRITING IF CONFLICTS IN EQUIPMENT LOCATIONS ARE DISCOVERED OR IF PROBLEMS ARISE DUE TO FIELD CONDITIONS, LACK OF INFORMATION OR ANY OTHER REASON. NO PAYMENT WILL BE MADE FOR CHANGES WHICH HAVE NOT BEEN FAVORABLY REVIEWED BY THE ENGINEER.
5. CONDUIT ROUTING SHOWN ON PLAN DRAWINGS IS DIAGRAMMATIC ONLY. RACEWAYS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT OR STRUCTURAL CONDITIONS. EXPOSED RACEWAYS SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BEAMS AND WALLS. REFER ALSO TO THE CONTRACT SPECIFICATIONS.
6. VERIFY THE EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES TO ALL EQUIPMENT AGAINST APPROVED SHOP DRAWINGS BEFORE STUBBING UP CONDUITS. CONDUIT STUB-UPS SHALL NOT BE MORE THAN 6 INCHES FROM THE CENTERLINE OF TERMINAL BOXES.
7. CONNECTIONS BETWEEN RIGID CONDUIT AND MOTOR TERMINAL BOXES OR SIMILAR EQUIPMENT SUBJECT TO VIBRATION SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT.
8. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO MOTORS AND OTHER EQUIPMENT.
9. CONDUITS FOR FUTURE EQUIPMENT OR EXTENSIONS SHALL BE TERMINATED AS SHOWN IN THE DETAILS OR AS SPECIFIED.
10. LOCATIONS OF PULLBOXES ARE APPROXIMATE. COORDINATE EXACT LOCATION IN THE FIELD TO ENSURE 6 INCHES (MINIMUM) CLEARANCE FROM MECHANICAL PIPING FLOW LINES.
11. ONLY MAJOR PULLBOXES ARE SHOWN. PROVIDE ADDITIONAL PULLBOXES WHERE REQUIRED TO MAKE A WORKABLE INSTALLATION.
12. PERFORM WORK IN ACCORDANCE WITH THE DETAILS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.
13. VERIFY ALL COLOR REQUIREMENTS BEFORE ORDERING MATERIALS.
14. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
15. REFER TO THE MECHANICAL DRAWINGS FOR CERTAIN CONTROL DIAGRAMS, EXACT LOCATIONS OF MECHANICAL EQUIPMENT, AND FOR CERTAIN CONNECTIONS TO BE MADE TO ELECTRICAL CIRCUITS.
16. CONDUIT SIZE AND FILL SHALL BE AS INDICATED ON THE CONDUIT AND CABLE SCHEDULES. WHERE NO SIZE IS SHOWN, THE CONDUIT SHALL BE SIZED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE ADOPTED BY THE AUTHORITY HAVING JURISDICTION. MINIMUM CONDUIT SIZE IS 3/4 INCH, EXCEPT WHERE ENCASED OR BURIED. MINIMUM ENCASED OR BURIED CONDUIT SIZE IS 1 INCH.
17. PROVIDE EXPANSION OR EXPANSION AND DEFLECTION FITTINGS FOR ALL CONDUIT RUNS CROSSING EXPANSION JOINTS. REFER TO THE STRUCTURAL DRAWINGS FOR LOCATIONS OF EXPANSION JOINTS.
18. PROVIDE 3/16 INCH NYLON PULL ROPE IN EACH EMPTY CONDUIT.
19. FOR LIGHTING AND RECEPTACLE SYSTEMS, ONLY CIRCUIT NUMBERS ARE SHOWN. PROVIDE ALL NECESSARY CONDUITS, WIRES, FITTINGS, JUNCTION BOXES AND NECESSARY COMPONENTS SHOWN OR NOT SHOWN ON THE DRAWINGS, TO MAKE THE ELECTRICAL INSTALLATION COMPLETE AND OPERATIONAL. SIZE CONDUITS AND WIRING IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. ALL CONDUIT RUNS SHALL BE CONCEALED UNLESS INDICATED OTHERWISE. CIRCUIT LOADING SHALL BE AS INDICATED IN THE PANEL SCHEDULES. ALL LIGHTING AND RECEPTACLE CIRCUITS SHALL INCLUDE GROUND WIRE.
20. MOUNT LUMINAIRES ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS, WITH THE DISTANCE BEING MEASURED FROM THE BOTTOM OF THE LUMINAIRE TO THE FINISHED FLOOR. PROVIDE APPROPRIATE BRACKETS AND HARDWARE FOR MOUNTING.
21. ALL RECEPTACLES IN OUTDOOR AND ANTICIPATED WET AREAS SHALL BE GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES WITH WEATHERPROOF WHILE IN-USE COVERS.
22. ALL FREE STANDING ELECTRICAL EQUIPMENT AND CONTROL PANELS SHALL BE SET ON CONCRETE HOUSEKEEPING PADS WITH LEVELING CHANNELS EMBEDDED IN THE PAD.
23. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE CENTERLINE OF THE TOP CIRCUIT BREAKER OPERATING HANDLE IN THE UPPERMOST POSITION TO THE FINISHED FLOOR SHALL NOT EXCEED 6'-7".
24. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INTERIOR OF EXTERIOR WALLS ABOVE GRADE OR IN OTHER LOCATIONS CONSIDERED DAMP OR WET SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4 INCH (MINIMUM) AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
25. PROVIDE LOCKOUTS IN STRICT ACCORDANCE WITH OWNER'S REQUIREMENTS.
26. REFER TO THE SINGLE LINE DIAGRAMS, EQUIPMENT ELEVATIONS, PANELBOARD SCHEDULES, AND COMPONENT/DEVICE LABELS IN THE CONTROL SCHEMATICS FOR NAMEPLATE INFORMATION. SEE THE CONTRACT SPECIFICATIONS FOR NAMEPLATE SIZE, COLOR, MATERIAL, AND PLACEMENT REQUIREMENTS.
27. "NORMAL" STATUS OF SWITCHES OR CONTACTS SHOWN IN CONTROL SCHEMATICS IS THE SHELF POSITION.

ELECTRICAL DEMOLITION NOTES

1. BIDDING CONTRACTORS SHALL VISIT THE SITE TO ASSESS THE SCOPE OF DEMOLITION, REMOVAL AND MODIFICATION WORK.
2. ELECTRICAL CONTRACTOR AND THE OWNER SHALL DE-ENERGIZE ALL WIRING PRIOR TO REMOVAL OF EQUIPMENT, DEVICES, MOTORS INSTRUMENTATION, CONTROL PANELS, ETC. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE OWNER.
3. EXPOSED RACEWAYS: REMOVE CONDUIT, WIRES, AND BOXES. PATCH TO MATCH EXISTING. FINISH ALL OPENINGS LEFT IN WALLS AND FLOORS.
4. CONCEALED CONDUITS IN THE SLAB: REMOVE EXISTING WIRES TO THE EXTENT POSSIBLE AND ABANDON CONDUITS IN THE SLAB. CUT CONDUIT FLUSH AND PATCH THE FLOOR TO MATCH EXISTING.
5. CONTROL PANELS: ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUIT AND WIRE AS DESCRIBED IN NOTES 3 AND 4. CONTRACTOR SHALL REMOVE PANELS AS NOTED ON THE CONTRACT DRAWINGS.
6. MOTOR CONTROL CENTERS: DISCONNECT AND REMOVE ALL CONDUITS AND WIRING TO EXISTING STARTERS AND/OR BREAKERS, PANELBOARDS, BRANCH CIRCUITS, INTERLOCKS AND STATUS WIRING WITHIN MCC.
7. REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL ELECTRICAL DEMOLITION AND REMOVAL REQUIREMENTS.

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LAWRENCE G. REISNGER, STATE OF WASHINGTON, 22589, REGISTERED PROFESSIONAL ENGINEER, 4/16/2024

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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

GENERAL ELECTRICAL ABBREVIATIONS AND NOTES

SCALE AS SHOWN
JOB NO 2196008.00
DATE APRIL 2024
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E-01

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SINGLE LINE DIAGRAM SYMBOLS

- BUS
- BUS (EXISTING)
- FEEDER
- FEEDER (EXISTING)
- X — AMPS FRAME; 100A — LOW VOLTAGE THERMAL-MAGNETIC CIRCUIT BREAKER; 70A — AMPS TRIP; 3-POLE EXCEPT WHERE NOTED; X = CIRCUIT NUMBER OR LOCATION (SEE ELEVATION)
- X — AMPS CONTINUOUS; 100A MCP — LOW VOLTAGE MOTOR CIRCUIT PROTECTOR; 3-POLE EXCEPT WHERE NOTED; X = CIRCUIT NUMBER OR LOCATION (SEE ELEVATION)
- 400AF 200AT — LOW VOLTAGE DRAWOUT CIRCUIT BREAKER INCLUDING L-S-I-G SETTINGS UNLESS NOTED OTHERWISE; L = LONG TIME; S = SHORT TIME; I = INSTANTANEOUS; G = GROUND FAULT
- 52 — MEDIUM VOLTAGE DRAWOUT CIRCUIT BREAKER
- FVNR # — FULL VOLTAGE COMBINATION STARTER WITH CONTROL POWER TRANSFORMER; # = NEMA SIZE; FVR = REVERSING TYPE; FVNR = NON-REVERSING TYPE
- RVSS A — REDUCED VOLTAGE STARTER WITH CONTROL POWER TRANSFORMER RATING IN AMPERES AS INDICATED; RVSS = SOLID STATE TYPE; RVAT = AUTO-TRANSFORMER TYPE
- VFD A — VARIABLE FREQUENCY DRIVE WITH CONTROL POWER TRANSFORMER RATING IN AMPERES AS INDICATED
- 30A — DISCONNECT SWITCH; 3 POLE EXCEPT WHERE NOTED; RATING IN AMPERES AS INDICATED
- 30A 25A — FUSED DISCONNECT SWITCH; 3 POLE EXCEPT WHERE NOTED; RATINGS IN AMPERES AS INDICATED
- 480:120 (3) — POTENTIAL TRANSFORMER; RATIO AND NUMBER OF PT'S AS INDICATED
- (3) — CURRENT TRANSFORMER; RATIO AND NUMBER OF CT'S AS INDICATED
- METERING DEVICE; * = METER TYPE; WHM = WATT HOUR METER; WM = WATT METER; AM = AMMETER; VM = VOLTMETER; PFM = POWER FACTOR METER; SSM = SOLID STATE METER
- # — RELAY DEVICE FUNCTION; # PER ANSI NUMBER C37.2

15/25	AUTO SYNCHRONIZER RELAY	50/51N	INST/TIME RESIDUALLY CONNECTED GND OVERCURRENT
25	SYNCHRONISM CHECK RELAY	51G	GND FAULT RELAY
27	UNDERVOLTAGE RELAY	52	POWER CIRCUIT BREAKER
27/59	UNDER/OVERVOLTAGE RELAY	55	POWER FACTOR TRIP RELAY
32	DIRECTIONAL POWER RELAY	60	VOLTAGE BALANCE
37	UNDERCURRENT RELAY	62	TIME DELAY
38	HIGH TEMP (BEARING)	65	GOVERNOR LOAD SHARING/SOFT LANDING CONTROL
39	VIBRATION RELAY	66	TIME BETWEEN STARTS RELAY
40	LOSS OF FIELD/UNDER EXCITATION RELAY	67	DIRECTIONAL REVERSE VAR/KW RELAY
41	FIELD CONTACTOR	71L	LOW OIL LEVEL RELAY
43	SELECTOR SWITCH	81O/U	OVER/UNDER FREQUENCY RELAY
46	CURRENT IMBALANCE RELAY	83	CONTROL POWER TRANSFORMER
47	PHASE SEQUENCE/FAILURE RELAY	86	UTILITY LOCKOUT RELAY
48	GROUND FAULT INCOMPLETE SEQUENCE RELAY	87TL	TRANSFORMER DIFFERENTIAL RELAY
49	HIGH TEMP (OIL OR STATOR)	87M	MOTOR DIFFERENTIAL RELAY
50/51	INST/TIME OVERCURRENT RELAY	90	VAR/PF AND CROSS CURRENT COMPENSATION CONTROLLER
50/51G	INST/TIME DIRECTLY CONNECTED GND OVERCURRENT RELAY		

- K — KEY INTERLOCK
- ST — SHUNT TRIP
- SSMP — SOLID STATE MOTOR PROTECTIVE DEVICE
- SPD — SURGE PROTECTIVE DEVICE
- EARTH GROUND CONNECTION
- LIGHTNING ARRESTOR AND SURGE CAPACITOR
- FLA HP — MOTOR; HORSEPOWER AND FULL LOAD AMPERES AS INDICATED
- # KW A — PACKAGED EQUIPMENT; LOAD (IN KW OR KVA) AND AMPERES AS INDICATED
- MOV — ELECTRICAL MOTOR OPERATED VALVE WITH INTEGRAL REVERSING STARTER
- TERMINATOR / POTHEAD
- POWER OR DISTRIBUTION TRANSFORMER; CONFIGURATION AND RATING AS INDICATED
- DELTA-WYE
- DELTA-WYE GROUNDED
- DELTA-DELTA
- GEN — GENERATOR; RATINGS AS INDICATED
- AUTOMATIC OR MANUAL TRANSFER SWITCH; RATING AND CONFIGURATION AS INDICATED
- 5 — CAPACITOR; RATING IN KVAR AS INDICATED
- A SEC — NEUTRAL GROUNDING RESISTOR; CURRENT RATING IN AMPERES AS NOTED; TIME RATING IN SECONDS AS NOTED
- # — CONTACTOR; NUMBER INDICATES NEMA SIZE
- OVERLOAD (THERMAL OR SOLID STATE)
- 5A — FUSE; SIZE AS INDICATED
- AS — AMMETER SWITCH
- VS — VOLTMETER SWITCH
- RECEPTACLE, 120V
- SPECIAL RECEPTACLE, 208V OR 240V, 1-PHASE
- SPECIAL/WELDING RECEPTACLE, 208V OR 240V, 3-PHASE
- SPECIAL RECEPTACLE, 480V, 3-PHASE

CONTROL SCHEMATIC SYMBOLS

- CONDUCTORS - NOT CONNECTED
- CONDUCTORS - CONNECTED
- TERMINAL
- ** # — CONTROL DEVICE COIL; ** = TYPE; CR = CONTROL RELAY; TD = TIME DELAY RELAY; ISR = INTRINSICALLY SAFE RELAY; PC = PHOTOCELL
- CR 1 — XXXX, XXXX; NORMALLY OPEN CONTACT LINE REFERENCE; NORMALLY CLOSED CONTACT LINE REFERENCE
- SV-# — SOLENOID COIL
- CR# CR# — CONTACT; NORMALLY OPEN / CLOSED
- MCP 5A — CIRCUIT BREAKER OR MCP AS NOTED; 1-POLE / 3-POLE
- OL — OVERLOAD (THERMAL OR SOLID STATE)
- DISCONNECT SWITCH; 1-POLE / 3-POLE
- M — MOTOR
- CONTROL POWER TRANSFORMER
- BATTERY
- 5A — FUSE; RATING IN AMPERES
- EARTH GROUND CONNECTION
- CHASSIS GROUND CONNECTION (NOT NECESSARILY EARTH GROUNDED)
- DI — DIGITAL INPUT TO PLC/RTU/DCS
- DIGITAL OUTPUT FROM PLC/RTU/DCS NORMALLY OPEN
- DIGITAL OUTPUT FROM PLC/RTU/DCS NORMALLY CLOSED
- AI — ANALOG INPUT TO PLC/RTU/DCS; 4-20 mA (UNLESS INDICATED OTHERWISE)
- AO — ANALOG OUTPUT FROM PLC/RTU/DCS; 4-20 mA (UNLESS INDICATED OTHERWISE)
- SINGLE POLE SWITCH; NORMALLY OPEN / CLOSED
- H O A XOO OOX — THREE-POSITION SELECTOR SWITCH; X: INDICATES CONTACTS CLOSED; H-O-A: HAND-OFF-AUTO; L-O-R: LOCAL-OFF-REMOTE; O-S-C: OPEN-STOP-CLOSE
- L R XOO OOX — TWO-POSITION SELECTOR SWITCH; X: INDICATES CONTACTS CLOSED; L-R: LOCAL-REMOTE; O-C: OPEN-CLOSE; A-M: AUTO-MANUAL
- O S C XOO OOX — THREE-POSITION SELECTOR SWITCH WITH SPRING-RETURN MOMENTARY CONTACT
- E-STOP E-STOP — EMERGENCY PUSHBUTTON; NORMALLY OPEN / CLOSED
- PUSHBUTTON; NORMALLY OPEN / CLOSED
- MULTI-POSITION SELECTOR SWITCH
- X — PUSH-TO-TEST INDICATING LIGHT; X = COLOR; A = AMBER; B = BLUE; G = GREEN; R = RED; W = WHITE
- X — INDICATING LIGHT
- ETM — ELAPSED TIME METER
- BUZZER
- BELL
- HORN
- RESISTANCE TEMPERATURE DETECTOR (RTD)
- HEATER
- COMMUNICATION JACK (ETHERNET UNLESS INDICATED OTHERWISE)
- RECEPTACLE, 120V
- 2.0Ω — NEUTRAL GROUNDING RESISTOR
- 1 — LOCATION SYMBOL; LEGEND SHOWN ON SCHEMATIC DRAWINGS; ALL DEVICES ARE LOCATED IN THE MCC UNLESS INDICATED OTHERWISE
- POTENTIOMETER
- REACTOR (LINE OR LOAD DEPENDING ON PLACEMENT)

SENSING SWITCHES		
CLOSE ON		SENSED VARIABLE
RISING	FALLING	
FS	FS	FLOW
LS	LS	LEVEL
PS	PS	PRESSURE
TS	TS	TEMPERATURE
LIMIT SWITCHES		
ZS	NORMALLY OPEN,CLOSE ON REACHING LIMIT	
ZS	NORMALLY CLOSED, OPEN ON REACHING LIMIT	
TORQUE SWITCH		
	NORMALLY CLOSED, OPEN ON INCREASING TORQUE	

TIMED CONTACTS			
SYMBOL	NORMAL	OPEN TO CLOSED	CLOSED TO OPEN
TR	OPEN	DELAYED	INSTANTANEOUS
TR	CLOSED	INSTANTANEOUS	DELAYED
TR	OPEN	INSTANTANEOUS	DELAYED
TR	CLOSED	DELAYED	INSTANTANEOUS

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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

GENERAL ELECTRICAL LEGEND - I

SCALE AS SHOWN
JOB NO 2196008.00
DATE APRIL 2024
SHEET 14 OF 24
E-02

PLAN SYMBOLS

CONDUIT AND RACEWAYS

- CONDUIT - MULTIPLE IN DUCT BANK
- MULTIPLE CONDUIT RUN
- CONDUIT - ENCASED OR UNDERGROUND
- CONDUIT - EXPOSED OR CONCEALED
- P-135 — CALLOUT INDICATING CONDUIT PER SCHEDULE
- HOME RUN TO PANELBOARD OR AS INDICATED (3/4 " CONDUIT, 2 #12, 1 #12 GND UNLESS INDICATED OTHERWISE)
- FLEXIBLE CONDUIT
- CONDUIT RUN, CONTINUES ON SAME SHEET OR AS NOTED
- CONDUIT - CAPPED OR SEALED
- OPEN CIRCLE DENOTES UPWARD CONDUIT RISER
- SEMI CIRCLE DENOTES DOWNWARD CONDUIT RISER
- J — JUNCTION BOX
- HH-# — UNDERGROUND RACEWAY HANDHOLE DIMENSIONS AS NOTED
- MH-# — UNDERGROUND RACEWAY MANHOLE DIMENSIONS AS NOTED

EQUIPMENT

- M — MOTOR
- PANEL OR CABINET - AS LABELED SWBD, SWGR, MCC, LP, PNLBD, PLC, ETC

GROUNDING

- BARE COPPER GROUND TO GROUND WIRE IN SLAB, OR UNDERGROUND GROUND GRID, SIZE AS NOTED
- GROUND CONNECTION - BOLTED
- GROUND CONNECTION - EXOTHERMICALLY WELDED
- GROUND ROD - IN WELL WITH BOX
- GROUND ROD - BURIED

FIRE PROTECTION

- F — FIRE ALARM PULL STATION
- F — FIRE ALARM STROBE
- F — FIRE ALARM HORN
- F — FIRE ALARM HORN/STROBE
- SD — SMOKE DETECTOR
- HD — HEAT DETECTOR

LIGHTING

- A / * — LUMINAIRE CALLOUT
  A = LUMINAIRE TYPE
  * = APPROXIMATE MOUNTING HEIGHT AFF
  CLG = CEILING MOUNT
  (SEE LUMINAIRE SCHEDULE FOR MORE DETAILS)
- X-#a — LUMINAIRE - STRIP OR TROFFER TYPE (SWITCHED/UNSWITCHED)
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  a = SWITCH DESIGNATION
- WALL MOUNTED LUMINAIRE (SWITCHED/UNSWITCHED)
- PENDANT/CEILING MOUNTED LUMINAIRE (SWITCHED/UNSWITCHED)
- POLE, BRACKET, ARM, AND MOUNTED LUMINAIRE
- RECESSED CAN LUMINAIRE (SWITCHED/UNSWITCHED)
- EMERGENCY LUMINAIRE WITH SELF CONTAINED BATTERY
- WALL/CEILING MOUNTED EXIT LIGHT DIRECTIONAL ARROW WHERE INDICATED, SHADED AREA INDICATES ILLUMINATED FACE
- $ X-#a / * — LIGHT SWITCH
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  a = SWITCH DESIGNATION
  * = SWITCH TYPE
  1 1 WAY
  3 3 WAY
  4 4 WAY
  D DIMMER
- M — MOTION SENSOR
- O — OCCUPANCY SENSOR
- PC — PHOTOCELL
- TC — TIME CLOCK

RECEPTACLES

- X-# / * — DUPLEX RECEPTACLE, 120V, WALL MOUNT NEMA 5-20R CONFIGURATION
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  * = RECEPTACLE TYPE
  WP WEATHERPROOF
  XP EXPLOSION PROOF
  GFCI GROUND FAULT CIRCUIT INTERRUPTER
- X-# / * — DUPLEX RECEPTACLE, 120V, FLOOR MOUNT NEMA 5-20R CONFIGURATION
- X-# / A — SINGLE SPECIAL RECEPTACLE, 208V OR 240V, 1-PHASE
  X = PANEL DESIGNATION
  # = CIRCUIT NUMBER
  A = AMPERAGE
- X-# / A — SINGLE SPECIAL/WELDING RECEPTACLE, 208V OR 240V, 3-PHASE
  X = PANEL DESIGNATION
  # = CIRCUIT NUMBER
  A = AMPERAGE
- X-# / A — SINGLE SPECIAL RECEPTACLE, 480V, 3-PHASE
  X = PANEL DESIGNATION
  # = CIRCUIT NUMBER
  A = AMPERAGE

SECURITY AND COMMUNICATION

- ANTENNA
- * / VC — VIDEO CAMERA
  * = TYPE
  F FIXED
  PTZ PAN-TILT-ZOOM
  360 360 DEGREE FIXED
- * — SECURITY ACCESS DEVICE
  * = TYPE
  CR CARD READER
  KS KEY SWITCH
  KP KEYPAD
  RF RADIO FREQUENCY ID
- TELEPHONE OUTLET WALL MOUNTED/FLOOR MOUNTED
- DATA OUTLET WALL MOUNTED/FLOOR MOUNTED
- TELEPHONE/DATA COMBINATION OUTLET WALL MOUNTED/FLOOR MOUNTED
- TV — TELEVISION ANTENNA/CABLE OUTLET

MISCELLANEOUS

- DISCONNECT SAFETY SWITCH
- INSTRUMENT
- $ X-# / * — SWITCH - SPECIAL PURPOSE
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  * = SWITCH TYPE
  M MOTOR RATED
  K KEY OPERATED
  T TIMER
- T — THERMOSTAT

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BELLEVUE, WASHINGTON
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SEATTLE, WASHINGTON

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GENERAL ELECTRICAL LEGEND - II

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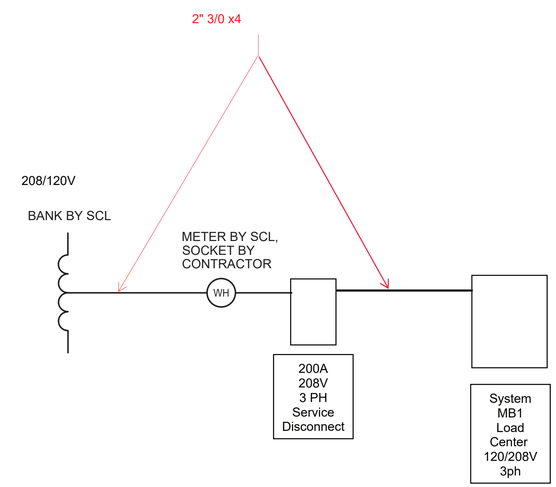
PANEL LOADS ON CP-1

I.D.	GLACIER8135 (DWG #8135
Voltage	120/208V
Phase	3
Panel FLA	162
Frequency	60hz
SCCR	10ka
Largest Motor: 20hp, 52 fla	
Nema Rating: 4	

PANEL CLASSIFICATION: UL508A / UL698A



ONE LINE DIAGRAM

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SCALES
0 — 1"
0 — 25mm
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

LAWRENCE G. REISINGER — STATE OF WASHINGTON — 22589 — REGISTERED PROFESSIONAL ENGINEER

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DEPARTMENT OF ECOLOGY State of Washington

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

ELECTRICAL
PANEL SCHEDULE AND THREE LINE DIAGRAM

As-Built

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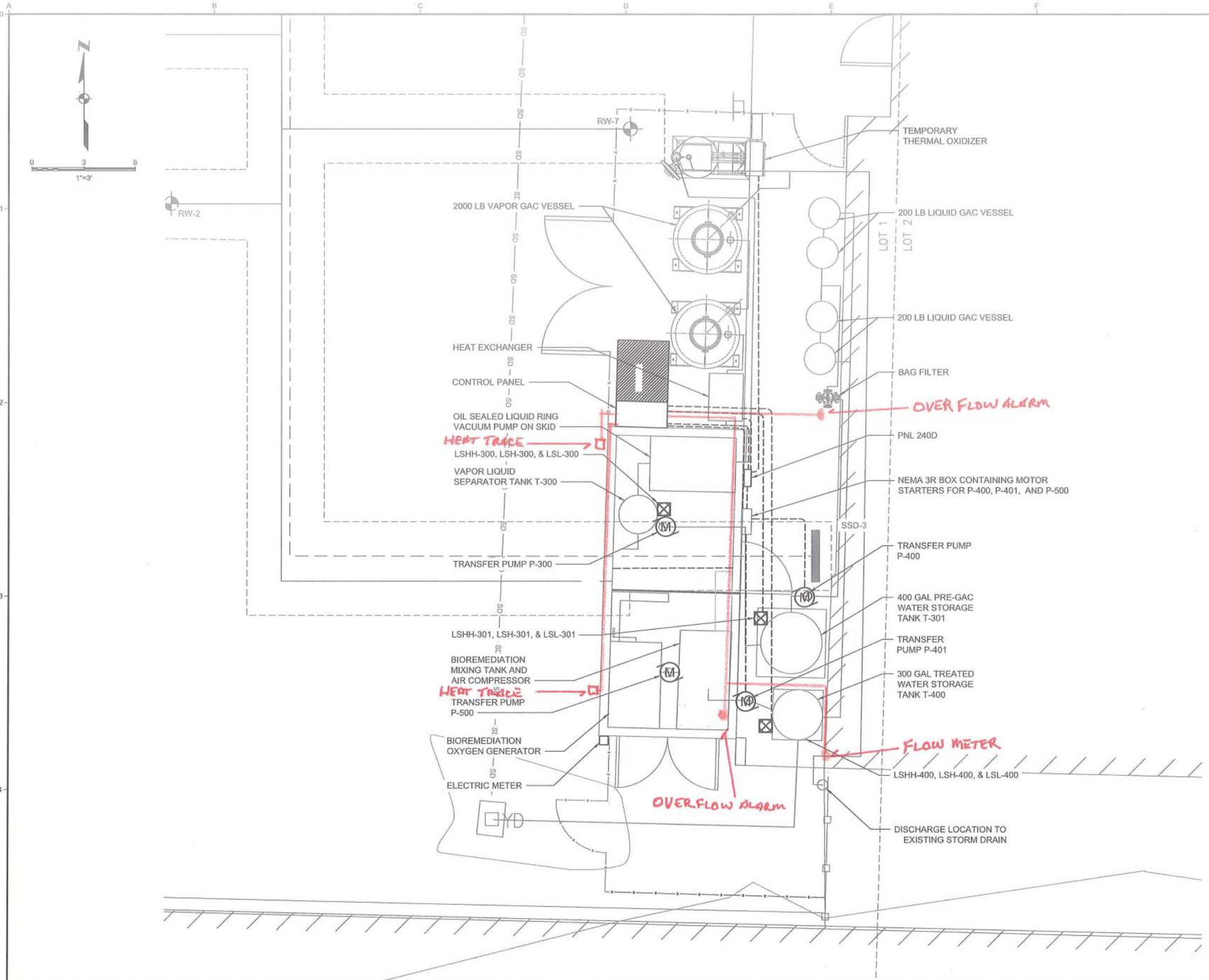

GENERAL SHEET NOTES

1. ALL CONDUITS SHOWN ARE SCHEMATIC, AND NOT THE ACTUAL PATH FROM ONE END TO THE OTHER. ROUTE ALL CONDUITS UNDER PAVEMENT OR OVERHEAD AS NECESSARY TO AVOID TRIPPING OR OTHER HAZARDS. UNDER PAVEMENT CONDUIT MAY BE PVC SCHEDULE 80. ABOVE GROUND AND TRANSITIONAL PIECES SHALL BE RIGID GALVANIZED STEEL CONDUIT. SIZE IN COMPLIANCE WITH CONDUIT FILL REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
2. PROVIDE EQUIPMENT AS SHOWN IN PREFABRICATED SHELTER STRUCTURE. PREWIRED TO ALL INTERNAL ELECTRICAL COMPONENTS, AND WIRED TO EXTERNAL ABUTTING PANELS FOR CONTROL AND POWER. THE "VACUUM BLOWER" UNIT AND ASSOCIATED EQUIPMENT HAVE BEEN EVALUATED AS MAKING THE ENCLOSED SPACE CLASS 1, GROUP D, DIVISION 2 PER NEC ARTICLE 501, AND MUST BE INSTALLED IN COMPLIANCE WITH INSTALLATIONS IN SUCH A SPACE. THE "DO-IT" UNIT AND ASSOCIATED EQUIPMENT ARE UNCLASSIFIED IN AN ENCLOSED SPACE. THE CONTRACTOR MAY MITIGATE THE CLASSIFIED SPACE BY MAKING ALL EQUIPMENT IN A SINGLE SPACE SUITABLE FOR DIVISION 2 OR MAY SEPARATE THE EQUIPMENT INTO TWO SPACES. PROVIDE ALL SEALS AND OTHER APPURTENANCES REQUIRED BY NEC AT THE BOUNDARY BETWEEN THE CLASSIFIED SPACE AND THE EXTERIOR OF THE SHELTER.
3. PROVIDE CONTROL PANEL WITH PROGRAMMABLE LOGIC CONTROLLER (PLC) FOR ALL EQUIPMENT AT THE SITE. CONTRACTOR SHALL COORDINATE INTERNAL SHELTER WIRING AND EXTERNAL WIRING AS SHOWN. PROVIDE LOCAL HMI FUNCTIONALITY AND AUTODIALING OF ALARM CONDITIONS. SEE SPECIFICATION XXX (CONTROL STRATEGY) FOR DETAILS REGARDING FUNCTION OF CONTROL AND COMMUNICATION SYSTEM.
4. PANEL PNL-240D IS SHOWN WITH ALL CIRCUITS FOR THE SITE ANTICIPATED, BOTH INTERNAL AND EXTERNAL TO THE SHELTER. CONNECT ALL INTERNAL LOADS FROM THE SHELTER AND ALL EXTERNAL LOADS AS SHOWN. IF ACTUAL LOADS DEVIATE FROM INDICATED LOADS, OR ADDITIONAL LOADS ARE ADDED OR INDICATED LOADS ARE DELETED, CONTRACTOR SHALL PREPARE REVISED PANEL SCHEDULE AND LOAD SUMMARY TO SUBMIT TO AHJ FOR APPROVAL.

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NO	REVISION	DATE	BY

SCALES
0 1"
0 25mm
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

LAWRENCE G. REISINGER — STATE OF WASHINGTON — 22589 — REGISTERED PROFESSIONAL ENGINEER

DESIGNED LGR
DRAWN RM
CHECKED LGR

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON
Kennedy Jenks

ELECTRICAL SITE PLAN

SCALE 1" = 3'
JOB NO 2196008.00
DATE OCTOBER 2022
SHEET 15 OF 19
E-05

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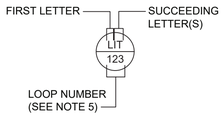
INSTRUMENT CALLOUTS AND TAG SCHEMA



TYPICAL TAG FORMAT

LIT-123	INSTRUMENT TAG NUMBER
LIT	FUNCTIONAL IDENTIFICATION
L	FIRST LETTER
IT	SUCCEEDING LETTER(S)
123	LOOP NUMBER

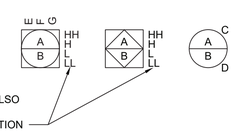
EXPANDED TAG FORMAT

20LIT-123A	INSTRUMENT TAG NUMBER
20	AREA NUMBER
LIT	FUNCTIONAL IDENTIFICATION
L	FIRST LETTER
IT	SUCCEEDING LETTER(S)
123	LOOP NUMBER
A	OPTIONAL SUFFIX

	FIRST LETTER (1)		SUCCEEDING LETTERS (15)		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (2)(3)(4)		ALARM		
B	BURNER, COMBUSTION (2)		USER'S CHOICE (5)	USER'S CHOICE (5)	USER'S CHOICE (5)
C	USER'S CHOICE (3a)(5)			CONTROL (23a)(23e)	CLOSED (27b)
D	DENSITY	DIFFERENTIAL	DAMPER		
E	VOLTAGE (2)		SENSOR (PRIMARY ELEMENT)		
F	FLOW, FLOW RATE (2)	RATIO (FRACTION) (2b)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE (16)		
H	HAND (2)				HIGH (27A)(28A)(29)
I	CURRENT (ELECTRICAL)(2)		INDICATE (17)		
J	POWER (2)		SCAN (18)		
K	TIME, TIME SCHEDULE (2)	TIME RATE OF CHANGE (12c)(13)		CONTROL STATION (24)	
L	LEVEL (2)		LIGHT (19)		LOW (27b)(28)(29)
M	MOISTURE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE (5)		USER'S CHOICE (5)	USER'S CHOICE (5)	USER'S CHOICE (5)
O	USER'S CHOICE (5)		ORIFICE, RESTRICTION		OPEN (27a)
P	PRESSURE, VACUUM (2)		POINT (TEST) CONNECTION		
Q	QUANTITY (2)	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION (2)		RECORD (20)		RUN
S	SPEED, FREQUENCY (2)	SAFETY (14)		SWITCH (23b)	STOP
T	TEMPERATURE (2)			TRANSMIT	
U	MULTI VARIABLE (2)(6)		MULTIFUNCTION (21)	MULTIFUNCTION (21)	MULTIFUNCTION (21)
V	VIBRATION, MECHANICAL ANALYSIS (2)(4)(7)			VALVE, DAMPER, OR LOUVER (23c)(23e)	
W	WEIGHT, FORCE (2)		WELL, PROBE		
X	UNCLASSIFIED (8)	X AXIS (11c)	ACCESSORY DEVICES (22) UNCLASSIFIED (8)	UNCLASSIFIED (8)	UNCLASSIFIED (8)
Y	EVENT, STATE, PRESENCE (2)(9)	Y AXIS (11c)		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION (2)	Z AXIS (11c), SAFETY INSTRUMENTED SYSTEM (30)		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

NOTE: NUMBERS IN PARANTHESES REFER TO EXPLANATORY NOTES IN ANSI/ISA-5.1-2009, SECTION 4.2

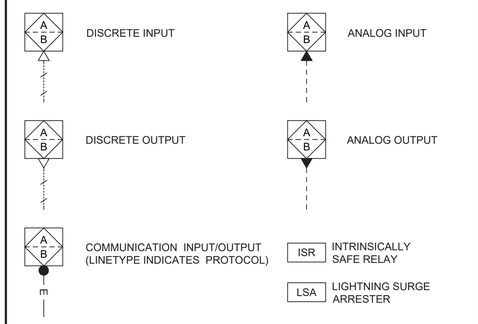
	LOCATED IN FIELD VISIBLE AT LOCATION OPERATOR ACCESSIBLE	LOCATED ON MAIN PANEL VISIBLE ON PANEL FRONT OPERATOR ACCESSIBLE	LOCATED IN MAIN PANEL CABINET NOT VISIBLE ON PANEL FRONT NOT OPERATOR ACCESSIBLE	LOCATED ON SECONDARY PANEL VISIBLE ON PANEL FRONT OPERATOR ACCESSIBLE	LOCATED IN SECONDARY PANEL CABINET NOT VISIBLE ON PANEL FRONT NOT OPERATOR ACCESSIBLE
SHARED DISPLAY SHARED CONTROL	A B	A B	A B	A B	A B
PROGRAMMABLE LOGIC CONTROL	A B	A B	A B	A B	A B
COMPUTER FUNCTION	C A B D	C A B D	C A B D	C A B D	C A B D
INSTRUMENT	C A B D	C A B D	C A B D	C A B D	C A B D
PILOT LIGHT	C A B D	C A B D		C A B D	



DISPLAY AND CONTROL SYMBOLS FOR ANALOG MEASURED VARIABLES MAY ALSO INDICATE THE PRESENCE OF DERIVED SETPOINTS USED FOR ALARM GENERATION

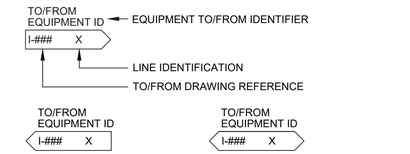
LETTER MAPPING:
A: IDENTIFICATION LETTERS (SEE TABLE OR REFER TO ANSI/ISA-5.1-2009; TABLE 4.1)
B: LOOP NUMBER
C: USER DESCRIPTOR/FUNCTION DESIGNATION (SEE LIST THIS SHEET)
D: MEASUREMENT (REFER TO ANSI/ISA-5.1-2009; TABLE 5.2.2)
E: PROCESS CONTROL DESCRIPTOR LINE 1
F: PROCESS CONTROL DESCRIPTOR LINE 2
G: PROCESS CONTROL DESCRIPTOR LINE 3

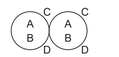
PLC I/O

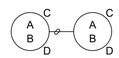


MISCELLANEOUS

OFF-SHEET CONNECTORS (ARROW IN DIRECTION OF PROCESS OR CONTROL)




TOUCHING BUBBLES INDICATE A SINGLE INSTRUMENT OR COMPONENT PERFORMING MULTIPLE FUNCTIONS, OR AN INSTRUMENT WITH INTEGRAL TRANSMITTER


INSTRUMENT WITH REMOTE TRANSMITTER

RELAY INTERLOCK
REFER TO CONTROL SCHEMATICS AND/OR PROCESS CONTROL NARRATIVES FOR BEHAVIOR

FUNCTION DESIGNATIONS

SWITCHES

A/M	AUTO-MANUAL
ESTOP	EMERGENCY STOP
F-R	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
L/R	LOCAL-REMOTE
LOR	LOCAL-OFF-REMOTE
O/C	OPEN-CLOSE
OCA	OPEN-CLOSE-AUTO
O-O	ON-OFF
OSC	OPEN-STOP-CLOSE
POT	POTENTIOMETER
RST	RESET
S-S	START-STOP

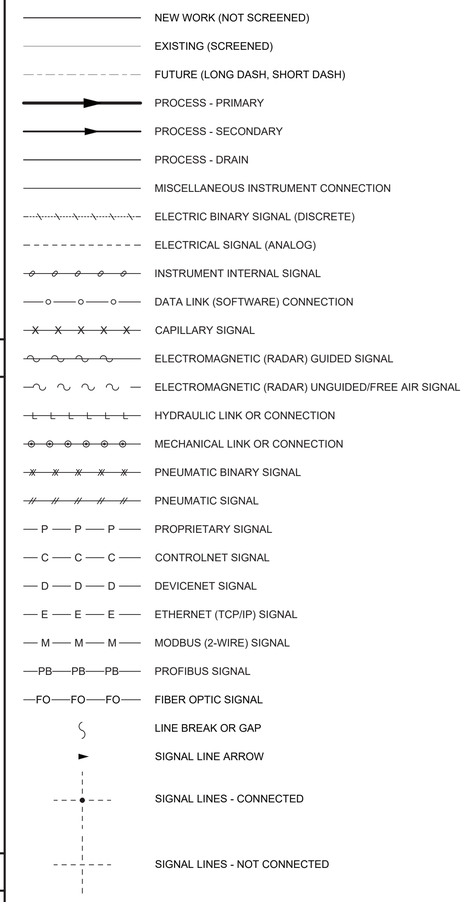
ANALYTICAL INSTRUMENTS

ALK	ALKALINITY
CL2*	CHLORINE CONCENTRATION
COMB	COMBUSTIBLE GAS
COND	CONDUCTIVITY
DO	DISSOLVED OXYGEN
H2S	HYDROGEN SULFIDE
LEL	LOWER EXPLOSIVE LIMIT
NO3	NITRATE
O2	OXYGEN CONCENTRATION
O3	OZONE
ORP	OXIDATION REDUCTION POTENTIAL
PH	HYDROGEN ION CONCENTRATION
SO2	SULFUR DIOXIDE
TH	TOTAL HARDNESS
TURB	TURBIDITY
UV	ULTRAVIOLET TRANSMITTANCE OR INTENSITY
*	NOTED AS TOTAL OR FREE

INSTRUMENT AND EQUIPMENT SERVICES

IA	INSTRUMENT AIR SUPPLY (SEE NOTE 4)
ES	ELECTRICAL SERVICE (DIFFERENT VOLTAGES ARE SPECIFICALLY NOTED)
POE	POWER OVER ETHERNET

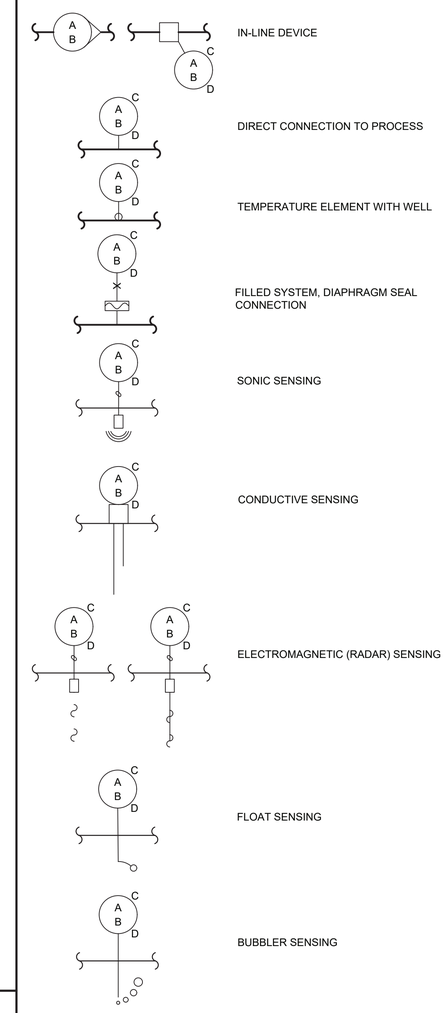
LINE SYMBOLOGY



SIGNAL PROCESSING FUNCTIONS

SUMMING	HIGH SELECTING
DIFFERENCE	LOW SELECTING
INTEGRAL	BIAS
DERIVATIVE	NONLINEAR OR UNSPECIFIED FUNCTION
MULTIPLYING	CONVERT: E - VOLTAGE, I - CURRENT, P - PNEUMATIC, A - ANALOG, B - BINARY, H - HYDRAULIC, O - ELECTROMAGNETIC/SONIC, R - RESISTANCE (ELECTRICAL), D - DIGITAL
DIVIDING	
ROOT EXTRACTION	
SQUARE ROOT	
EXPONENTIAL	

TYPICAL CONNECTIONS



NOTES

1. SEE THE GENERAL AND ELECTRICAL DISCIPLINE DRAWINGS FOR ADDITIONAL SYMBOLS AND ABBREVIATIONS.
2. SEE THE GENERAL DISCIPLINE DRAWINGS FOR EQUIPMENT DESIGNATIONS AND PROCESS IDENTIFICATION CODES.
3. THIS IS A GENERALIZED LEGEND SHEET. SEE ALSO ISA S5.1, S5.3 AND S7.3.
4. FOR INSTRUMENT AIR QUALITY STANDARDS, REFER TO ISA RP7.7.
5. WHERE LOOP NUMBERS EXCEED THE LENGTH AVAILABLE WITHIN A BUBBLE, THE LOWER HALF OF THE BUBBLE MAY APPEAR BROKEN TO ALLOW SPACE FOR THE LOOP NUMBER.
6. SEE SPECIFICATION 17010 FOR COMPLETE DETAILS OF LOOP DRAWING AND INTERCONNECTION DRAWING SUBMITTAL REQUIREMENTS.
7. POWER SUPPLIES FOR INSTRUMENT LOOPS OR SYSTEMS SHALL BE PROVIDED BY THE INSTRUMENTATION SUPPLIER TO MEET THE VOLTAGE AND CURRENT REQUIREMENTS OF THE COMPONENTS IN EACH LOOP OR SYSTEM.
8. FIELD SWITCHES FOR ELECTRICAL MOTOR OPERATION SHALL BE SUPPLIED BY THE ELECTRICAL CONTRACTOR UNLESS THEY ARE PART OF A VENDOR PACKAGE.

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NO	REVISION	DATE	BY

LAWRENCE G. REISINGER, STATE OF WASHINGTON, 32599, REGISTERED PROFESSIONAL ENGINEER
2/28/2024

DESIGNED	LGR
DRAWN	RM
CHECKED	LGR

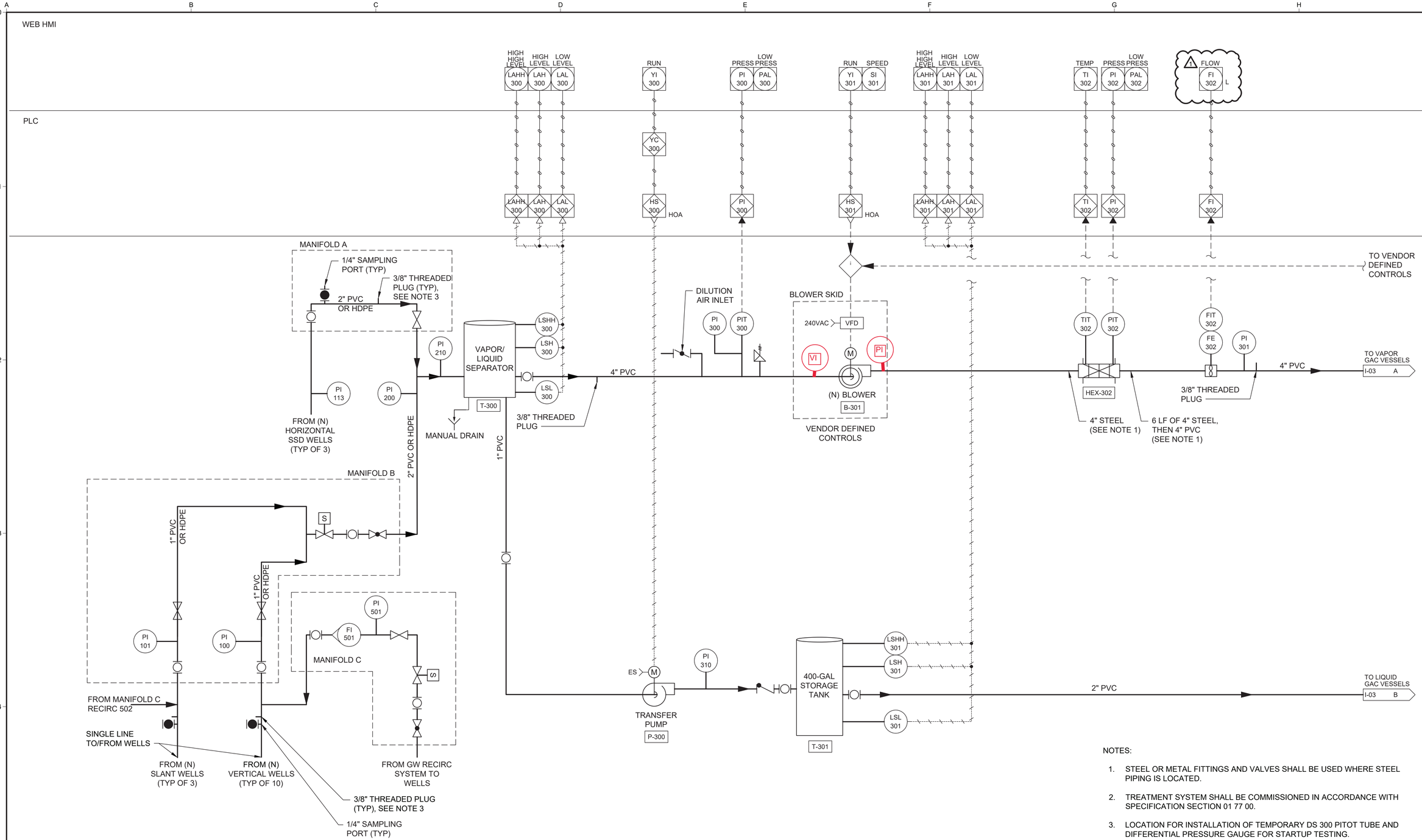
DEPARTMENT OF ECOLOGY State of Washington

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

P&ID LEGEND

SCALE	AS SHOWN
JOB NO	2196008.00
DATE	FEBRUARY 2024
SHEET	18 OF 23
	I-01



NOTES:

1. STEEL OR METAL FITTINGS AND VALVES SHALL BE USED WHERE STEEL PIPING IS LOCATED.
2. TREATMENT SYSTEM SHALL BE COMMISSIONED IN ACCORDANCE WITH SPECIFICATION SECTION 01 77 00.
3. LOCATION FOR INSTALLATION OF TEMPORARY DS 300 PITOT TUBE AND DIFFERENTIAL PRESSURE GAUGE FOR STARTUP TESTING.

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P&ID - I

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JOB NO 2196008.00
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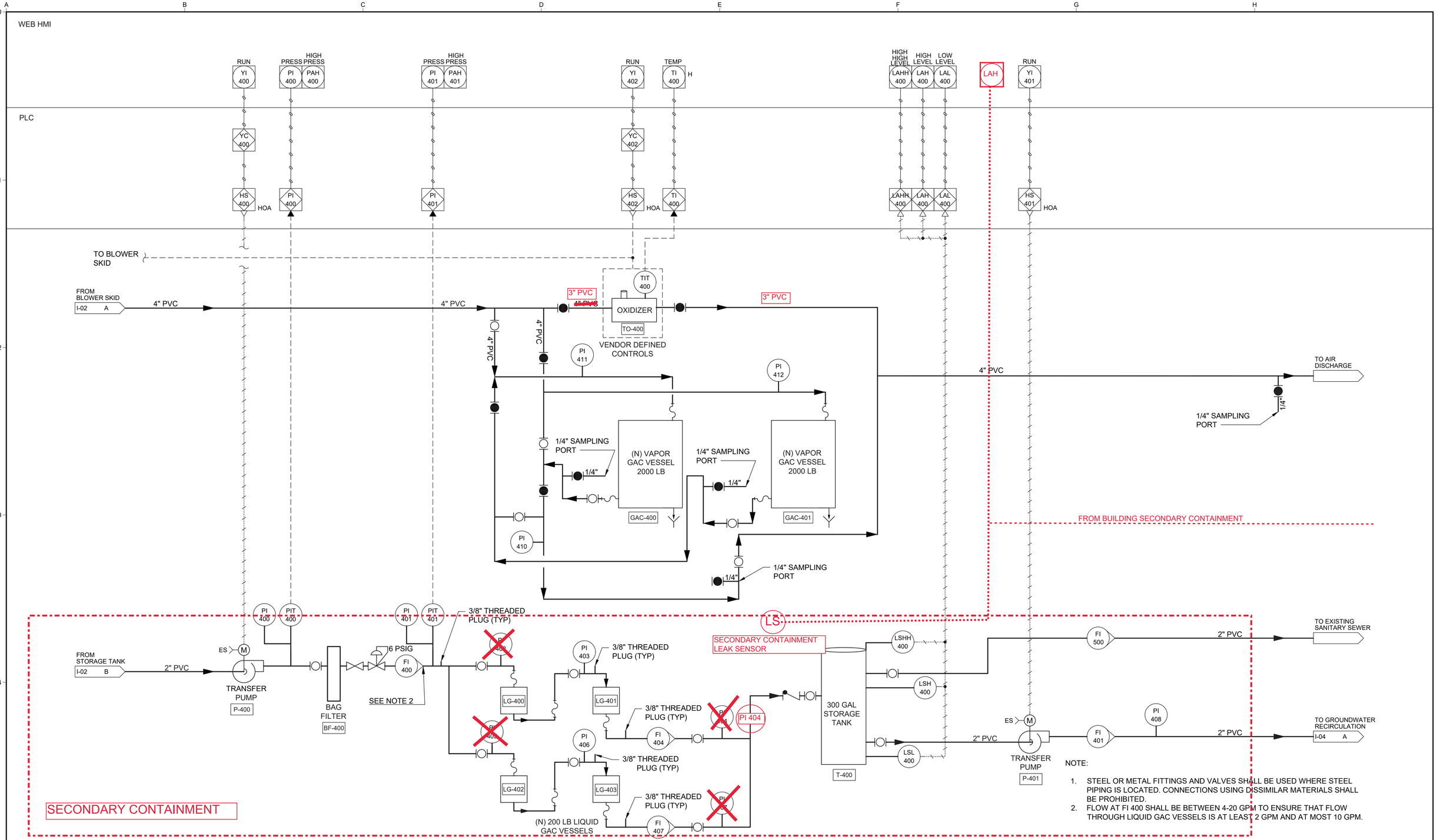

NOTE:

1. STEEL OR METAL FITTINGS AND VALVES SHALL BE USED WHERE STEEL PIPING IS LOCATED. CONNECTIONS USING DISSIMILAR MATERIALS SHALL BE PROHIBITED.
2. FLOW AT FI 400 SHALL BE BETWEEN 4-20 GPM TO ENSURE THAT FLOW THROUGH LIQUID GAC VESSELS IS AT LEAST 2 GPM AND AT MOST 10 GPM.

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As-Built

SCALE AS SHOWN
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SHEET 20 OF 23
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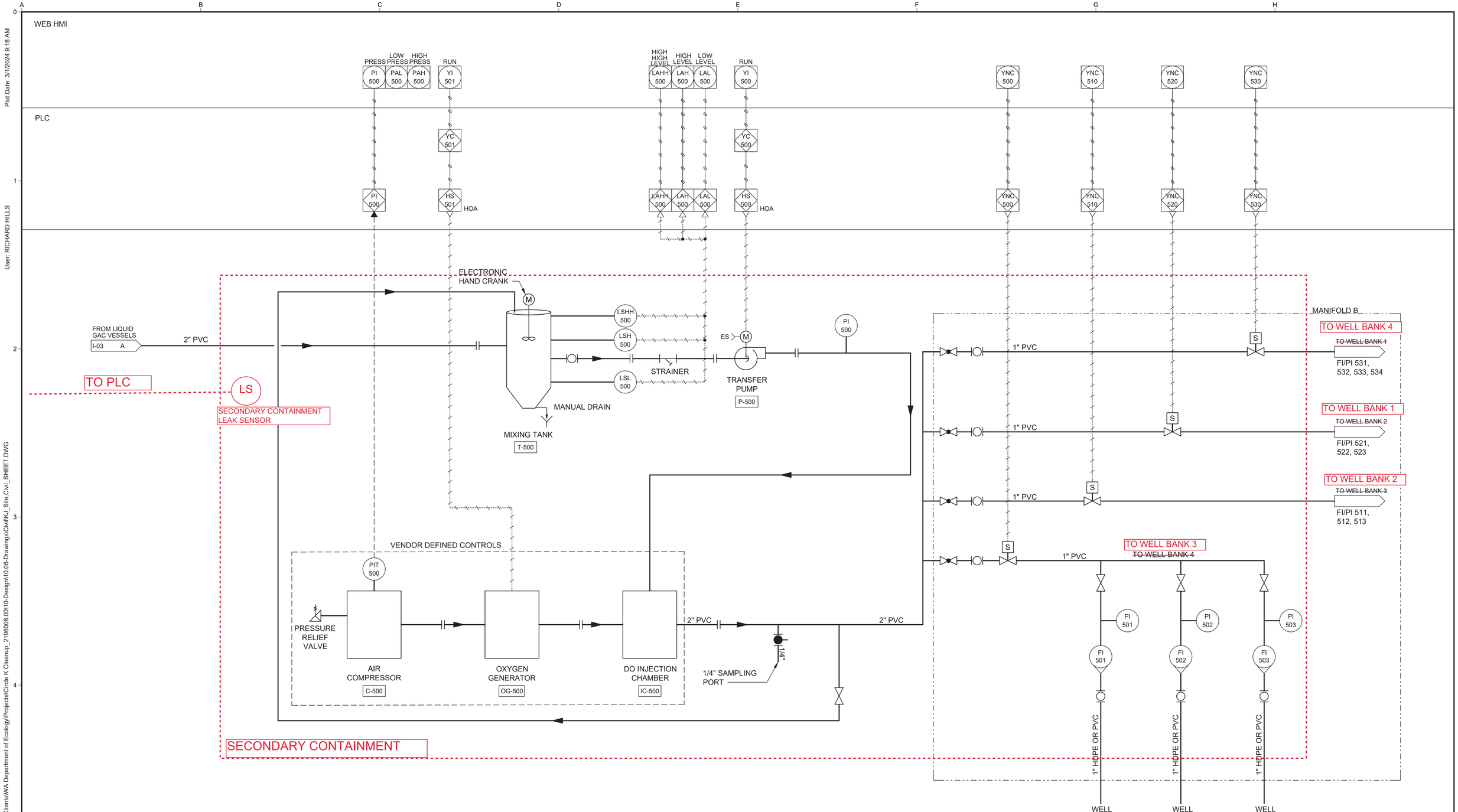

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NO	REVISION	DATE	BY

LAWRENCE G. REISINGER — STATE OF WASHINGTON — 32599 — REGISTERED PROFESSIONAL ENGINEER — 2/28/2024

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BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

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SCALE AS SHOWN
JOB NO 2196008.00
DATE FEBRUARY 2024
SHEET 21 OF 23
I-04

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CONSTRUCTION STORMWATER CONTROL (CSC) GENERAL NOTES

1. A FIRST GROUND DISTURBANCE INSPECTION IS REQUIRED PRIOR TO START OF WORK ON ALL SITES WITH LAND DISTURBING ACTIVITY. SCHEDULE A FIRST GROUND DISTURBANCE INSPECTION FOR AN ISSUED BUILDING PERMIT AT 206-684-8900 OR ONLINE AS DESCRIBED AT http://www.seattle.gov/sdci/inspections/site-development-inspections
2. THE APPLICANT SHALL DESIGNATE AN EROSION AND SEDIMENT CONTROL (ESC) SUPERVISOR WHO SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPS). FOR LARGE CONSTRUCTION PROJECTS, THE ESC SUPERVISOR SHOULD BE A CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL). PROVIDE THE NAME AND PHONE NUMBER OF THE ESC SUPERVISOR TO THE SITE INSPECTOR AT THE FIRST GROUND DISTURBANCE INSPECTION.
3. BMPS SHALL BE INSTALLED PRIOR TO STARTING CONSTRUCTION TO ENSURE SEDIMENT–LADEN WATER DOES NOT LEAVE THE PROJECT SITE OR ENTER ROADSIDE DITCHES, STORM DRAINS, SURFACE WATERS, OR WETLANDS.
4. THE BMPS INCLUDED IN THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. THE APPLICANT IS RESPONSIBLE FOR ENSURING THAT BMPS ARE MODIFIED AS NEEDED FOR UNEXPECTED STORM EVENTS OR OTHER UNFORESEEN CIRCUMSTANCES, AND TO ACCOUNT FOR CHANGING SITE CONDITIONS.
5. ANY AREAS OF DISTURBED SOIL THAT WILL NOT BE WORKED FOR TWO CONSECUTIVE DAYS DURING THE WET SEASON (OCT 1 TO APRIL 30) OR SEVEN DAYS DURING THE DRY SEASON (MAY 1 TO SEPT 30) SHALL BE IMMEDIATELY STABILIZED WITH APPROVED BMPS METHODS (E.G. STRAW, MULCH, PLASTIC COVERING, COLD MIX, ETC.)
6. GRADING AND/OR SOIL DISTURBING ACTIVITIES MAY BE LIMITED OR PROHIBITED FOR CERTAIN SITES SUBJECT TO ECA STANDARDS (I.E. ECA STEEP SLOPES, LANDSLIDE PRONE AREAS, ETC.) BETWEEN OCTOBER 31ST AND APRIL 1ST. IF NOTED IN THE GEOTECHNICAL SPECIAL INSPECTIONS REQUIREMENTS, A GRADING SEASON EXTENSION LETTER (GSEL) ISSUED BY SDCI IS REQUIRED FOR ALL GRADING AND/OR SOIL DISTURBING ACTIVITIES DURING THIS PERIOD. THE GEOTECHNICAL SPECIAL INSPECTOR MUST SUBMIT ELECTRONIC APPLICATIONS FOR A GSEL USING THE SDCI PROJECT PORTAL. ALLOW FOUR TO SIX WEEKS FOR PROCESSING. FAILURE TO OBTAIN THE GSEL PRIOR TO OCTOBER 31 MAY RESULT IN A WORK STOPPAGE.
7. CITY STREETS AND SIDEWALKS SHALL BE KEPT CLEAN AT ALL TIMES. NO MATERIAL SHALL BE STORED ON CITY STREETS OR SIDEWALKS WITHOUT A STREET USE PERMIT FROM THE SEATTLE DEPARTMENT OF TRANSPORTATION (SDOT).
8. POLLUTION CONTROL MEASURES SHALL BE FOLLOWED TO ENSURE THAT NO LIQUID PRODUCTS OR CONTAMINATED WATER ENTERS ANY STORM DRAINAGE FACILITIES OR OTHERWISE LEAVES THE PROJECT SITE. ANY HAZARDOUS MATERIALS OR LIQUID PRODUCTS THAT HAVE THE POTENTIAL TO POLLUTE RUNOFF SHALL BE STORED AND DISPOSED OF PROPERLY.
9. ENSURE THAT WASHOUT FROM CONCRETE TRUCKS IS PERFORMED OFF–SITE OR IN DESIGNATED CONCRETE WASHOUT AREAS ONLY. DO NOT WASH OUT CONCRETE TRUCKS ONTO THE GROUND, OR TO STORM DRAINS OR OPEN DITCHES. DO NOT DUMP EXCESS CONCRETE ONSITE, EXCEPT IN DESIGNATED CONCRETE WASHOUT AREAS.
10. ALL AREAS OF DISTURBED SOIL SHALL BE FULLY STABILIZED WITH THE APPROPRIATE SOIL AMENDMENT AND COVER MEASURES AT COMPLETION OF THE PROJECT. TYPICAL COVER MEASURES INCLUDE LANDSCAPING OR HYDROSEED WITH MULCH.

CONSTRUCTION STORMWATER CONTROL (CSC) PLAN REQUIREMENTS / NARRATIVE

SHOW TEMPORARY AND PERMANENT BEST MANAGEMENT PRACTICES (BMPS) IN THE PLAN VIEW OF THIS SHEET THAT WILL ACCOMPLISH THE MINIMUM REQUIREMENTS DESCRIBED IN THE NARRATIVE BELOW. THE BMPS SHOWN IN THE PLAN VIEW OF THIS PLAN ARE THE MINIMUM REQUIRED. ADDITIONAL BMPS ARE REQUIRED WHEN MINIMUM CONTROLS ARE NOT SUFFICIENT TO PREVENT EROSION OR TRANSPORT OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE.

- MARK CLEARING LIMITS
- DELINEATE ENVIRONMENTALLY CRITICAL AREAS
- RETAIN TOP LAYER AND NATIVE VEGETATION
- ESTABLISH CONSTRUCTION ACCESS
- PROTECT DOWNSTREAM PROPERTIES AND RECEIVING WATERS
- PREVENT EROSION AND SEDIMENT TRANSPORT FROM THE SITE
- STABILIZE SOILS
- PROTECT SLOPES
- PROTECT STORM DRAINS
- STABILIZE CHANNEL AND OUTLETS
- CONTROL POLLUTANTS
- CONTROL DEWATERING
- MAINTAIN AND INSPECT BMPs
- EXECUTE CONSTRUCTION STORMWATER CONTROL PLAN
- MINIMIZE OPEN TRENCHES
- PHASE THE PROJECT
- INSTALL PERMANENT FLOW CONTROL AND WATER QUALITY FACILITIES
- PROTECT STORMWATER BMPs PRIOR TO, DURING, AND AFTER CONSTRUCTION

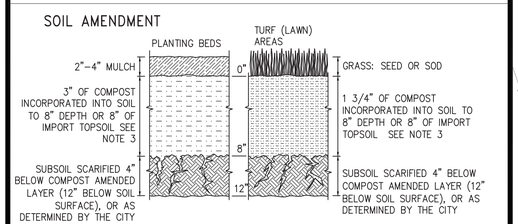
POST CONSTRUCTION SOIL MANAGEMENT PLAN

AT THE END OF PROJECT, ALL AREAS DISTURBED AND NOT COVERED WITH A HARD SURFACE MUST BE AMENDED PER THE SOIL AMENDMENT DETAIL BELOW AND PROBE TO 12–INCHES AT THE SITE FINAL INSPECTION.

LABEL ALL AREAS DISTURBED AND NOT COVERED WITH A HARD SURFACE AS ONE OF THE FOLLOWING: SA (SOIL AMENDMENT AREA) or ND (NON–DISTURBED AREA).

- NON–DISTURBED AREA (ND): VEGETATED AREAS THAT WILL NOT BE SUBJECT TO LAND DISTURBING ACTIVITY DO NOT REQUIRE SOIL AMENDMENT IF THEY ARE FENCED AND CONTINUOUSLY PROTECTED THROUGHOUT CONSTRUCTION. THE FENCING MUST BE IN PLACE AT THE FIRST GROUND DISTURBANCE INSPECTION. NO DISTURBANCE, INCLUDING VEHICLE TRAFFIC OR MATERIAL STORAGE, IS ALLOWED IN THESE AREAS UNTIL FINAL INSPECTION.
- SOIL AMENDMENT AREA (SA): VEGETATED OR COMPOST AREAS (TURF AND LANDSCAPE) MUST BE AMENDED PER THE SOIL AMENDMENT DETAIL. THIS INCLUDES AREAS IMPACTED BY CLEARING AND GRADING, STOCKPILING, SITE ACCESS, PATHWAYS AND MATERIALS OR EQUIPMENT STORAGE.

SOIL AMENDMENT

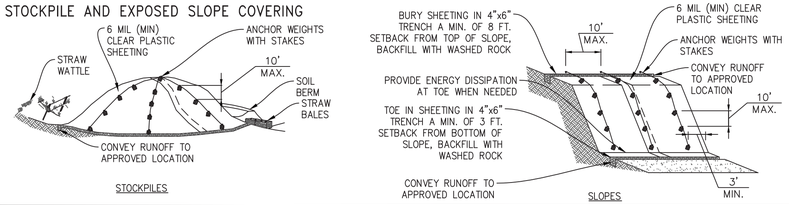


NOTES:

1. POST CONSTRUCTION SOIL AMENDMENT IS REQUIRED ON ALL AREAS NOT COVERED BY HARD SURFACE WHERE SOIL IS DISTURBED DURING CONSTRUCTION.
2. SOIL AMENDMENT MUST PASS A 12 INCH MINIMUM PROBE TEST.
3. IMPORT TOPSOIL, IF USED, MUST MEET THE REQUIREMENTS OF THE SEATTLE STORMWATER MANUAL, VOL. 1, SECTIONS 5.1.5.1 AND 5.1.5.3.

SYMBOL: (SA) AREA REQUIRING SOIL AMENDMENT (ND) NON–DISTURBED AREA (SOIL AMENDMENT NOT REQUIRED)

STOCKPILE AND EXPOSED SLOPE COVERING



SYMBOL: (SP)

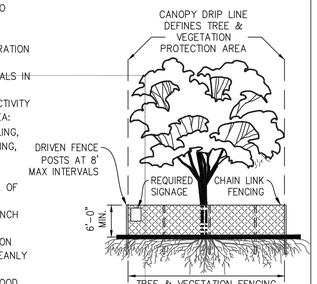
TREE & VEGETATION PROTECTION

TREE PROTECTION FENCING AND SIGN

1. CHAIN LINK FENCE REQUIRED (NO ORANGE CONSTRUCTION FENCE OR PLYWOOD)
2. MINIMUM 6' HIGH
3. FENCE SHALL BE SUPPORTED BY RIGID POSTS DRIVEN INTO THE GROUND AT 8' MAXIMUM INTERVALS
4. MUST BE INSTALLED PRIOR TO DEMOLITION OR GROUND DISTURBANCE
5. KEPT IN PLACE FOR THE DURATION OF CONSTRUCTION
6. NO DUMPING OF ANY MATERIALS IN THE PROTECTION AREA
7. NO SOIL DISTURBANCE OR ACTIVITY ALLOWED WITHIN FENCED AREA: MATERIAL STORAGE/STOCKPILING, PARKING, EXCAVATION, DUMPING, OR WASHING
8. MODIFICATIONS OF THESE REQUIREMENTS BY APPROVAL OF SDCI PLANNER ONLY
9. IF ROOTS GREATER THAN 2 INCH FOUND OUTSIDE OF FENCING, PROTECT BY HAND EXCAVATION AND, IF NECESSARY, CUT CLEANLY AND KEEP MOIST
10. USE 3 INCHES OR DEEPER WOOD CHIP MULCH OUTSIDE FENCED AREAS TO PROTECT FEEDER ROOTS

VEGETATION PROTECTION (DOES NOT APPLY TO TREES)

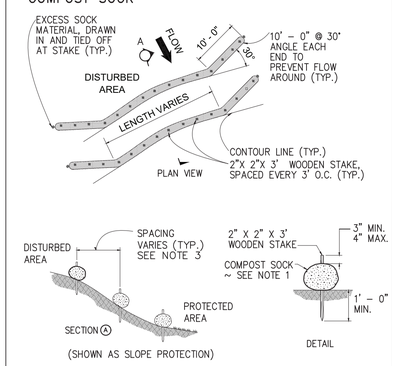
1. ORANGE MESH OR SIMILAR OPEN MATERIAL
2. PROTECT VEGETATION OUTSIDE CONSTRUCTION ZONE WITH FENCING AS SHOWN



LINK TO REQUIRED TREE PROTECTION SIGNAGE:

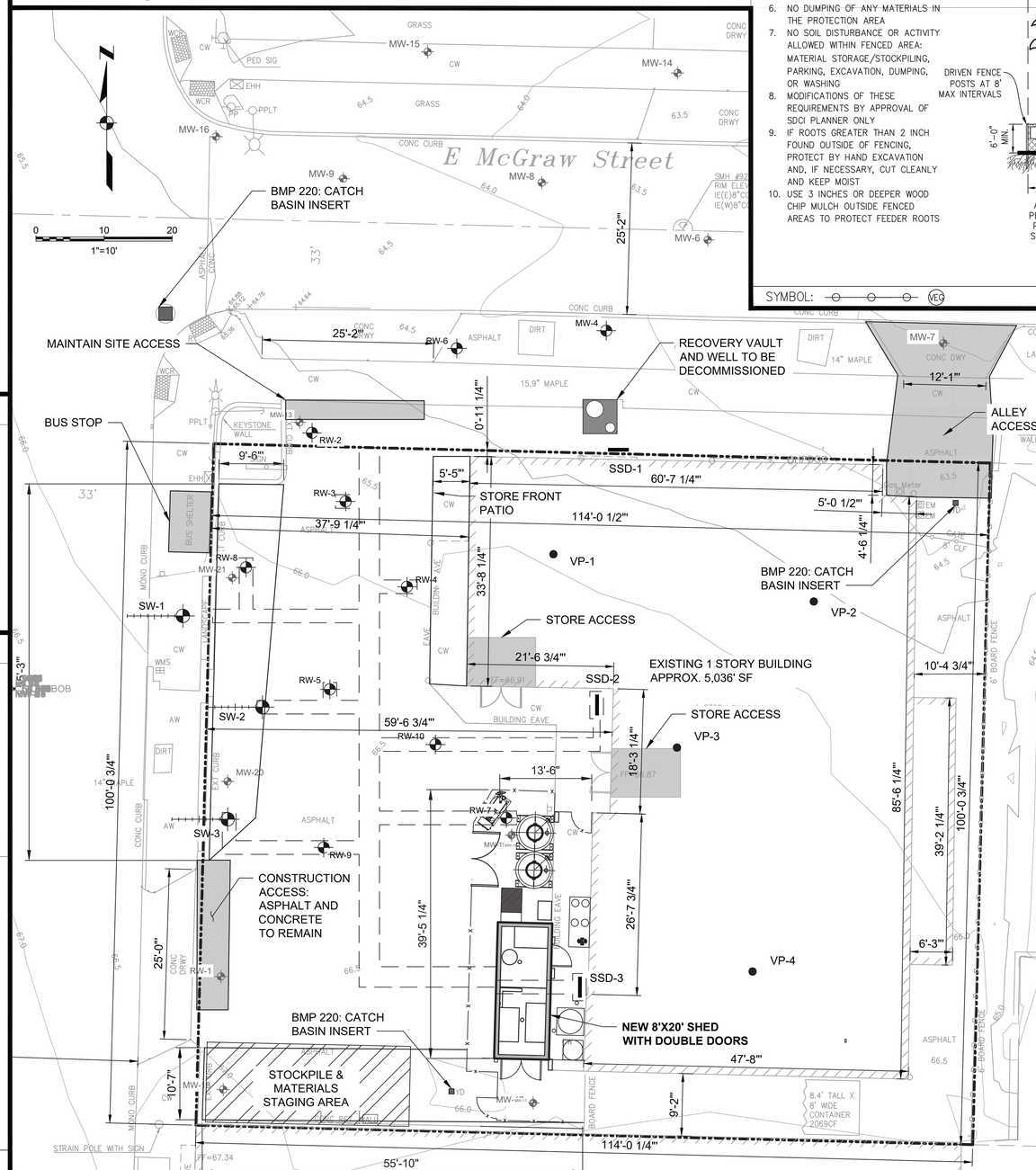
SYMBOL: (VEG)

COMPOST SOCK



1. COMPOST SOCK SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATION 9.14.4(9). COMPOST SOCK SHALL BE A MINIMUM OF 10" IN DIAMETER OR SIZED TO SUIT CONDITIONS AS SPECIFIED BY THE ENGINEER.
2. ALWAYS INSTALL COMPOST SOCK PERPENDICULAR TO SLOPE AND ALONG CONTOUR LINES.
3. REMOVE SEDIMENT FROM THE UP SLOPE SIDE OF THE COMPOST SOCK WHEN ACCUMULATION HAS REACHED 1/2 OF THE EFFECTIVE HEIGHT OF THE COMPOST SOCK.
4. MAY BE USED IN PLACE OF FILTER FENCE FOR PREMIER CONTROL.

SYMBOL: (CS)



GENERAL SHEET NOTES

1. STORMWATER FROM ROOF DRAINS DISCHARGE TO CURB WEEP HOLES THAT DRAIN TO STORMWATER MAIN. PARKING LOT CATCH BASIN DISCHARGES TO SANITARY SEWER MAIN.
2. EXISTING DRIVEWAYS SHALL REMAIN PAVED. ALL TRUCKS ENTERING AND LEAVING THE SITE WILL REMAIN ON PAVED ROADS.
3. TRENCH EXCAVATIONS SHALL BE BACKFILLED AS SOON AS POSSIBLE.
4. ANY WATER ACCUMULATED IN TRENCHES WILL BE PUMPED INTO 55-GALLON DRUMS STORED ON SITE. WATER WILL THEN BE CHARACTERIZED FOR OFFSITE DISPOSAL AFTER CONSTRUCTION IS COMPLETED.
5. TRENCH EXCAVATIONS WILL BE COVERED WITH PLASTIC SHEETING TO PREVENT CONTACT OF STORMWATER WITH SOIL UNTIL EXCAVATION HAS BEEN BACKFILLED.
6. ANY SEDIMENT OR SOIL TRACKED ONTO THE SITE WILL BE SWEPT UP WITHIN 30 MINUTES OF OCCURRENCE.
7. ANY STOCKPILES USED WILL BE UNDERLAIN, AND COVERED, WITH PLASTIC SHEETING OF A SIZE SUBSTANTIALLY LARGER THAN THE PILE AND SECURED AS REQUIRED PRIOR TO LEAVING THE SITE ON A DAILY BASIS. STOCKPILE COVERS WILL BE SECURED AGAINST MOVEMENT BY WIND.

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-02)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 1)
- SUB-SLAB DEPRESSURIZATION WELL
- APPROXIMATE EXTENT OF TRENCH
- CHAIN LINK FENCE
- VAPOR MONITORING PIN (SEE NOTE 2)
- SITE AND STORE ACCESS AREAS
- PROPERTY LINE
- STOCKPILE & MATERIALS STAGING AREA
- BMP C220: CATCH BASIN INSERT

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

TEMPLATE VERSION: 2021–06–08

CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS

STANDARD CONSTRUCTION STORMWATER CONTROL AND POST CONSTRUCTION SOIL MANAGEMENT (CSC/SOIL) PLAN

APPLICANT PLAN SET

BENJAMIN EDWARD FENTES
STATE OF WASHINGTON
88495
REGISTERED PROFESSIONAL ENGINEER

SDCI PERMIT NO.: 6996584–CN

ADDRESS: ––––– SEATTLE, WA

DESIGNED BY CMW:
DRAWN BY: CMW
CHECKED BY: RPH
DATE: 01/17/2024

STANDARD CSC/SOIL PLAN

SHEET SDW - 01

DRAINAGE & WASTEWATER CONTROL PLAN REQUIREMENTS

THIS PLAN SHALL SHOW A SITE PLAN INCLUDING ALL DRAINAGE FEATURES (HARD SURFACES, BMPS, DRAIN LINES, CATCH BASINS, INLETS, PUMPS, ETC.) AND ALL SIDE SEWER FEATURES (SERVICE DRAIN SIDE SEWERS AND SANITARY SIDE SEWERS AND THEIR APPROVED POINTS OF CONNECTION).

SEE VOLUME 1, CHAPTER 8 OF THE 2021 SEATTLE STORMWATER MANUAL FOR SITE AND DRAINAGE ELEMENTS REQUIRED ON THIS PLAN. THE STORWMATER MANUAL AND CAD TEMPLATES FOR THIS PLAN ARE AVAILABLE AT THE FOLLOWING LINK: http://www.seattle.gov/sdci/codes/codes-we-enforce-(a-z)/stormwater-code

SITE AND DRAINAGE CONTROL SUMMARY SHEET

COMPLETE THE ELECTRONIC ON-SITE STORMWATER MANAGEMENT CALCULATOR AND INSERT THE SITE AND DRAINAGE CONTROL SUMMARY SHEET BELOW. THE ELECTRONIC DOCUMENT IS AVAILABLE ON THE DPD STORMWATER CODE WEBSITE: http://www.seattle.gov/sdci/codes/codes-we-enforce-(a-z)/stormwater-code

SEE THE INSTRUCTIONS TAB IN THE EXCEL FILE FOR GUIDANCE TO SELECT AND DOCUMENT THE ON-SITE STORMWATER MANAGEMENT BMPS IF REQUIRED.

On-site Stormwater Management Calculator
Site and Drainage Control Summary

Version 01-04-2023

To use the On-Site List Calculator you must select "Enable Content" when the Security Warning appears.

Project Information

Site Address	2350 24th Ave E, Seattle, WA 98112	SDCI Project Number	6996584-CN
Primary Contact	Dale Myers	SDOT Project Number	SUUMP0000620
Project Type	Remediation	Primary Contact E-mail or Phone	DAMY461@ECY.WA.GOV

Is this project "Closely Related" to other SDCI construction permits/projects? ○ Yes ◉ No

"Closely Related" SDCI Construction Permit Numbers

Is this project associated with a Short Plat or Subdivision? ○ Yes ◉ No SDCI MUP Number

Was the project lot created or altered in size after Jan 1, 2016? No

Total Site Area	11,400 sf	Total Closely Related and/or Short Plat/Subdivision Site Area	sf
Total New plus Replaced Hard Surface Area (NPRHS)	635 sf		
Total New and/or Replaced Lawn/Landscaping	0 sf	Total Closely Related and/or Short Plat/Subdivision NPRHS	sf
Undisturbed and Protected Site Area	0 sf		
Total Existing Hard Surface Area To Remain	11,400 sf	Total Existing Hard Surface Area (Prior to Project)	11,400 sf

Site Information

Note: Reference the Preliminary Assessment Report (PAR) to complete this section.

Approved Point of Stormwater Discharge: Curb Weep Hole

Drainage Basin: Designated Receiving Water

Is the downstream drainage system considered Capacity Constrained by SPU? No

Approved Point of Wastewater Discharge: Public Sanitary Sewer Main

Approved Point of Sub-Surface Discharge: On Site Infiltration

Required Flow Control Standard: ☐ Pre-Developed Pasture ☐ Pre-Developed Forest ☐ Peak Control ☐ Wetland Protection ☐ Existing Conditions ☑ None

Project will permanently discharge groundwater? No

Required Water Quality Treatment Standard: ☐ Oil Control ☐ Enhanced ☐ Basic ☑ None

Total Pollution Generating Hard Surface Area	0 sf	w/ Closely Related/Short Plat/Subdiv. sf
Total Pollution Generating Pervious Surface Area	0 sf	w/ Closely Related/Short Plat/Subdiv. sf

Environmentally Critical Areas: No

☐ Steep Slope ☐ Potential Slide ☐ Riparian Corridor ☐ Wetland ☐ Liquefaction ☐ Flood Prone
☐ Landfill ☐ Known Landslide ☐ Fish / Wildlife ☐ Peat / Groundwater Management ☐ Shoreline Habitat

Is there soil and/or groundwater contamination on this site? Yes Source Control is required Yes

Infiltration Information

Is infiltration investigation required?

Is infiltration on the site feasible?

Site Measured Infiltration Rate ___ x Infiltration Rate Correction Factor ___ = 0 Site Design Inf Rate

On-site Stormwater Management (select List Approach or Performance Standard) OSM not required

☐ On-site List Approach (Pre-sized) Calculator -- Complete the Surface tabs and BMP Sizing tabs (Most commonly used)

☐ On-site Performance Standard -- Stormwater modeling by Civil Engineer (Also for No Off-site Point of Discharge)

Number of roof areas 0

Number of other surface areas 0 Enter number of surface areas and hit Enter

Surface	Surfaces Description	On-site BMP	Contrib. Area (sf)	Facility Size (sf)	Facility Configuration

Total New/Replaced Roof Area	0	Total Roof Area Managed	0
Total New/Replaced Other Surface Area	0	Total Other Surface Managed	0
Total Area Managed	0 sf	Total Volume Managed On Site	0 gal
Estimated compost required for soil amendment	0 cy	*Volume of compost will be verified by the Inspector.*	

Missing or invalid reference
File: ..\d0181575\OSM.pdf

seattle.gov

ON-SITE STORMWATER MANAGEMENT PLANTINGS

PLANTING GENERAL NOTES
1. PLANTS SHALL BE SITED ACCORDING TO SUN, SOIL, WIND AND MOISTURE REQUIREMENTS.
2. AT A MINIMUM, PROVISIONS MUST BE MADE FOR SUPPLEMENTAL IRRIGATION DURING THE FIRST TWO GROWING SEASONS.

BIORETENTION CELLS, PLANTERS AND RAIN GARDEN NOTES
1. FOR A LIST OF APPROVED PLANTS FOR BIORETENTION/RAIN GARDEN FACILITIES, SEE APPENDIX E, SECTION E-9 OF THE SEATTLE STORMWATER MANUAL.
2. VEGETATION COVERAGE OF SELECTED PLANS MUST ACHIEVE 90-PERCENT COVERAGE WITHIN 2 YEARS OR ADDITIONAL PLANTINGS SHALL BE PROVIDED. UNLESS DESIGNED BY A LICENSED LANDSCAPE ARCHITECT, PROVIDE A MINIMUM OF 1 PLANT PER EVERY 2 SQUARE FEET OF BIORETENTION BOTTOM AND SLOPED SIDE AREA.
3. PROVIDE A MINIMUM OF THREE DIFFERENT SPECIES OF SHRUBS AND HERBACEOUS PLANTS IN EACH FACILITY.

VEGETATED ROOF NOTES
1. APPROPRIATE PLANTS INCLUDE SUCCULENTS, GRASSES, HERBS, AND WILDFLOWERS THAT ARE ADAPTED TO HARSH CONDITIONS. PLANTS MAY BE INSTALLED AS PRE-GROWN MATS, INDIVIDUAL PLUGS, CUTTINGS, OR SPREAD AS SEEDS.
2. VEGETATION COVERAGE OF SELECTED PLANS MUST ACHIEVE 80-PERCENT COVERAGE WITHIN 2 YEARS OR ADDITIONAL PLANTINGS SHALL BE PROVIDED.
3. A LANDSCAPE MANAGEMENT PLAN SHALL BE DEVELOPED AND IMPLEMENTED.

STORMWATER FACILITIES/CONTROL OPERATIONS & MAINTENANCE REQUIREMENTS

ALL STORMWATER FACILITIES/CONTROLS SHALL BE OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2021 SEATTLE STORMWATER MANUAL, APPENDIX G.

SIDE SEWER AND DRAINAGE PERMIT NOTES

1. SIDE SEWERS AND DRAINAGE FACILITIES SHALL BE CONSTRUCTED PER THE "REQUIREMENTS FOR DESIGN OF SIDE SEWERS (DRAINAGE & WASTEWATER)" DIRECTORS' RULE DPD 4-2011/2011-004 AND PER THE "2021 SEATTLE STORMWATER MANUAL" DIRECTORS' RULE SDCI 10-2021/SPU DWW-200.
2. A SEPARATE DRAINAGE AND SIDE SEWER PERMIT IS REQUIRED FOR ALL ONSITE DRAINAGE ELEMENTS AND SIDE SEWERS/SERVICE DRAINS. APPROVAL OF THIS PLAN IS REQUIRED PRIOR TO OBTAINING A DRAINAGE AND SIDE SEWER PERMIT.
3. RE-USE OF EXISTING SIDE SEWERS WHEN THERE WILL BE AN INCREASE IN LIVING UNITS REQUIRES THE EVALUATION AND CERTIFICATION (PE EVAL/CERT) OF THE EXISTING SIDE SEWER BY A PROFESSIONAL ENGINEER PRIOR TO FINALIZING THE SIDE SEWER AND DRAINAGE PERMIT. IN MOST CASES, THE SIDE SEWER MUST BE LINED ALL THE WAY TO THE MAIN. SEE DIRECTORS RULE 4-2011V.M AND SMC 21.16.240.
4. IN ORDER TO ADD UNITS TO AN EXISTING SIDE SEWER, A CERTIFIED LETTER STATING THE INTENT TO ADD UNITS TO THE SHARED SIDE SEWER MUST BE SENT TO ALL PROPERTY OWNERS OF PARCELS SERVED BY THE SHARED SIDE SEWER AT LEAST 30 DAYS PRIOR TO APPLYING FOR THE SIDE SEWER PERMIT. SMC 21.16.240.C. A RECEIPT OF CERTIFIED MAILING AND THE CERTIFICATION/ATTESTATION OF MAILING NOTIFICATION MUST BE SUBMITTED TO SDCI PRIOR TO PERMIT ISSUANCE.
5. DEVIATIONS FROM THE APPROVED DRAINAGE AND WASTEWATER CONTROL PLAN REQUIRE A FORMAL POST-SUBMITTAL REVISION FOR PLAN REVIEW AND APPROVAL. POST-SUBMITTAL REVISIONS MUST BE SUBMITTED ELECTRONICALLY THROUGH THE SDCI PROJECT PORTAL.

AS-BUILT MEASUREMENTS / NOTES

THIS SECTION IS TO BE COMPLETED AFTER THE DRAINAGE, WASTEWATER, AND SIDE SEWER FEATURES HAVE BEEN INSTALLED. FOR INSTRUCTIONS TO PREPARE THE AS-BUILT PLAN, SEE SDCI TIP #504.

SDCI SIDE SEWER AND DRAINAGE PERMIT #

MEASUREMENTS IN THE RIGHT-OF-WAY
1. DISTANCE FROM CENTERLINE OF DOWSTREAM MH TO CENTERLINE OF NEW SERVICE CONNECTION
2. SIDE SEWER INTERSECTION WITH PROPERTY LINE - DEPTH
3. SIDE SEWER INSTERSECTION WITH PROPERTY LINE - DISTANCE

PIPE LINERS
☐ PIPE LINER INSTALLED ON PRIVATE PROPERTY
☐ PIPE LINER INSTALLED IN THE RIGHT-OF-WAY

NOTES FOR PLAN VIEW

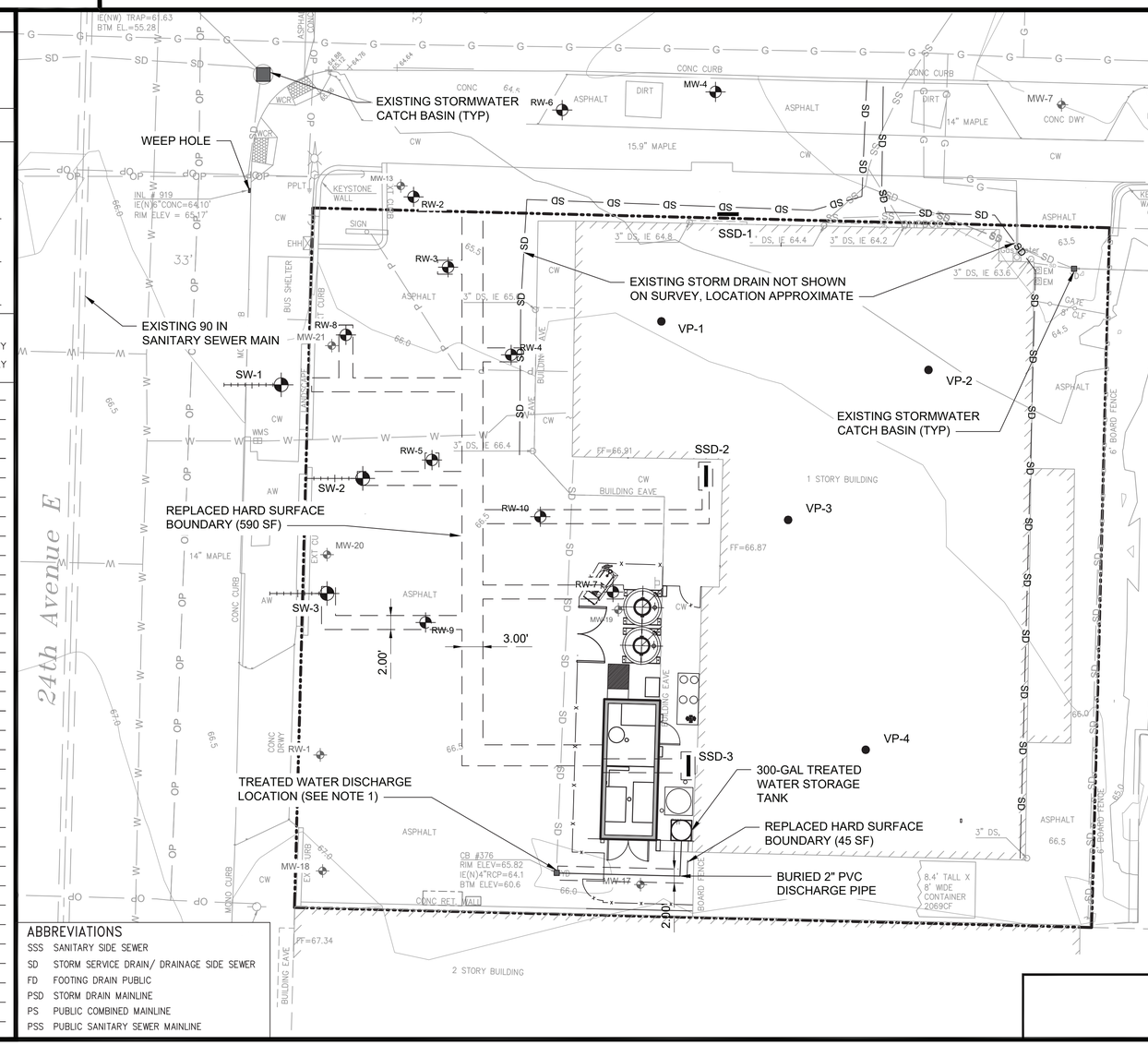
DETAILS: SELECT THE APPLICABLE DETAILS AND SHOW THEM HERE. PROVIDE AN ADDITIONAL SHEET IF NEEDED.

NOTES

1. TREATED WATER DISCHARGE TO EXISTING STORM DRAIN CONNECTED TO SANITARY SEWER IS PERMITTED UNDER KING COUNTY INDUSTRIAL WASTE (KCIW) WASTEWATER DISCHARGE AUTHORIZATION NO. 4614-01.

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-02)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 1)
- SUB-SLAB DEPRESSURIZATION WELL
- CHAIN LINK FENCE
- VAPOR MONITORING PIN
- PROPERTY LINE



ABBREVIATIONS

SSS	SANITARY SIDE SEWER
SD	STORM SERVICE DRAIN/ DRAINAGE SIDE SEWER
FD	FOOTING DRAIN PUBLIC
PSD	STORM DRAIN MAINLINE
PS	PUBLIC COMBINED MAINLINE
PSS	PUBLIC SANITARY SEWER MAINLINE

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

TEMPLATE VERSION: 2021-06-18

CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS

DRAINAGE AND WASTEWATER CONTROL (DWC) PLAN
APPLICANT PLAN SET

BENJAMIN EDWARD FOSTER, STATE OF WASHINGTON, 88495, REGISTERED PROFESSIONAL ENGINEER

SDCI PERMIT NO.: 6996584-CN

ADDRESS: 2350 24TH AVE E SEATTLE, WA

DESIGNED BY: CMW
DRAWN BY: CMW
CHECKED BY: BEF

DWC PLAN

SHEET SDW - 02

Plot Date: 4/30/2024 4:15 PM
User: CAYLA WHITESIDE
File: C:\bms\kjce-pw\d0181574\21960080\-CSC-02.dwg

General Structural Notes

THE FOLLOWING APPLY UNLESS SHOWN OTHERWISE ON THE DRAWINGS

CRITERIA

1. ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE 2018 SEATTLE BUILDING CODE.

2. DESIGN LOADING CRITERIA:
   MANUFACTURING
   FLOOR LIVE LOAD (LIGHT MANUFACTURING) . . . . . 125 PSF
   MISCELLANEOUS LOADS
   ROOF MECHANICAL . . . . . .1500 LBS
   DEFLECTION CRITERIA
   LIVE LOAD DEFLECTION L/360
   TOTAL LOAD DEFLECTION L/240
   ENVIRONMENTAL LOADS
   SNOW . . . . . .Ce=1.0, Is=1.0, Ct=1.1, Pg=20 PSF
   WIND . . . . . GCpi=0.18, 110 MPH, RISK CATEGORY II, EXPOSURE "B"
   EARTHQUAKE . . . ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
   LATERAL SYSTEM: LIGHT FRAMED SHEAR WALLS, Vs=2.5 KIPS. SITE CLASS=D, Ss=1.39, Sds=1.0, S1=0.49, SD1=0.88, Cs=0.56, SDC D, Ie=1.0, R=3.5

3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH CIVIL DRAWINGS FOR BIDDING AND CONSTRUCTION. CIVIL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THE SPECIFICATION, THESE GENERAL NOTES AND THE SITE CONDITIONS SHALL BE REPORTED TO GLACIAL ENVIRONMENTAL SERVICES (GENERAL CONTRACTOR), WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING. ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK.

4. PRIMARY STRUCTURAL ELEMENTS NOT DIMENSIONED ON THE STRUCTURAL PLANS AND DETAILS SHALL BE LOCATED BY THE CIVIL PLANS AND DETAILS.

5. ALL STRUCTURAL SYSTEMS, WHICH ARE TO BE COMPOSED OF COMPONENTS TO BE FIELD ERECTED, SHALL BE SUPERVISED BY THE SUPPLIER DURING MANUFACTURING, DELIVERY, HANDLING, STORAGE AND ERECTION IN ACCORDANCE WITH INSTRUCTIONS PREPARED BY THE SUPPLIER.

STEEL

6. STRUCTURAL STEEL DESIGN, FABRICATION, AND ERECTION SHALL BE BASED ON:
   A. AISC 360 AND SECTION 2205.2 OF THE INTERNATIONAL BUILDING CODE.

7. ROLLED SHAPES INCLUDING PLATES, SHALL CONFORM TO ASTM A36, FY = 36 KSI. STEEL PIPE SHALL CONFORM TO ASTM A-53, TYPE E OR S, GRADE B, Fy = 35 KSI. STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B, FY = 42 KSI (ROUND), FY = 46 KSI (SQUARE AND RECTANGULAR). CONNECTION BOLTS SHALL CONFORM TO ASTM A307.

8. ALL STEEL EXPOSED TO THE WEATHER OR IN CONTACT WITH GROUND SHALL BE CORROSION PROTECTED BY GALVANIZATION OR PROVIDED WITH EXTERIOR PAINT SYSTEM, UNLESS OTHERWISE NOTED. EXISTING CONTAINER COMPONENTS ARE EXCLUDED.

9. ALL WELDING SHALL BE IN CONFORMANCE WITH AISC AND AWS STANDARDS AND SHALL BE PERFORMED BY WABO CERTIFIED WELDERS USING E70XX ELECTRODES.

GEOTECHNICAL

10. FOUNDATION NOTES: ALLOWABLE SOIL PRESSURE AND LATERAL EARTH PRESSURE ARE ASSUMED AND THEREFORE MUST BE VERIFIED BY A QUALIFIED SOILS ENGINEER OR APPROVED BY THE BUILDING OFFICIAL. IF SOILS ARE FOUND TO BE OTHER THAN ASSUMED, NOTIFY THE STRUCTURAL ENGINEER FOR POSSIBLE FOUNDATION REDESIGN.

    FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED EARTH AT LEAST 18" BELOW ADJACENT FINISHED GRADE.

    ALLOWABLE SOIL PRESSURE. . . . . 1500 PSF
    ALLOWABLE PASSIVE EARTH PRESSURE (FS OF 1.5 INCLUDED). . . . . 250 PCF
    COEFFICIENT OF FRICTION (FS OF 1.5 INCLUDED). 0.3

WOOD

11. FRAMING LUMBER SHALL BE KILN DRIED OR MC-19, AND GRADED AND MARKED IN CONFORMANCE WITH WCLIB STANDARD GRADING RULES FOR WEST COAST LUMBER NO. 17. FURNISH TO THE FOLLOWING MINIMUM STANDARDS: DOUGLAS-FIR-LARCH OR HEM-FIR NO. 2.

12. WOOD FASTENERS: NAIL SIZES SPECIFIED ON DRAWINGS ARE BASED ON THE FOLLOWING SPECIFICATIONS: 10d - 3" x 0.148", 16d BOX - 3-1/2" x 0.135".

13. WOOD FRAMING NOTES--THE FOLLOWING APPLY UNLESS OTHERWISE SHOWN ON THE PLANS: WALL FRAMING: REFER ARCHITECTURAL DRAWINGS FOR THE SIZE OF ALL WALLS. ALL STUDS SHALL BE SPACED AT 16" O.C. UNO. TWO STUDS MINIMUM SHALL BE PROVIDED AT THE END OF ALL WALLS. WHERE SHOWN, FASTEN 15/32"CDX PLYWOOD TO STUD WALL. NAIL PANEL EDGES WITH 8D @ 16"OC. BLOCK PANEL EDGES WITH 2x LAID FLAT AND NAIL PANELS TO INTERMEDIATE SUPPORTS WITH 8D @ 12"OC.

CONCRETE

14. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED AND PLACED IN ACCORDANCE WITH ACI 301, INCLUDING TESTING PROCEDURES. CONCRETE SHALL ATTAIN A 28-DAY STRENGTH OF f'c = 3,000 PSI AND MIX SHALL CONTAIN NOT LESS THAN 5-1/2 SACKS OF CEMENT PER CUBIC YARD AND SHALL BE PROPORTIONED TO PRODUCE A SLUMP OF 5" OR LESS. REQUIRED CONCRETE STRENGTH IS BASED ON THE DURABILITY REQUIREMENTS OF SECTION 1904 OF THE IBC. DESIGN STRENGTH IS f'c = 2,500 PSI.

15. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (INCLUDING SUPPLEMENT S1), GRADE 60, FY = 60,000 PSI. PLACE REINFORCEMENT WITHOUT SPLICES.

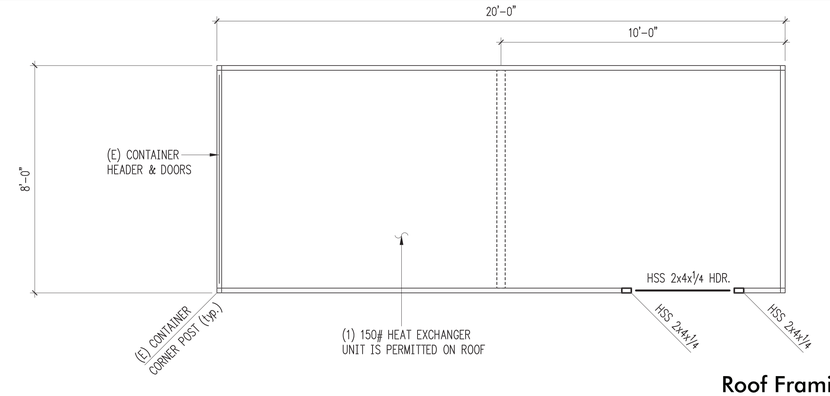
16. CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

    FOOTINGS AND OTHER UNFORMED SURFACES CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH . . . . . 3"

    FORMED SURFACES EXPOSED TO EARTH OR WEATHER (#5 BARS OR SMALLER) . . . . . 1-1/2"

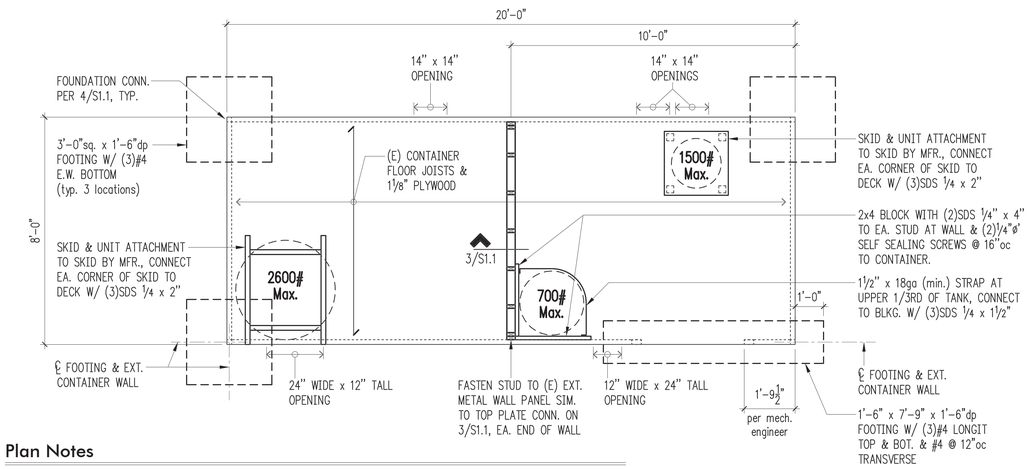
1

FOR REFERENCE ONLY



Roof Framing Plan

Scale: 3/8" = 1'-0"



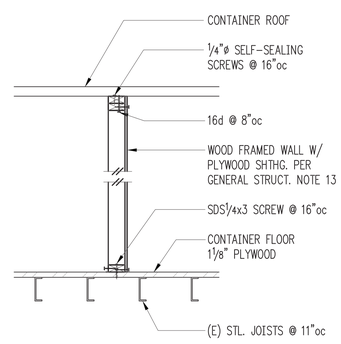
Plan Notes

1. SIDE WALLS MAY BE DRILLED FOR PIPING. MAX. 6"ø HOLE W/ (2) HOLE DIAMETERS CLEAR BETWEEN ADJACENT HOLES.
2. (E) CONTAINER FLOOR: 1 1/8" PLYWOOD OVER 5" STEEL CHANNELS @ 11"oc.
3. EXISTING CONTAINER SHALL BE 20'-0" LONG ISO CERTIFIED CARGO CONTAINER.
4. ALL FOUNDATIONS ARE CAST-IN-PLACE CONCRETE PER GENERAL STRUCTURAL NOTES 14, 15, AND 16.
5. AT PERIMETER OF CONTAINER BASE, FORKLIFT HOLES SHALL BE LEFT OPEN FOR UNDERFLOOR VENTILATION.

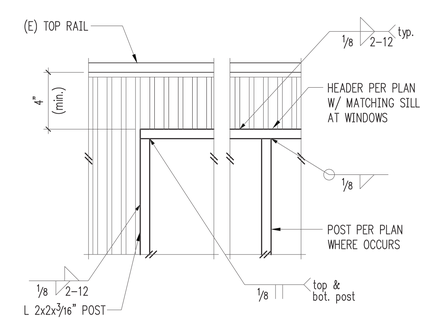
1

Container Floor Framing Plan

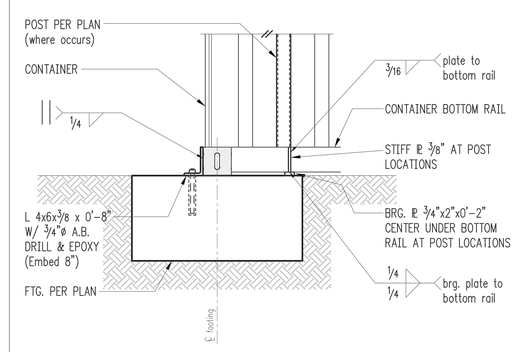
Scale: 3/8" = 1'-0"



Typical Partition Wall 2



Typical Header 3



Typical Footing 4

STRUCTURAL ENGINEERING

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2124 Third Avenue, Suite 100
Seattle, WA 98121

TACOMA
934 Broadway, Suite 100
Tacoma, WA 98402

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BRIAN P. RITTERBUSCH, STATE OF WASHINGTON, 53241, STRUCTURAL ENGINEER, PROFESSIONAL ENGINEER

DRAWN: SJB
DESIGN: BPR
CHECKED: BPR
APPROVED: BPR

REVISIONS:

1	Permit Correction 2	Apr. 22, 2024

JURISDICTIONAL APPROVAL STAMP:

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

PROJECT TITLE:
Circle K
Equipment Enclosure
2350 24th Ave E
Seattle, WA 98112

ARCHITECT:
Glacier Environmental Services

ISSUE:
Permit

SHEET TITLE:
General Structural Notes, Framing Plans, and Details

SCALE: 3/4" = 1'-0" U.N.O.
DATE: March 28, 2024
PROJECT NO: 10846-2024-01
SHEET NO: S1.1

8 x 20 SEABOX GENERAL ARRANGEMENT DETAIL

ENTIRE SYSTEM IS 3RD PARTY CERTIFIED

CONTROL PANEL

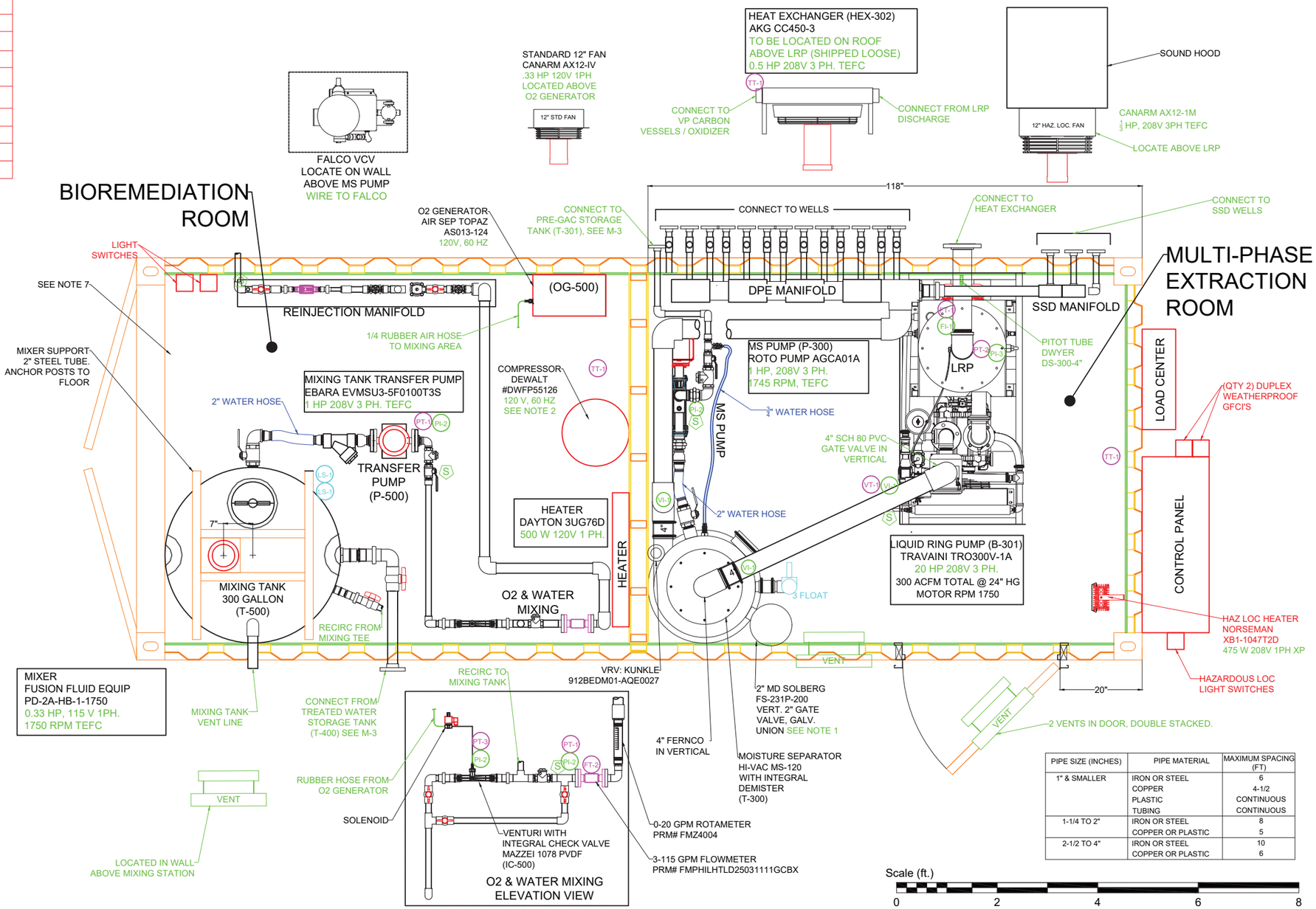
1. PANEL LISTING	508&698a
2. DEADFRONT	YES
3. VOLTAGE	120/208V THREE PHASE WYE
4. PHASE	3
5. AUTO RESTART	YES
6. BREAKERS IN PANEL	YES
7. HOUR METERS	YES
8. AMP METERS	NO
9. HOA AND RESET BUTTON	YES
10. OXIDIZER INTERLOCK	YES
11. PLC	SIEMENS
12. 7/24 TIMER	SIEMENS
13. SURGE PROTECTOR	YES
14. PHASE MONITOR	NO
15. PANEL TRANSFORMER	NO
16 FAN IN PANEL	NO
17. TELEMETRY	SIEMENS
18. TELEMETRY SERVICE	PRM
19. BATTERY BACKUP	YES

NOTES:
1. 1" MS TANK DRAIN LOCATED BELOW MANUAL DILUTION
2. PNEUMATIC ACTUATORS ON DPE MANIFOLD VALVES WILL BE CONNECTED TO COMPRESSOR LOCATED IN NON-HAZARDOUS SIDE.
3. WALLS & CEILING SHALL HAVE R-13 INSULATION AND WOOD FRAMING AND WILL ADD 4" THICKNESS ON ALL SIDES. FLOOR TO HAVE R10 INSULATION.
4. HAZ. LOC. LIGHT IN MPE ROOM. STD LIGHT IN BIOREMEDIATION ROOM.
5. SOUND HOODS TO BE LOCATED OVER ALL VENTS IN MPE ROOM ONLY, INCLUDING LRP HX VENT.
6. LIQUID RING PUMP WILL SIT ON ¾" RUBBER MAT.
7. 4-1/2" BERM WILL BE PROVIDED AROUND PERIMETER OF BOTH ROOMS. FLOOR WILL BE COATED AND SEALED TO ACT AS SECONDARY CONTAINMENT.
8. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES
9. ANY PLUMBING ON FLOOR IN WALKWAY AREAS REQUIRES A STEPOVER.
10. MINIMIZE PROTRUSION OUTSIDE ON DPE MANIFOLD PENETRATIONS

LOOSE EQUIPMENT:
1. POST LRP HEAT EXCHANGER (AFTERCOOLER) TO BE PROVIDED LOOSE AND FIELD PIPED BY OTHERS.
2. FALCO 300 CATALYTIC OXIDIZER. SUPPLIED WITH SOLBERG HDL-PSG344/2-300 COALESCER TO BE INSTALLED BEFORE FALCO INLET. VCV INSTALLED IN LRP ROOM TO BE REMOVED AND RETURNED WITH FALCO AT THE END OF RENTAL.
3. VAPOR PHASE CARBON VESSELS: (2) VP-2000. EACH FILLED WITH 2000 LBS OF REACTIVATED CARBON. EACH ALSO INCLUDES 1" SS DRAINS, (3)PRESSURE INDICATORS (PI-3) AND 4" ALUMINUM CAMLOCK CONNECTIONS.
3. PRE-LGAC WATER STORAGE TANK SKID (M-3).
4. TREATED WATER SKID (M-3).
5. LGAC SKID(M-4).
6. QTY 4 ANCHOR POSTS: PRM# TRAILSEABOXANCHORX
7. DWYER DS-300 PITOT TUBE AND DIFF. PRES GAUGE (FI-1) FOR STARTUP TESTING OF DPE WELLS
8. SPARE SS STRAINER BASKET SIZED FOR #2 TRADE SIZE BAG
9. QTY 25 OF 25 MICRON BAG FILTERS
10. QTY 25 OF 50 MICRON BAG FILTERS

PRM PARTS LIST

PRM PARTS	DESCRIPTION	PRM #	QTY
PI-1	0-50 PSI LF GAUGE	PGCNBTY630251850PSI	0
PI-2	0-100 PSI PRES GAUGE	PGCNBTY6302514100PSI	3
PI-3	0-10PSI PRESS GAUGE	PGCNBTY630251310PSI	4
PI-4	-15 HG- 100 PSI LF GAUGE	PGCNBTY6301515HG100PSI	1
VI-1	0-30" HG LF GAUGE	PGCNBTY630252230HG	3
TT-1	0-392 TEMP TRANSMITTER	CONTD148WD	3
PT-1	0-100 PSI PRES TRANSMITTER	PT100PSICABLE025MNPTX	2
PT-2	0-100"WC PRES TRANSMITTER	PGTLFMI100WCX	1
PT-3	-15 TO 30 PSIG PRES TRANS.	PT15V165PSI24VDCX	1
VT-1	0-30" VACUUM TRANSMITTER	PT100030HG025MNPTX	1
FT-1	0-5"WC DPT	PGTLFMI005WCX	1
FT-2	3-115 GPM FLOW TRANS.	FMPHILHTLD25031111GCBX	1
FI-1	0-5"WC DIFF PRES. GAUGE	DPGJH0005X	1
LS-1	FLOAT LEVEL SWITCH	FLSLSCF07X7X	2



PIPE SIZE (INCHES)	PIPE MATERIAL	MAXIMUM SPACING (FT)
1" & SMALLER	IRON OR STEEL	6
	COPPER	4-1/2
	PLASTIC	CONTINUOUS
	TUBING	CONTINUOUS
1-1/4 TO 2"	IRON OR STEEL	8
	COPPER OR PLASTIC	5
2-1/2 TO 4"	IRON OR STEEL	10
	COPPER OR PLASTIC	6

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
SEABOX GENERAL ARRANGEMENT

QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

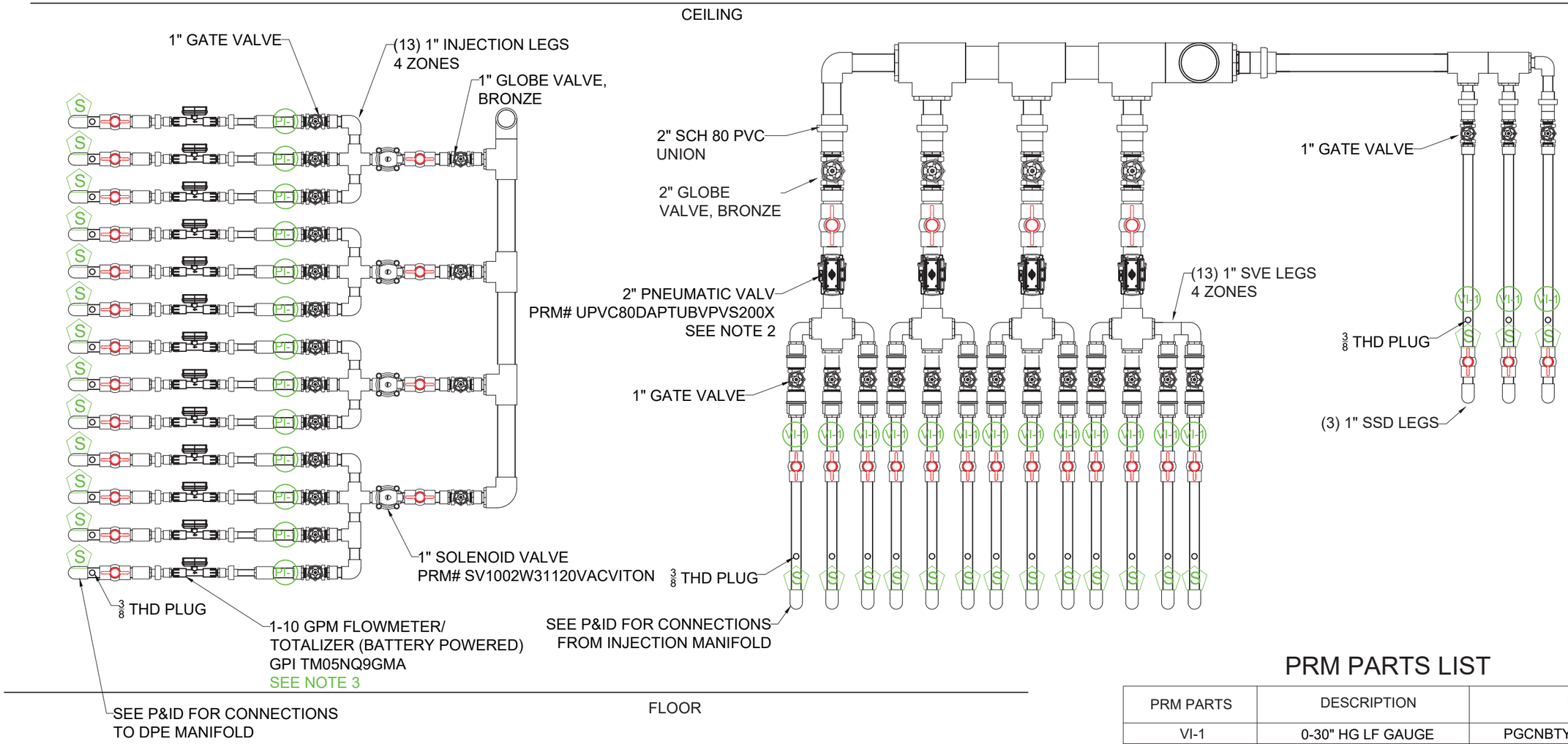
NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: M-1

REINJECTION MANIFOLD ELEVATION DETAIL

DPE MANIFOLD ELEVATION DETAIL

SSD MANIFOLD ELEVATION DETAIL



PRM PARTS LIST

PRM PARTS	DESCRIPTION	PRM #	QTY
VI-1	0-30" HG LF GAUGE	PGCNBTY630252230HG	16
PI-1	0-30 PSI GAUGE	PGCNBTY630251230PSI	13

NOTES:

1. DPE MANIFOLD: ONE OR TWO ZONES MAY BE LOCATED ON PARTITION WALL IF EXTRA SPACE IS REQUIRED
2. COMPRESSED AIR REQUIRED FOR ACTUATION OF 2" PNEUMATIC VALVES ON DPE MANIFOLD TO BE PROVIDED BY COMPRESSOR LOCATED IN INJECTION SIDE OF SEABOX.
3. ALLOW 10 PIPE DIAMETERS STRAIGHT PIPE UPSTREAM OF FLOWMETERS AND 5 PIPE DIAMETERS DOWNSTREAM.

Scale (ft.)

0 2 4

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GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
REINJECTION / DPE / SSD
MANIFOLD ELEVATION DETAILS

QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

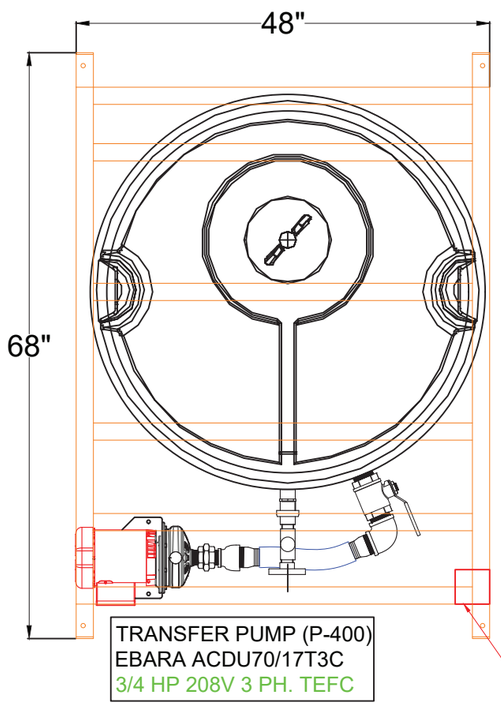
NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: M-2

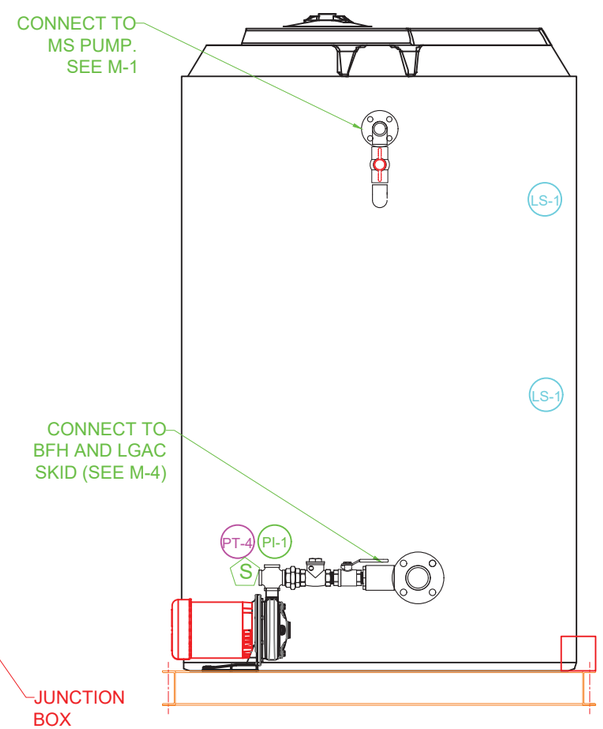
PRE-GAC WATER STORAGE TANK SKID (T-301)

500 GALLON TANK

PLAN VIEW



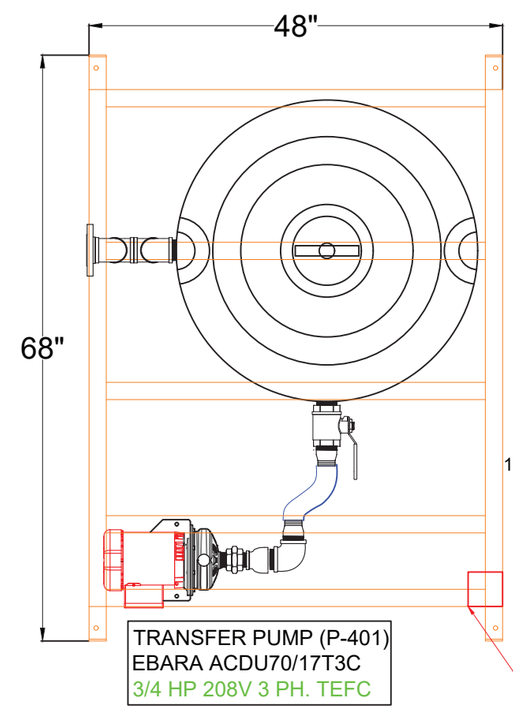
ELEVATION VIEW



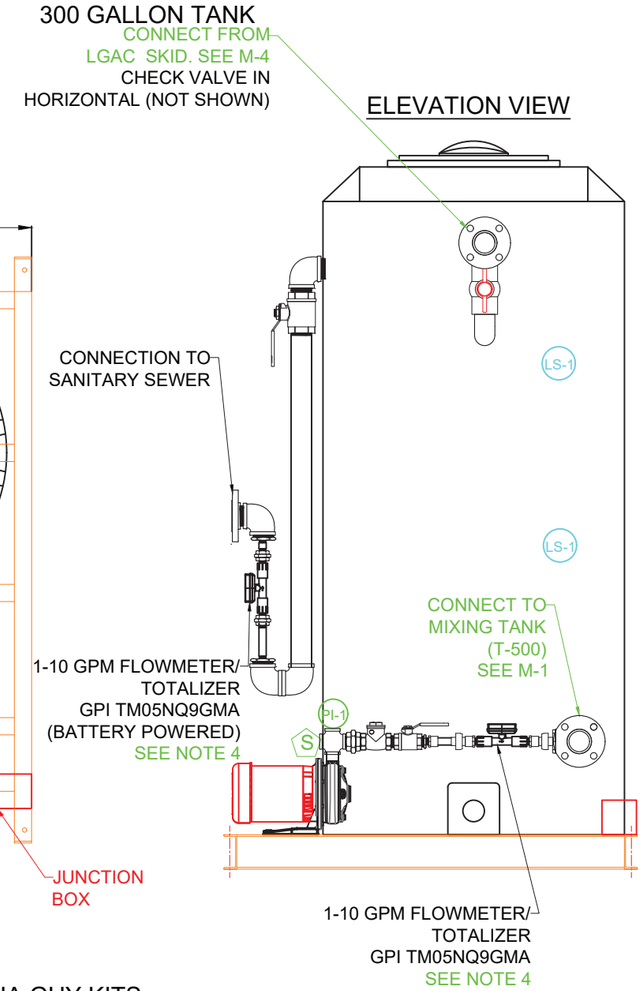
TREATED WATER STORAGE TANK SKID (T-400)

300 GALLON TANK

PLAN VIEW



ELEVATION VIEW



NOTES:
1. TANKS ATTACH TO SKIDS VIA GUY KITS
2. PIPE SUPPORTS TO BE PROVIDED AS NEEDED
3. ALL ELECTRICAL PRE-WIRED TO JUNCTION BOX
4. ALLOW 10 PIPE DIAMETERS STRAIGHT PIPE UPSTREAM OF FLOWMETERS AND 5 PIPE DIAMETERS DOWNSTREAM.

SKID CONSTRUCTION NOTES
1. SKID PAINT DETAILS:
   1.1. PRIMER: EPOXY PRIMER (HBE-400)
   1.2. PAINT: BATTLESHIP GREY ACRYLIC URETHANE FINISH (AUE-100)
2. MATERIAL: 4X2 CS CHANNEL

Scale (ft.)

0 2 4

PRM PARTS LIST

PRM PARTS	DESCRIPTION	PRM #	QTY
PI-1	0-50 PSI LF GAUGE	PGCNBTY630251850PSI	2
PT-4	0-50 PSI TRANSMITTER	PT50PPSI24VDCX	1
LS-1	FLOAT LEVEL SWITCH	FLSLSCF07X7X	4

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CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

PROJECT TITLE: MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

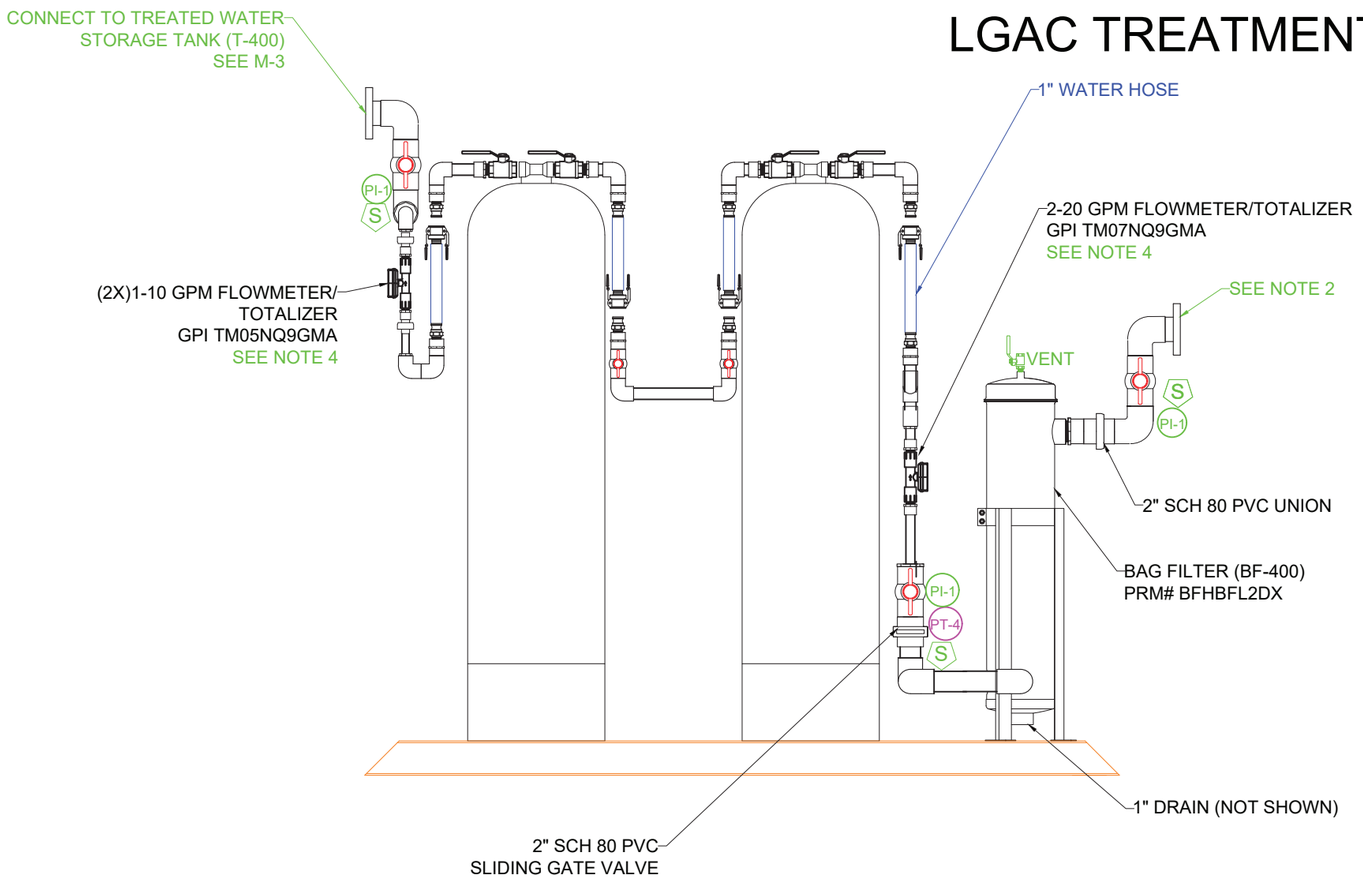
SHEET TITLE: STORAGE TANK SKIDS

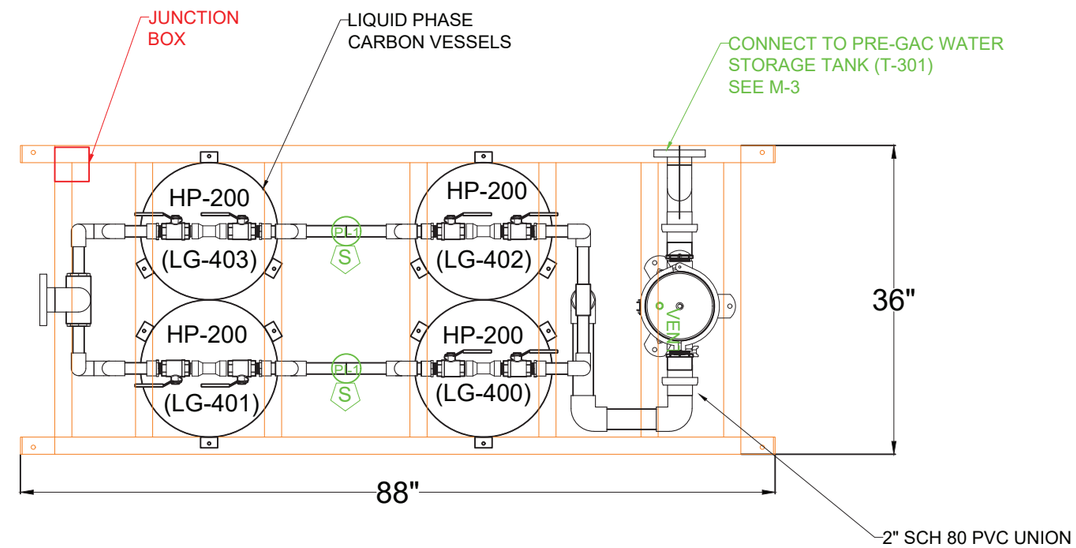
QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: M-3

LGAC TREATMENT SKID





NOTES:
1. PIPE SUPPORTS TO BE PROVIDED AS NEEDED
2. BAG FILTER INLET PLUMBING SHOWN ON RIGHT HAND SIDE FOR DRAWING CLARITY- SEE PLAN DETAIL.
3. ALL ELECTRICAL PRE-WIRED TO JUNCTION BOX.
4.ALLOW 10 PIPE DIAMETERS STRAIGHT PIPE UPSTREAM OF FLOWMETERS AND 5 PIPE DIAMETERS DOWNSTREAM.

PRM PARTS LIST

PRM PARTS	DESCRIPTION	PRM #	QTY
PI-1	0-50 PSI LF GAUGE	PGCNBTY630251850PSI	5
PT-4	0-50 PSI TRANSMITTER	PT50PPSI24VDCX	1

SKID CONSTRUCTION NOTES

1. SKID PAINT DETAILS:
   - 1.1. PRIMER: EPOXY PRIMER (HBE-400)
   - 1.2. PAINT: BATTLESHIP GREY ACRYLIC URETHANE FINISH (AUE-100)
2. MATERIAL: 4X2 CS CHANNEL

Scale (ft.)

0 2 4

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CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

PROJECT TITLE: MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE: LGAC TREATMENT SKID

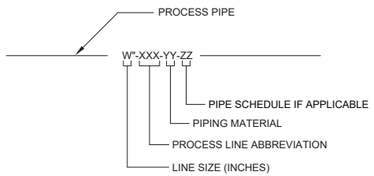
QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: M-4

LINE IDENTIFICATION CODES

LINE NUMBERING



PIPING MATERIAL IDENTIFICATION

AL	ALUMINUM
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CARBON STEEL
COP	COPPER
CPP	CORRUGATED PLASTIC PIPE
CIP	CAST IRON PIPE
DIP	DUCTILE IRON PIPE
FH	FLEXIBLE HOSE
GAL	GALVANIZED STEEL PIPE
NYL	NYLON
PE	POLYETHYLENE PIPE
PP	POLYPROPYLENE PIPE
PVC	POLYVINYL PIPE
RUB	RUBBER HOSE
SS	STAINLESS STEEL
TEF	TEFLON TUBING

PROCESS LINE ABBREVIATIONS

AIR	AIR, ATMOSPHERIC PRESSURE
BW	BACKWASH
CA	COMPRESSED AIR
CD	CONDENSATE
CF	CHEMICAL FEED
CGW	CONTAMINATED GROUNDWATER
D	DRAIN
EFF	EFFLUENT
EXH	EXHAUST
GW	GROUNDWATER
LFG	LANDFILL GAS
NPW	NON-POTABLE WATER
P	PRODUCT
PR	PROCESS FLOW
PROP	PROPANE
PW	POTABLE WATER
S	SANITARY
SL	SLUDGE
SP	SAMPLE PORT
STS	STORM SEWER
TF	TOTAL FLUIDS
V	VENT
VAP	VAPOR

LINE CODING

PROCESS FLOW

PNEUMATIC SIGNAL

WIRELESS SIGNAL

ELECTRICAL SIGNALS

4-20mA / LOW VOLTAGE

LINE VOLTAGE

IS

VALVE AND PIPING SYMBOLS

GLOBE VALVE

GATE VALVE

BUTTERFLY VALVE

CHECK VALVE

PLUG VALVE

3-WAY VALVE

ANGLE VALVE

RELIEF VALVE/VACUUM BREAKER

BALL VALVE

GLOBE VALVE

SELF-CONTAINING PRESSURE REGULATING VALVE

NEEDLE VALVE

BP BACKFLOW PREVENTER

NO NORMALLY OPEN

NC NORMALLY CLOSED

FLEXIBLE HOSE

FLEXIBLE COUPLING

MOTOR DRIVEN

BASKET TYPE STRAINER

Y-TYPE STRAINER

DUPLEX STRAINER

SLEEVE COUPLING (SC)

FLOOR DRAIN

EQUIPMENT DRAIN

CLEANOUT (CO)

REMOVABLE PLUG

REMOVABLE CAP

EXHAUST TO ATMOSPHERE (INSIDE)

EXHAUST TO ATMOSPHERE (OUTSIDE)

REDUCER

UNION

QUICK DISCONNECT COUPLING

BF BLIND FLANGE

FLANGE

DAMPER

TEST PORT WITH STOP COCK VALVE

VALVE OPERATOR SYMBOLS

S SOLENOID

M MOTOR, ELECTRIC

P PNEUMATIC

DIAPHRAGM WITH POSITIONER

HANDWHEEL OR LEVER

CHAINWHEEL

PRIMARY ELEMENT SYMBOLS - FLOW

ORIFICE PLATE

PITOT TUBE

THERMAL MASS FLOW METER

ROTOMETER

FLUME

WEIR

TURBINE OR PROPELLOR TYPE METER

MAGNETIC FLOW METER

TOTALING FLOW METER

EQUIPMENT SYMBOLS

PUMP

PNEUMATIC DIAPHRAGM PUMP

LIQUID RING VACUUM PUMP

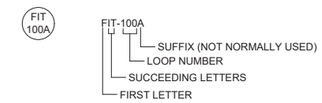
BLOWER

AIR COMPRESSOR

POSITIVE DISPLACEMENT PUMP

SCREW COMPRESSOR

INSTRUMENT IDENTIFICATION



FUNCTIONAL ABBREVIATIONS

DO	DISSOLVED OXYGEN	OC	OPEN-CLOSE
FC	FAIL CLOSED	OO	ON-OFF (MAINTAINED)
FI	FAIL INTERMINATE	ORP	OXIDATION REDUCTION POTENTIAL
FL	FAIL LOCKED	OSC	OPEN-STOP-CLOSE (MOMENTARY)
FO	FAIL OPEN	SS	START-STOP (MONENTARY)
HOA	HAND-OFF-AUTOMATIC	>	HIGH SELECT
I/I	CURRENT-TO-CURRENT	<	LOW SELECT
I/P	CURRENT-TO-PNEUMATIC		
LEL	LOWER EXPLOSIVE LIMIT		
LR	LOCAL-REMOTE		

S SAMPLE PORT

GENERAL INSTRUMENT SYMBOLS

LOCALLY MOUNTED

FRONT-OF PANEL MOUNTED

BACK-OF-PANEL MOUNTED

I INTERLOCK

P PURGE

PLC FUNCTION BLOCK

INSTRUMENT IDENTIFICATION TABLE

FIRST LETTER			SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME				
C	CONDUCTIVITY			CONTROL	CLOSE
D	DENSITY (SP, GR)	DIFFERENTIAL		DRIVE	
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			
G	GAUGING (DIMENSIONAL)		GLASS		
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE
N					
O			ORIFICE		OPEN
P	PRESSURE		POINT (TEST)		
Q	QUANT. OR EVENT	INTEGRATE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED OR FREQ.	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	ULTRAVIOLET		MULTIFUNCTION		
V	VACUUM	VISCOSITY		VALVE OR DAMPER	
W	WEIGHT OR FORCE		WELL		
X	THERMOCOUPLE		UNCLASSIFIED		
Y	VIBRATION			RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE	

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

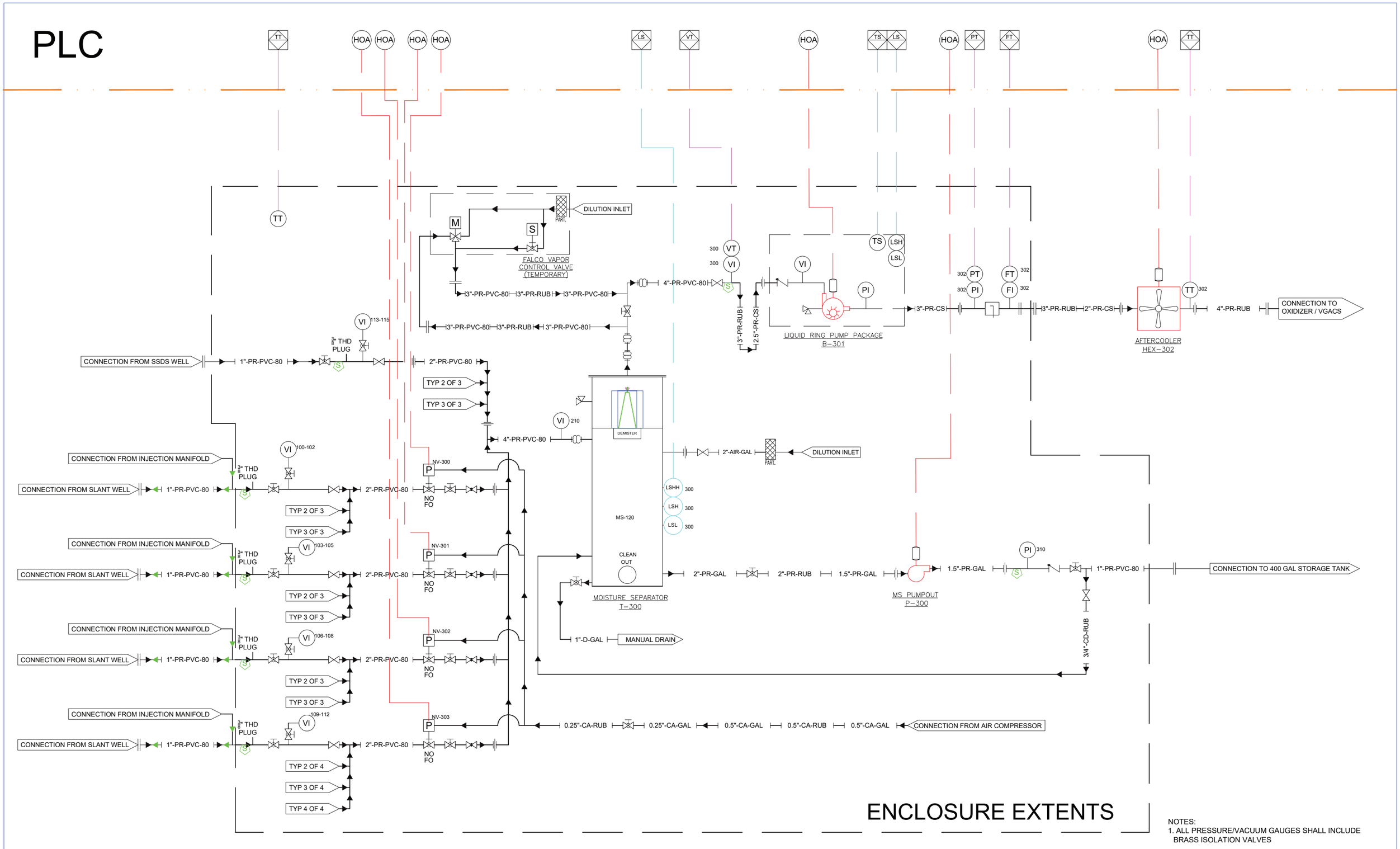
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION DIAGRAM LEGEND

QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-1



NOTES:
1. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

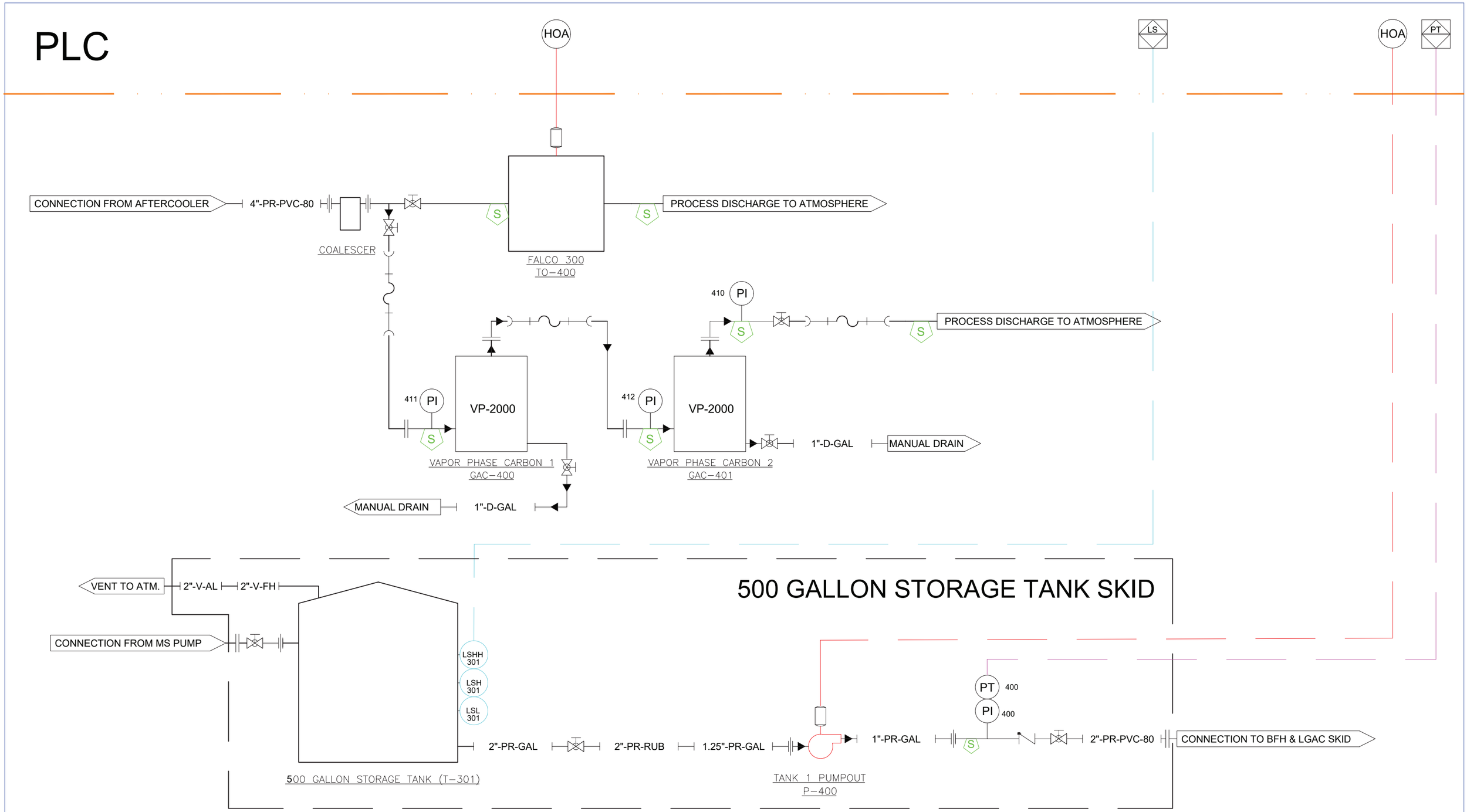
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
INLET MANIFOLDS, MS TANK, & LRP

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-2



NOTES:
1. PRM IS NOT RESPONSIBLE FOR MAKING CONNECTIONS TO/FROM/BETWEEN FALCO AND CARBON VESSELS
2. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

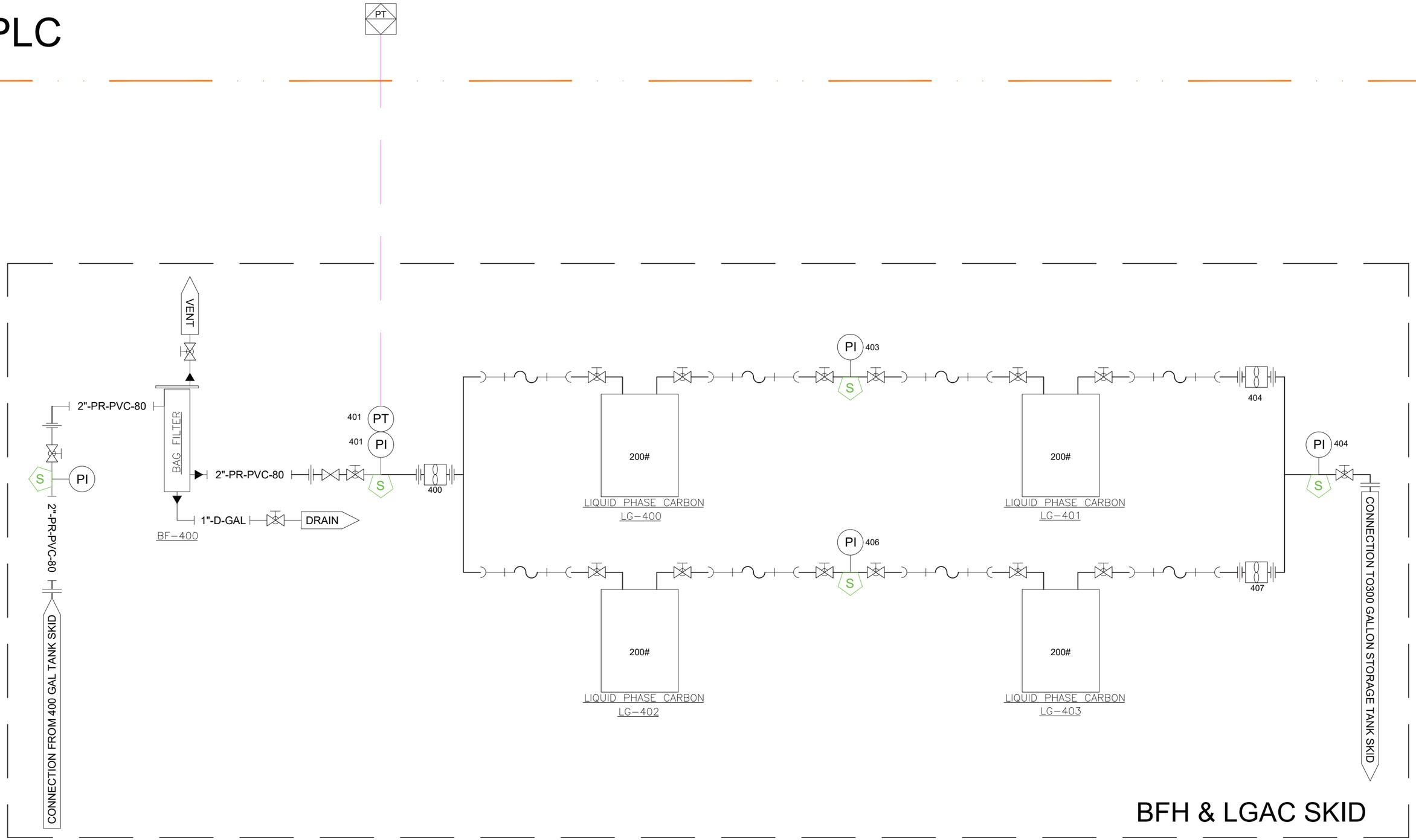
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
VGACs & 500 GALLON STORAGE TANK SKID

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER:
P&ID-3



NOTES:
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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

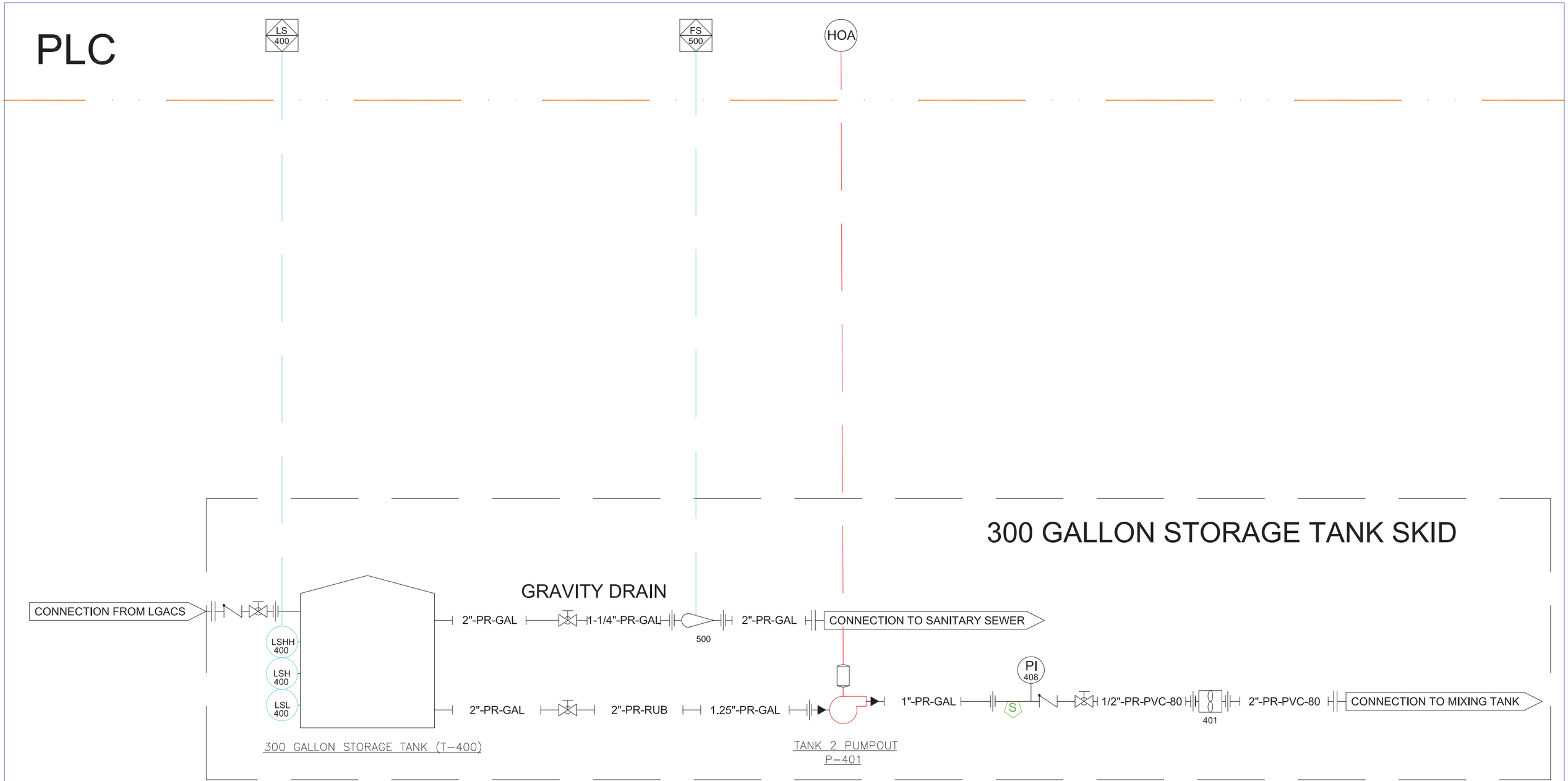
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
BFH & LGAC SKID

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-4



NOTES:
1. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

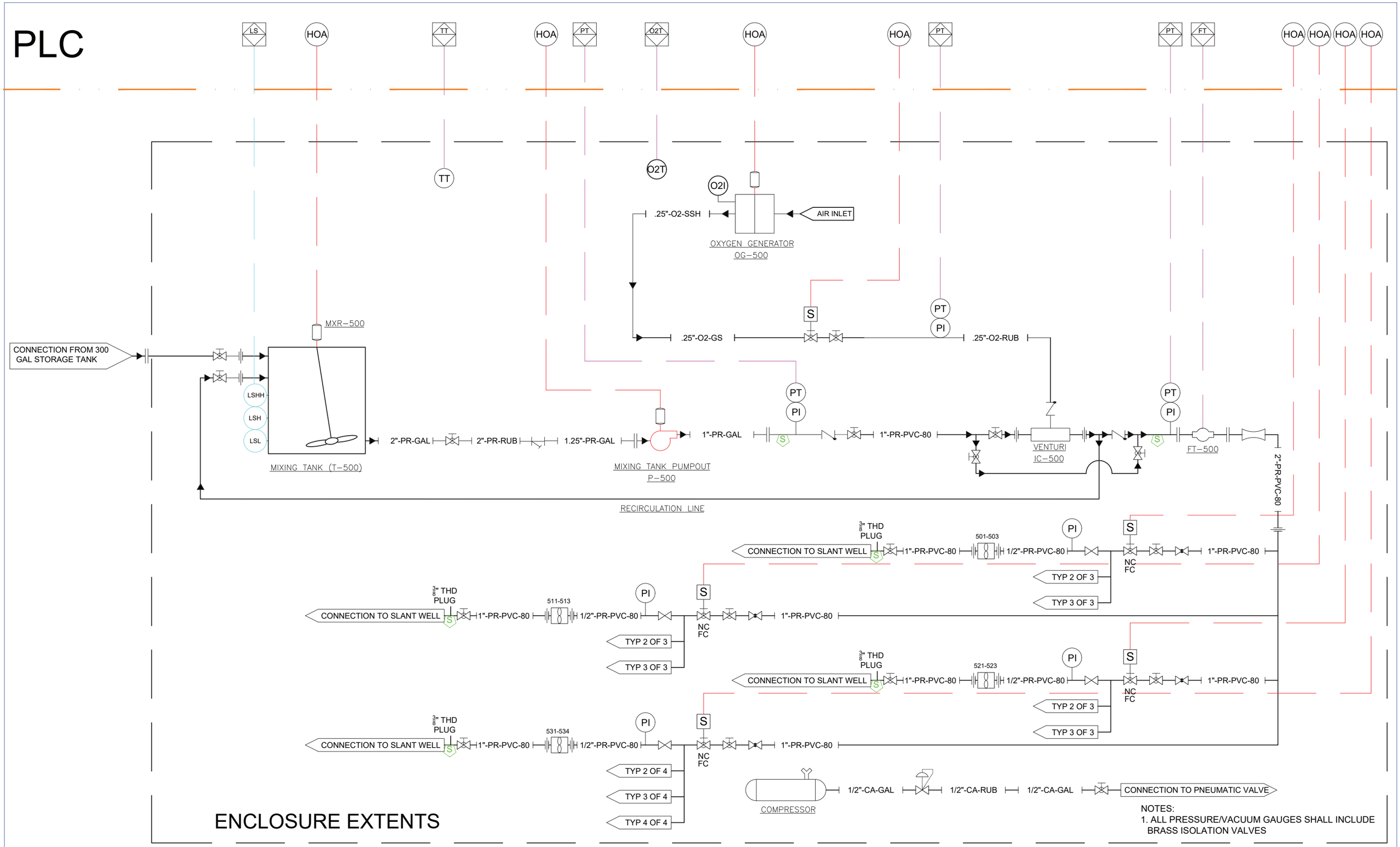
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
300 GALLON STORAGE TANK SKID

QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24
3	LABEL UPDATES	07/15/24
4	AS-BUILTS	08/23/24
5	CO-#1	04/10/25

DRAWING NUMBER: P&ID-5



NOTES:
1. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

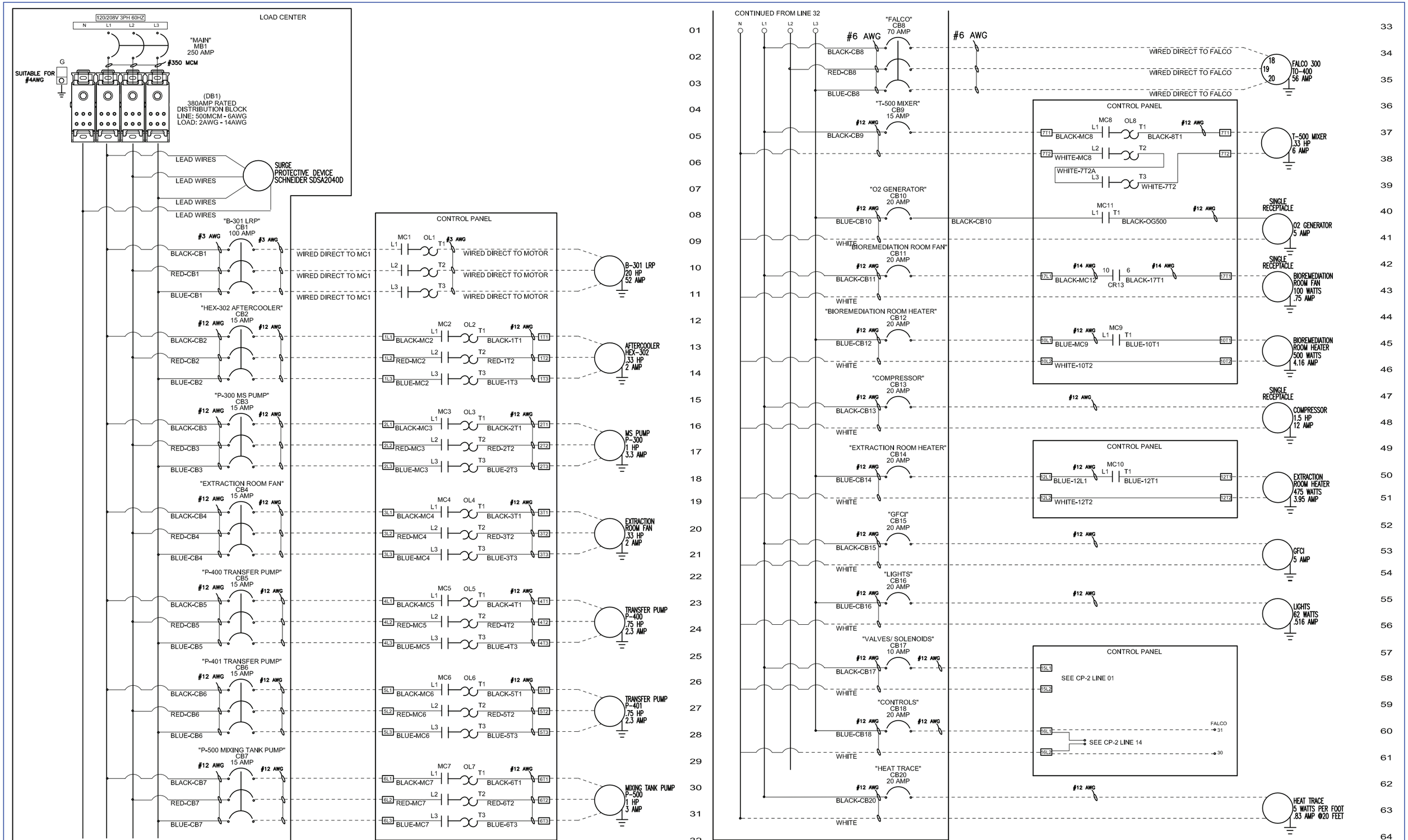
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
BIO-REMEDIATION

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-6



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CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

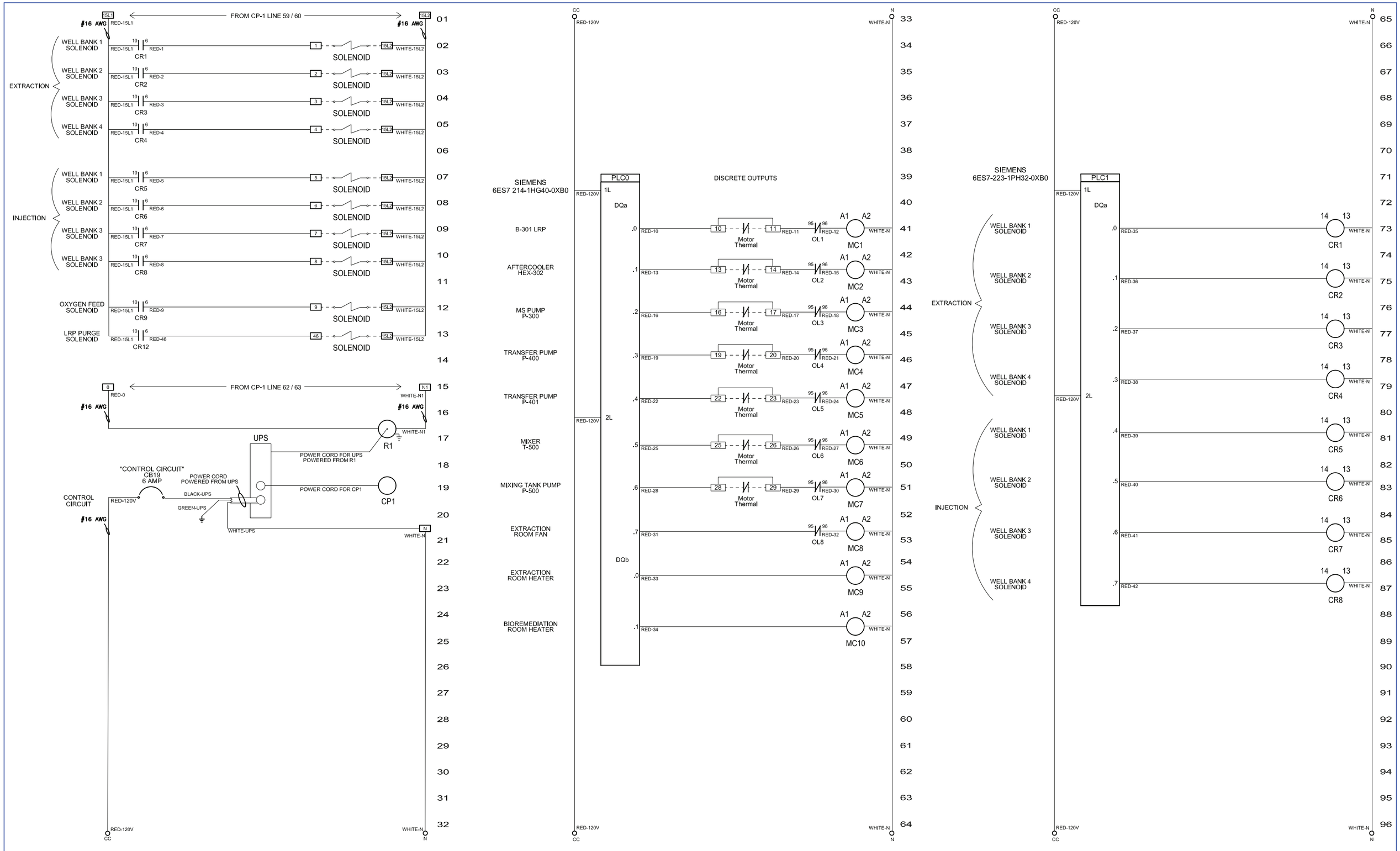
PROJECT TITLE: CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE: CONTROL SCHEMATIC

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

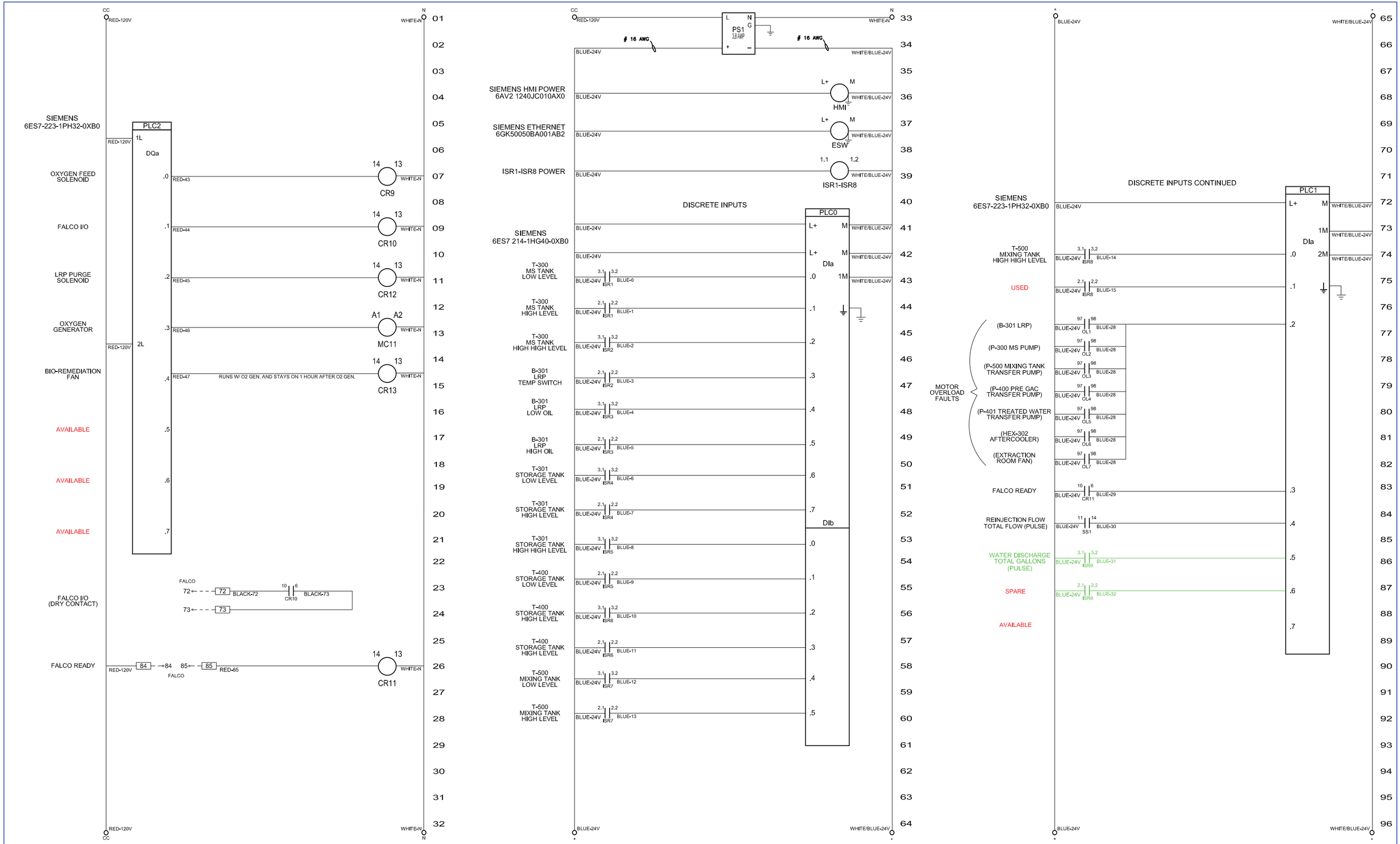
NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER: CP-1



PRMFiltration	Product Recovery Management Inc. This information is proprietary and confidential. No copies or reproductions allowed without the express written consent of PRM Inc.	CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC. 7509 212TH STREET SW EDMONDS, WASHINGTON 98026	PROJECT TITLE: CIRCLE K 1461 2350 24TH AVE E. SEATTLE, KING COUNTY WASHINGTON 98112	SHEET TITLE: CONTROL SCHEMATIC	CAD FILE: GLACIER	PROJECT NUMBER: 8135	SCALE: NTS	NO.	REVISION	DATE
					DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693	1	As Built	4/1/2024

DRAWING NUMBER: CP-2



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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

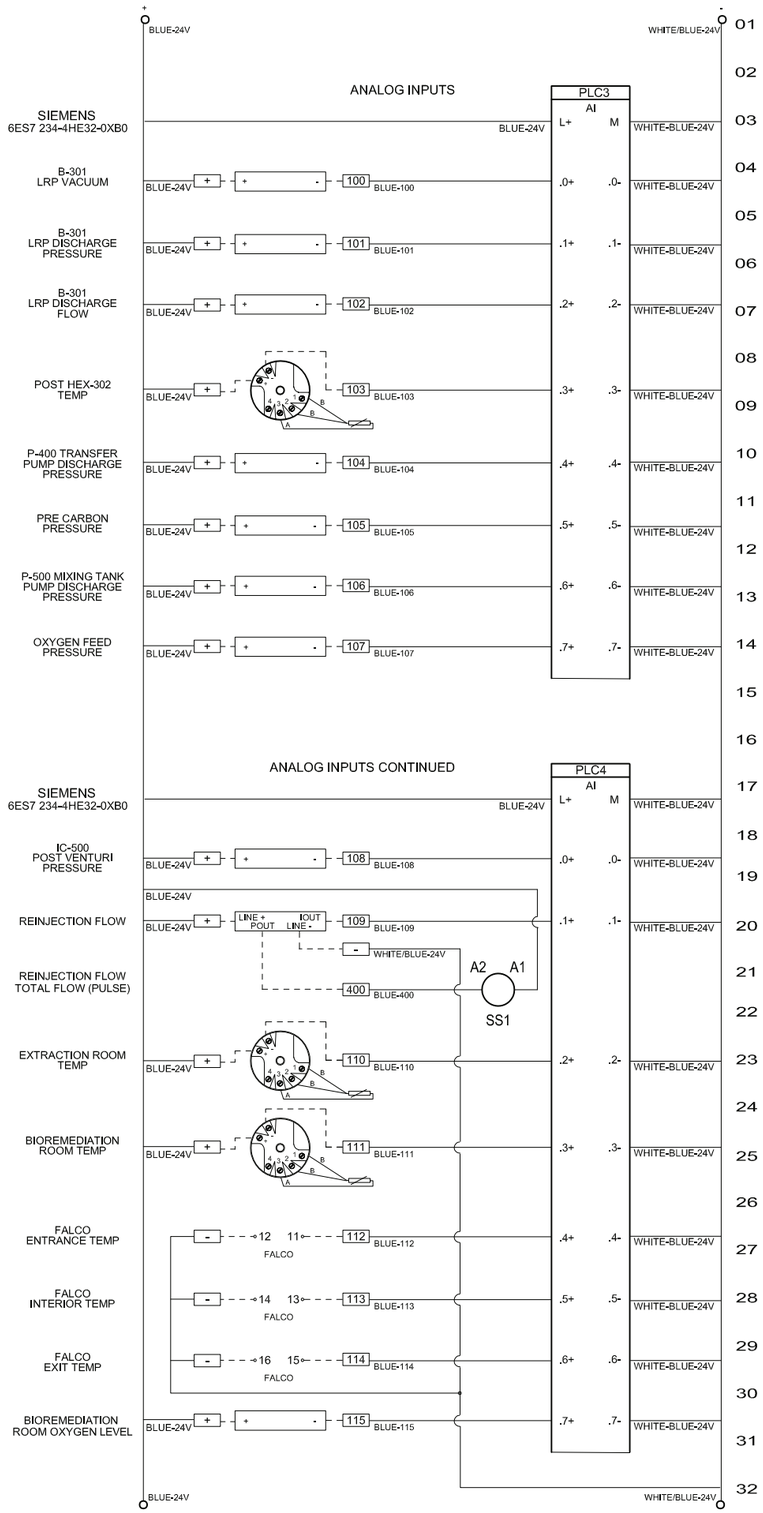
PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE:
CONTROL SCHEMATIC

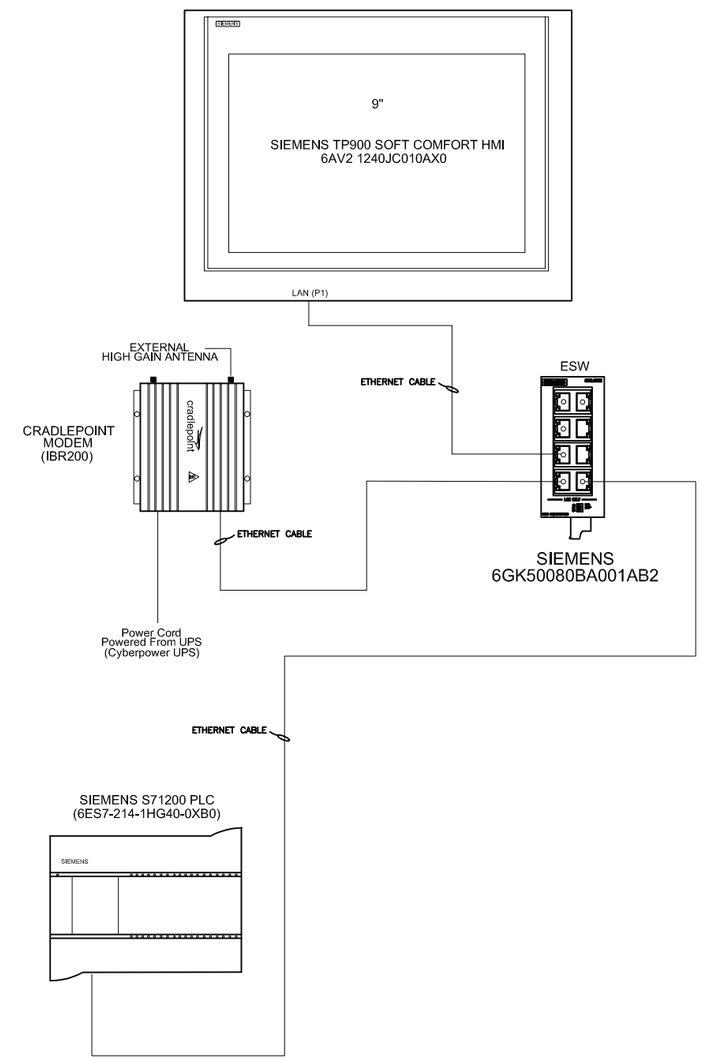
CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024
2	Water Discharge Totalizer	12/2/24

DRAWING NUMBER:
CP-3



NETWORKING



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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE:
CONTROL SCHEMATIC
& NETWORKING MAP

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE:	DRAWN BY:	MET FILE:
11/17/23	CATLIN	SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER:
CP-4

TERM1: 89 (ALL)
PARTITION: 1
END CLAMP: 2

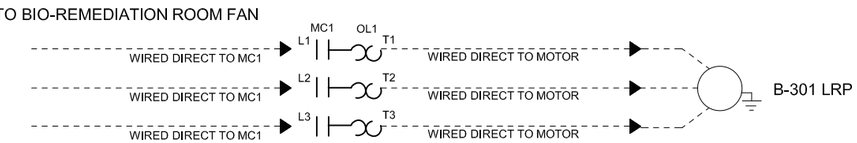
LINE VOLTAGE TERMINALS

	CC	CC	120VAC BATTERY BACKUP PROTECTED (terminals are jumped together)
	CC	CC	
	CC	CC	
	N	N	120VAC NEUTRAL (terminals are jumped together) CONTROLS USE ONLY
	N	N	
	N	N	
(LOAD CENTER) CB2	1L1	1L1	A PHASE IN FROM LOAD CENTER
	1L2	1L2	B PHASE IN FROM LOAD CENTER
	1L3	1L3	C PHASE IN FROM LOAD CENTER
HEX-302 AFTERCOOLER	1T1	1T1	A PHASE OUT TO HEX-302 AFTERCOOLER
	1T2	1T2	B PHASE OUT TO HEX-302 AFTERCOOLER
	1T3	1T3	C PHASE OUT TO HEX-302 AFTERCOOLER
(LOAD CENTER) CB3	2L1	2L1	A PHASE IN FROM LOAD CENTER
	2L2	2L2	B PHASE IN FROM LOAD CENTER
	2L3	2L3	C PHASE IN FROM LOAD CENTER
P-300 MS PUMP	2T1	2T1	A PHASE OUT TO P-300 MS PUMP
	2T2	2T2	B PHASE OUT TO P-300 MS PUMP
	2T3	2T3	C PHASE OUT TO P-300 MS PUMP
(LOAD CENTER) CB4	3L1	3L1	A PHASE IN FROM LOAD CENTER
	3L2	3L2	B PHASE IN FROM LOAD CENTER
	3L3	3L3	C PHASE IN FROM LOAD CENTER
EXTRACTION ROOM FAN	3T1	3T1	A PHASE OUT TO EXTRACTION ROOM FAN
	3T2	3T2	B PHASE OUT TO EXTRACTION ROOM FAN
	3T3	3T3	C PHASE OUT TO EXTRACTION ROOM FAN
(LOAD CENTER) CB5	4L1	4L1	A PHASE IN FROM LOAD CENTER
	4L2	4L2	B PHASE IN FROM LOAD CENTER
	4L3	4L3	C PHASE IN FROM LOAD CENTER
P-400 TRANSFER PUMP	4T1	4T1	A PHASE OUT TO P-400 TRANSFER PUMP
	4T2	4T2	B PHASE OUT TO P-400 TRANSFER PUMP
	4T3	4T3	C PHASE OUT TO P-400 TRANSFER PUMP
(LOAD CENTER) CB6	5L1	5L1	A PHASE IN FROM LOAD CENTER
	5L2	5L2	B PHASE IN FROM LOAD CENTER
	5L3	5L3	C PHASE IN FROM LOAD CENTER
P-401 TRANSFER PUMP	5T1	5T1	A PHASE OUT TO P-401 TRANSFER PUMP
	5T2	5T2	B PHASE OUT TO P-401 TRANSFER PUMP
	5T3	5T3	C PHASE OUT TO P-401 TRANSFER PUMP
(LOAD CENTER) CB7	6L1	6L1	A PHASE IN FROM LOAD CENTER
	6L2	6L2	B PHASE IN FROM LOAD CENTER
	6L3	6L3	C PHASE IN FROM LOAD CENTER
P-500 MIXING TANK PUMP	6T1	6T1	A PHASE OUT TO P-500 MIXING TANK PUMP
	6T2	6T2	B PHASE OUT TO P-500 MIXING TANK PUMP
	6T3	6T3	C PHASE OUT TO P-500 MIXING TANK PUMP
(LOAD CENTER) CB9	7L1	7L1	120V IN FROM LOAD CENTER
	7L2	7L2	NEUTRAL IN FROM LOAD CENTER
T-500 MIXER	7T2	7T2	120V OUT TO T-500 MIXER
	7T3	7T3	NEUTRAL OUT TO T-500 MIXER

(LOAD CENTER) CB12	10L1	10L1	120V IN FROM LOAD CENTER
	10L2	10L2	NEUTRAL IN FROM LOAD CENTER
BIOREMEDIATION ROOM HEATER	10T1	10T1	120V OUT TO BIOREMEDIATION ROOM HEATER
	10T2	10T2	NEUTRAL OUT TO BIOREMEDIATION ROOM HEATER
(LOAD CENTER) CB14	12L1	12L1	120V IN FROM LOAD CENTER
	12L2	12L2	NEUTRAL IN FROM LOAD CENTER
EXTRACTION ROOM HEATER	12T1	12T1	120V OUT TO EXTRACTION ROOM HEATER
	12T2	12T2	NEUTRAL OUT TO EXTRACTION ROOM HEATER
(LOAD CENTER) CB17	15L1	15L1	120V IN FROM LOAD CENTER (VALVES / SOLENOIDS)
	15L2	15L2	NEUTRAL IN FROM LOAD CENTER (VALVES / SOLENOIDS)
(LOAD CENTER) CB18	16L1	16L1	120V IN FROM LOAD CENTER (CONTROLS)
	16L2	16L2	NEUTRAL IN FROM LOAD CENTER (CONTROLS)
SOLENOIDS	1	1	WELL BANK 1 SOLENOID (120V) — EXTRACTION
	2	2	WELL BANK 2 SOLENOID (120V) — EXTRACTION
	3	3	WELL BANK 3 SOLENOID (120V) — EXTRACTION
	4	4	WELL BANK 4 SOLENOID (120V) — EXTRACTION
	5	5	WELL BANK 1 SOLENOID (120V) — INJECTION
	6	6	WELL BANK 2 SOLENOID (120V) — INJECTION
	7	7	WELL BANK 3 SOLENOID (120V) — INJECTION
	8	8	WELL BANK 4 SOLENOID (120V) — INJECTION
	9	9	OXYGEN FEED SOLENOID (120V)
	15L2	15L2	NEUTRAL BANK FOR SOLENOIDS TERMINALS JUMPED TOGETHER
	15L2	15L2	
	15L2	15L2	
	15L2	15L2	
B-301 LRP MOTOR THERMALS (jumper "10" to "11" if no thermal protection)	10	10	B-301 LRP MOTOR THERMAL (COMMON OUT)
	11	11	B-301 LRP MOTOR THERMAL (SIGNAL IN)
HEX-302 AFTERCOOLER MOTOR THERMALS (jumper "13" to "14" if no thermal protection)	13	13	HEX-302 AFTERCOOLER MOTOR THERMAL (COMMON OUT)
	14	14	HEX-302 AFTERCOOLER MOTOR THERMAL (SIGNAL IN)
P-300 MS PUMP MOTOR THERMALS (jumper "16" to "17" if no thermal protection)	16	16	P-300 MS PUMP MOTOR THERMAL (COMMON OUT)
	17	17	P-300 MS PUMP MOTOR THERMAL (SIGNAL IN)
P-400 TRANSFER PUMP MOTOR THERMALS (jumper "19" to "20" if no thermal protection)	19	19	P-400 TRANSFER PUMP MOTOR THERMAL (COMMON OUT)
	20	20	P-400 TRANSFER PUMP MOTOR THERMAL (SIGNAL IN)
P-401 TRANSFER PUMP MOTOR THERMALS (jumper "22" to "23" if no thermal protection)	22	22	P-401 TRANSFER PUMP MOTOR THERMAL (COMMON OUT)
	23	23	P-401 TRANSFER PUMP MOTOR THERMAL (SIGNAL IN)
T-500 MIXER MOTOR THERMALS (jumper "25" to "26" if no thermal protection)	25	25	T-500 MIXER MOTOR THERMAL (COMMON OUT)
	26	26	T-500 MIXER MOTOR THERMAL (SIGNAL IN)
P-500 MIXING TANK PUMP MOTOR THERMALS (jumper "28" to "29" if no thermal protection)	28	28	P-500 MIXING TANK PUMP MOTOR THERMAL (COMMON OUT)
	29	29	P-500 MIXING TANK PUMP MOTOR THERMAL (SIGNAL IN)
FALCO 72	72	72	FALCO I/O (COMMON IN)
FALCO 73	73	73	FALCO I/O (SIGNAL OUT)
FALCO 84	84	84	FALCO READY (COMMON OUT)
FALCO 85	85	85	FALCO READY (SIGNAL IN)
SOLENOID	46	46	LRP PURGE SOLENOID (120V)
(LOAD CENTER) CB11	17L1	17L1	120V IN FOR BIO-REMEDIATION ROOM FAN
BIO-REMEDIATION ROOM FAN	17T2	17T2	120V OUT TO BIO-REMEDIATION ROOM FAN

I.D.	GLACIER8135 (DWG #8135
Voltage	120/208V
Phase	3
Panel FLA	162
Frequency	60hz
SCCR	10ka
Largest Motor:	20hp, 52 fla
Nema Rating: 4	

PANEL CLASSIFICATION: UL508A / UL698A



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CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE: CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE: LINE TERMINAL DEFINITIONS

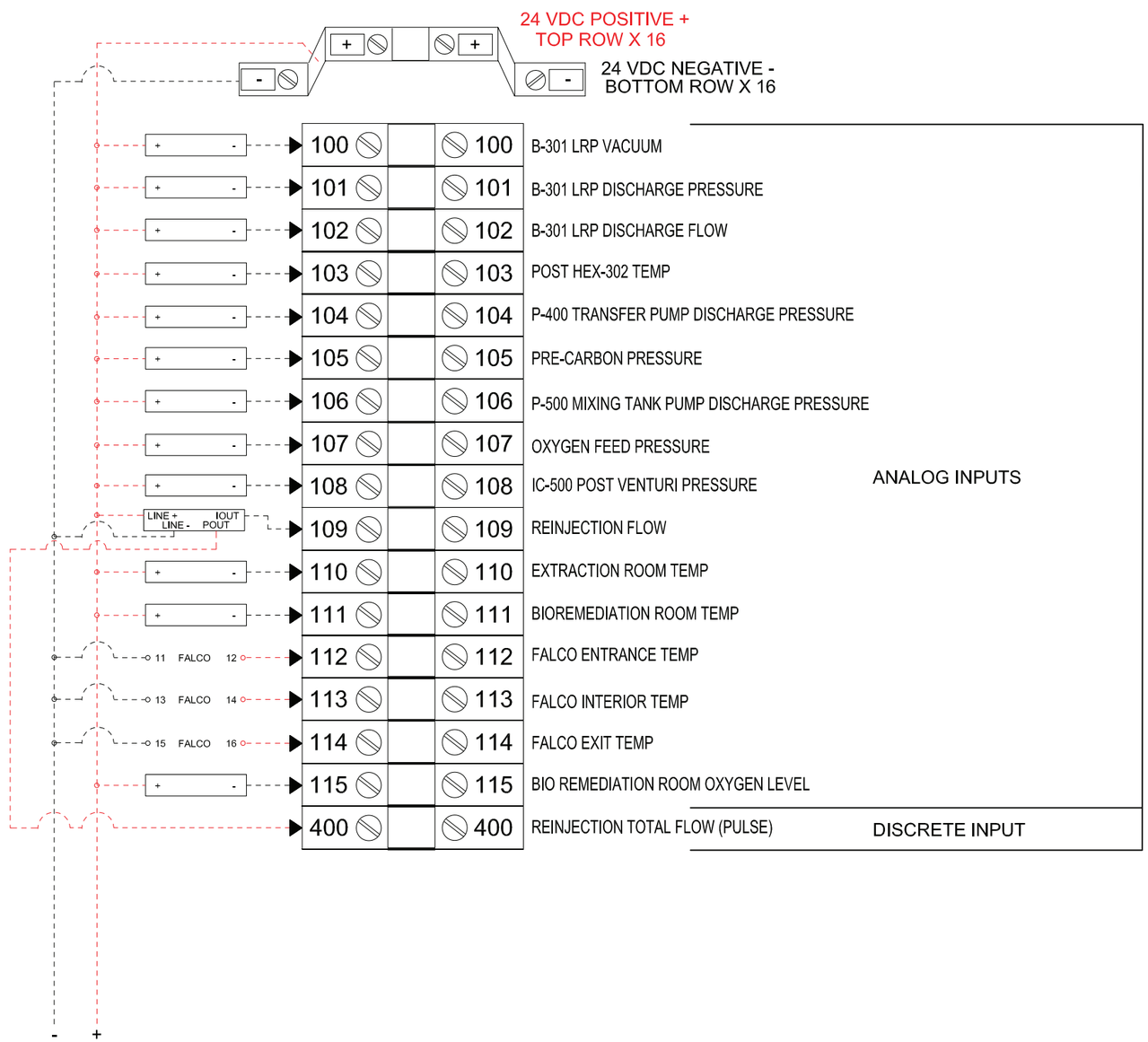
CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER: CP-5

TERM3: 16 (+ / -)
TERM2: 17 (100 - 400)
PARTITION: 2
END CLAMP: 2

LOW VOLTAGE TERMINALS



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CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE: CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE: LOW TERMINAL DEFINITIONS

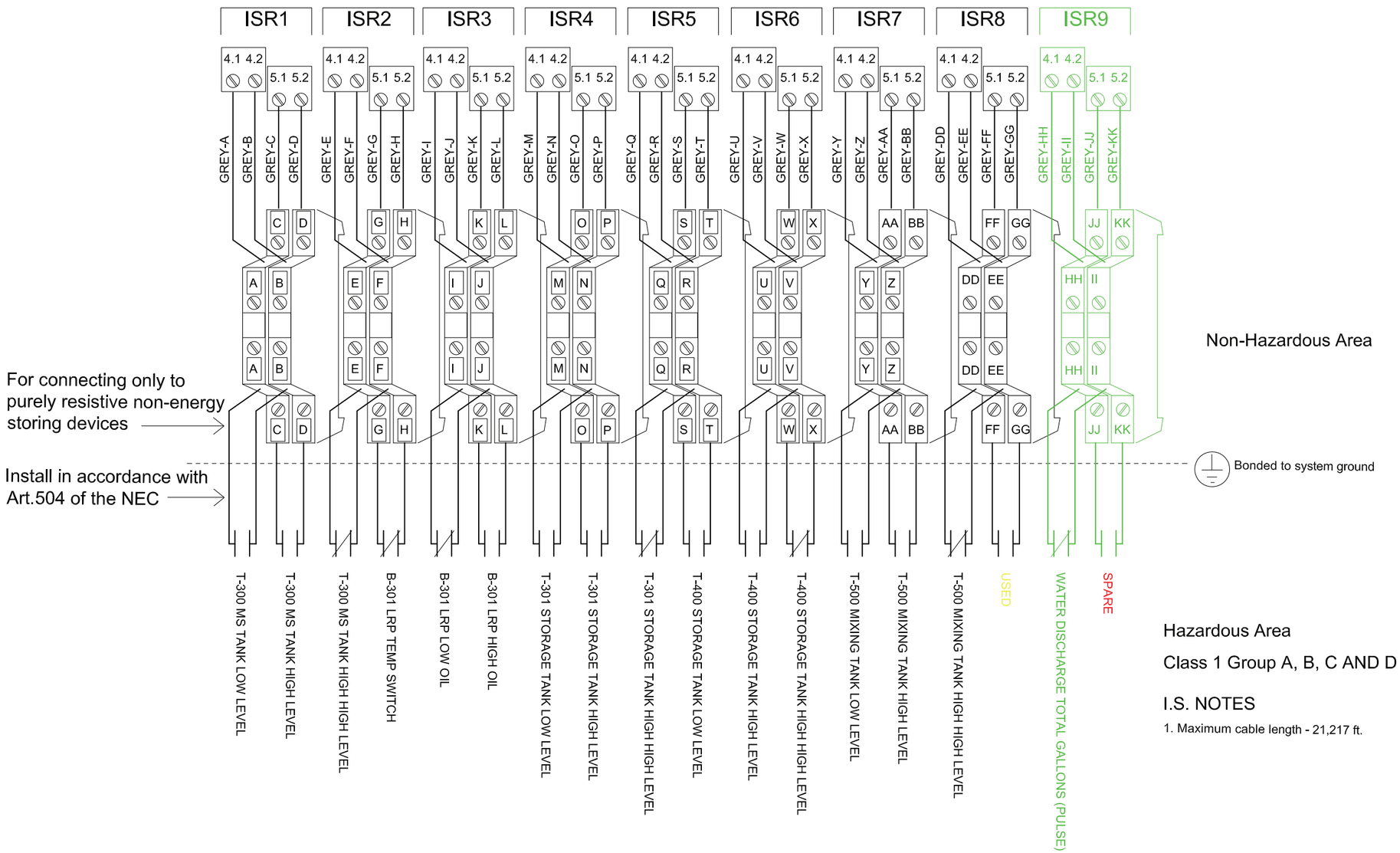
CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER: CP-6

TERM4 = 18
PARTITION: 1
END CLAMP: 2

** TERMINAL "CC" PURPOSELY OMITTED



Hazardous Area

Class 1 Group A, B, C AND D

I.S. NOTES

1. Maximum cable length - 21,217 ft.

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

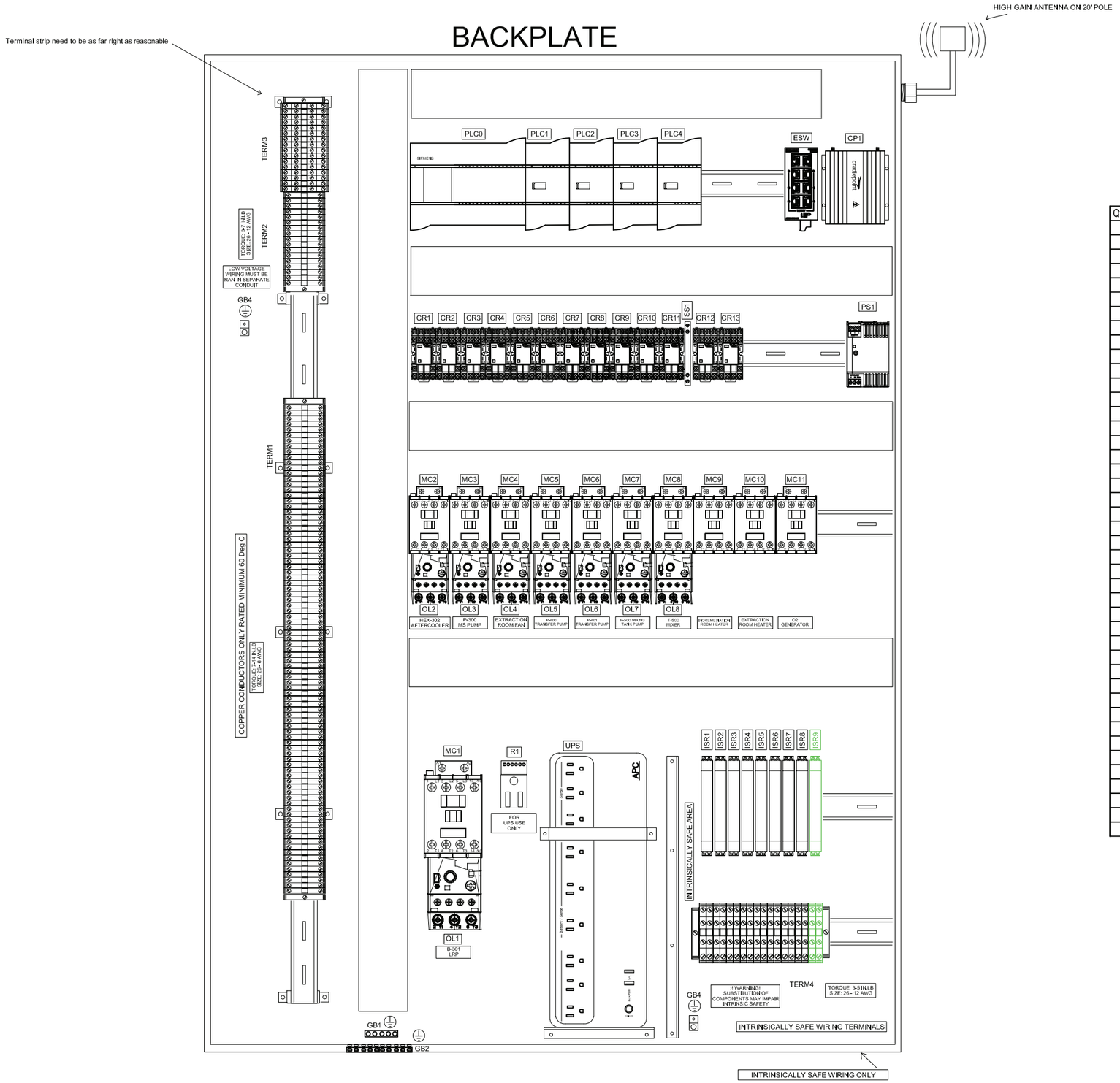
SHEET TITLE:
INTRINSICALLY SAFE TERMINAL DEFINITIONS

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE:	DRAWN BY:	MET FILE:
11/17/23	CATLIN	SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024
2	Water Discharge Totalizer	12/2/24

DRAWING NUMBER:
CP-7

BACKPLATE



Qty.	Drawing I.D.	Part No.	Description
		Enclosures	
1		28260	Technomatic 32x48x12 w/ Backplate
		Backplate	
1	PLC0	6ES7 214-1HG40-0XB0	Siemens S71200 PLC
1	PLC1	6ES72231PH320XB0	Siemens 8 Discrete Input 8 Relay Output Module
1	PLC2	6ES72231PH320XB0	Siemens 8 Discrete Input 8 Relay Output Module
1	PLC3	6ES72314HF320XB0	Siemens 8 Analog Input Module
1	PLC4	6ES72314HF320XB0	Siemens 8 Analog Input Module
1	ESW	6GK50050BA001AB2	Siemens 5 Port Ethernet Switch
1	CP1	IBR200	Cradlepoint Modem
13	CR1-CR13	D4L-110VAC	Rele 120vac Ice Cube Relay
13	CR1-CR13	ES-15/4	Rele Ice Cube Relay Base
1	SS1	8950820000	Weidmuller Solid State Relay
1	PS1	6EP1332-5BA20	Siemens 24VDC Power Supply
10	MC2-MC11	3RT20161AK61	Siemens Motor Controller
1	OL2	3RU21161CB0	Siemens Motor Overload 1.8 - 2.5 amp
1	OL3	3RU21161EB0	Siemens Motor Overload 2.8 - 4.0 amp
1	OL4	3RU21161CB0	Siemens Motor Overload 1.8 - 2.5 amp
1	OL5	3RU21161DB0	Siemens Motor Overload 2.2 - 3.2 amp
1	OL6	3RU21161DB0	Siemens Motor Overload 2.2 - 3.2 amp
1	OL7	3RU21161EB0	Siemens Motor Overload 2.8 - 4.0 amp
1	OL8	3RU21161HB0	Siemens Motor Overload 5.5 - 8.0 amp
1	MC1	3RT20381AK60	Siemens Motor Controller
1	OL1	3RU21364QB0	Siemens Motor Overload 47 - 57 amp
1	R1	635OL-080523	Wiedmuller 15amp GFCI
1	UPS	BE850G2	APC 850va Uniturupted Power Supply
2		PS5266-X	Pass & Seymour Male Plug End
9	ISR1-ISR9	2865476	Phoenix Contact Intrinsically Safe Barrier / Relay
90	TERM1	1020200000	Weidmuller Terminal Blocks
17	TERM2	1020000000	Weidmuller Terminal Blocks
16	TERM3	1021500000	Wiedmuller Terminal Blocks Tan 2 Tier
18	TERM4	1021580000	Wiedmuller Terminal Blocks Blue 2 Tier
1		1050000000	Wiedmuller Terminal Block Partition Plate
1		1059100000	Wiedmuller Terminal Block Partition Plate
1		1059180000	Wiedmuller Terminal Block Partition Plate
6		1061200000	Wiedmuller Terminal Block End Clamp
1	GB1	PK5GTA	Square D Equipment Grounding Bar Kit
1	GB2	PK7GTA	Siemens Equipment Grounding Bar Kit
2	GB4	OEC99001	Single Grounding Lug 4-14AWG
	AS NEEDED		80x60 Wire Duct
1	Antenna	WMMG-7-27-5SP	Rok Bro's High Gain Antenna
20'	Antenna		1 1/4" EMT

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

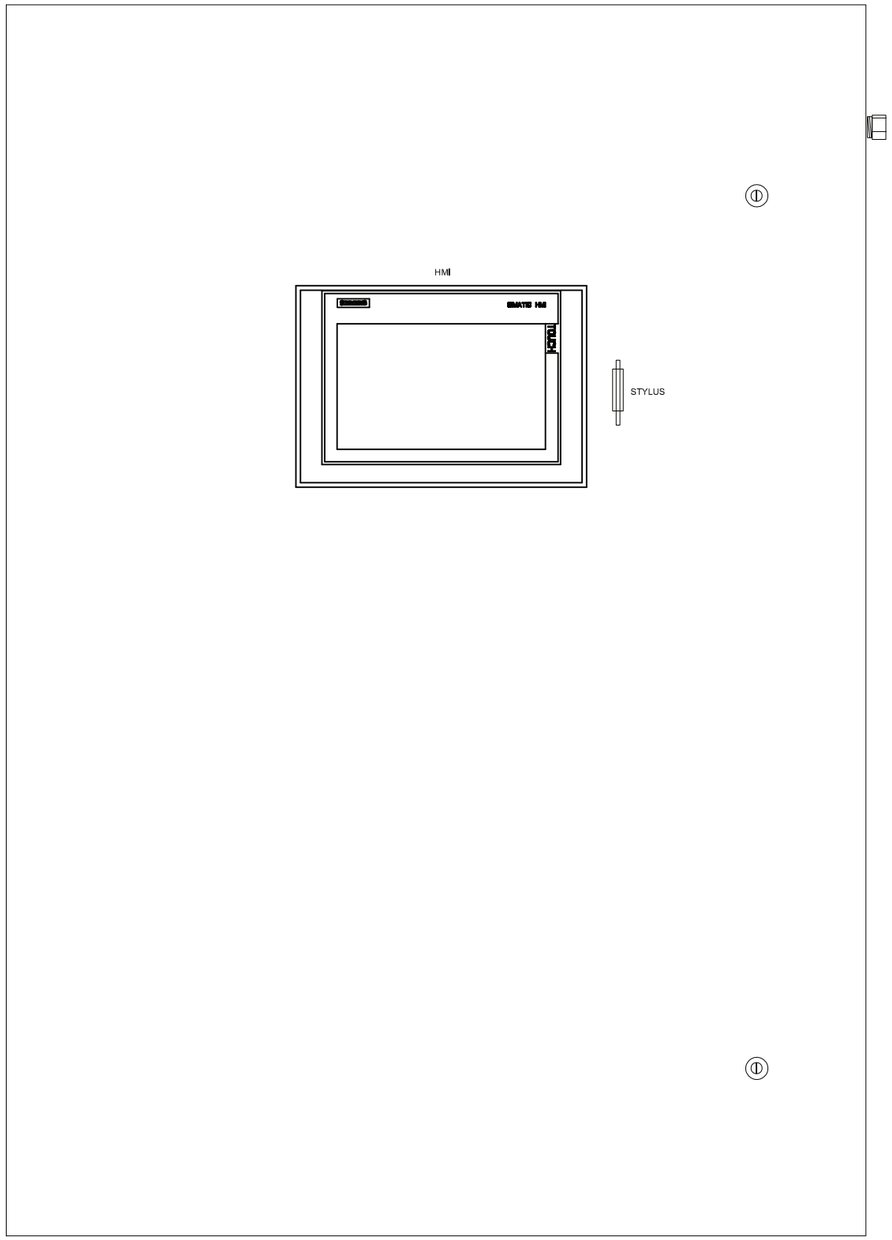
SHEET TITLE:
LAYOUT & BILL OF MATERIAL

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

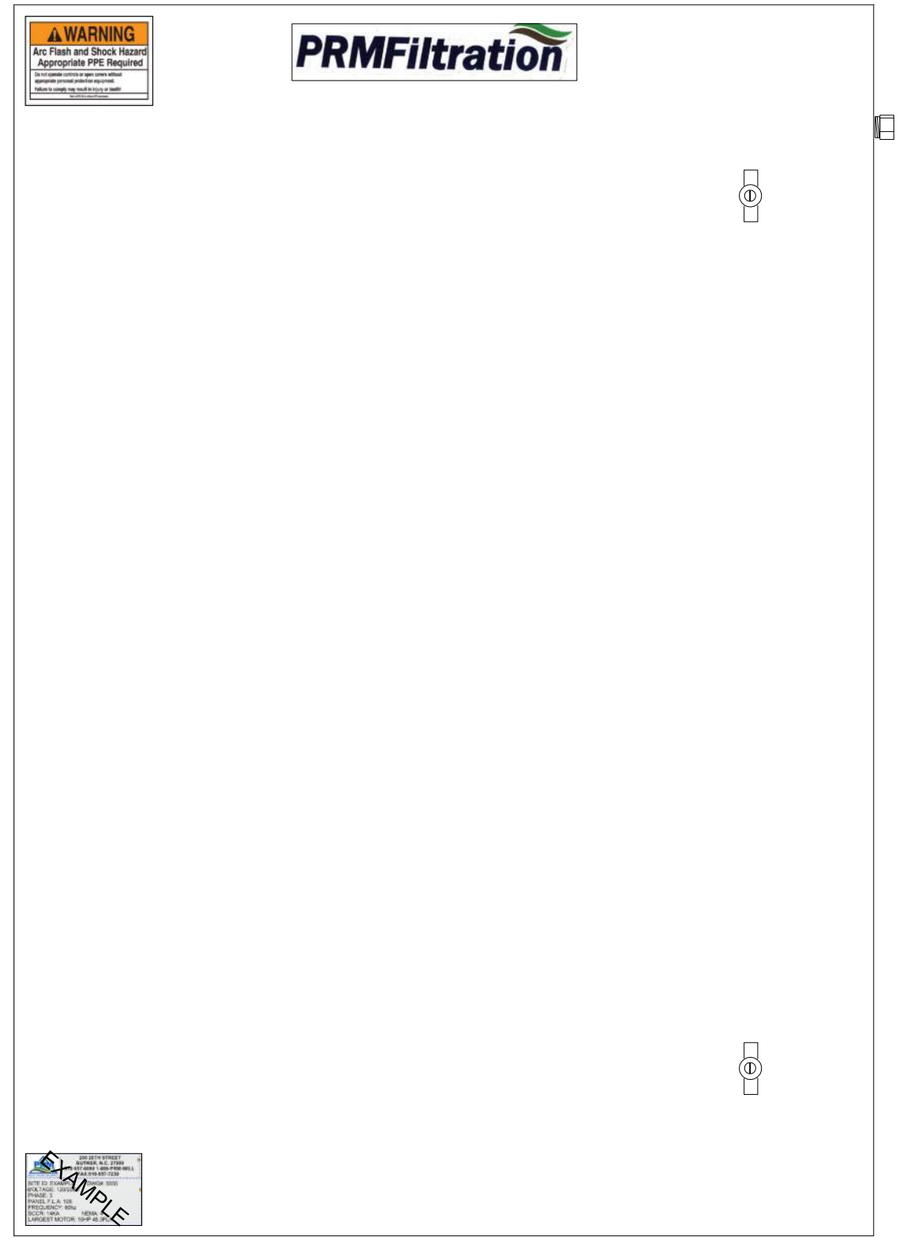
NO.	REVISION	DATE
1	As Built	4/1/2024
2	Water Discharge Totalizer	12/2/24

DRAWING NUMBER: CP-8

(HINGE ON RIGHT SIDE)
INTERIOR DOOR



EXTERIOR DOOR



Qty.	Drawing I.D.	Part No.	Description
		Door	
1	HMI	6AV2 1240JC010AX0	Siemens 9-inch Soft Comfort Touch Panel
1	HMI	N/A	Soft Tip Stylus
1	HMI	Classic-1-1003	PenPal Stylus Holder

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EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

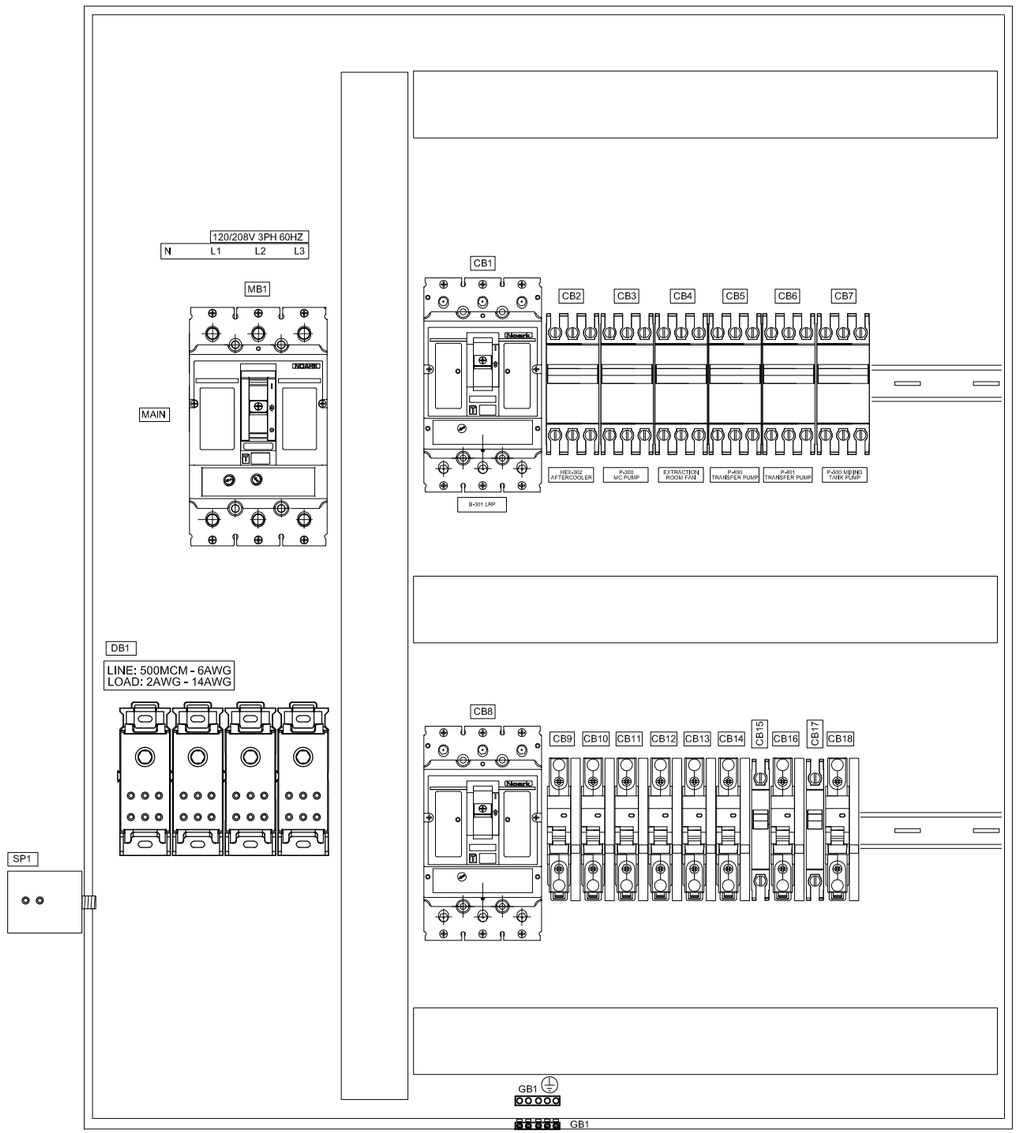
SHEET TITLE:
LAYOUT & BILL OF MATERIAL

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE:	DRAWN BY:	MET FILE:
11/17/23	CATLIN	SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER:
CP-9

BACKPLATE



Qty.	Drawing I.D.	Part No.	Description
		Enclosures	
1		28220	Technomatic 32x40x12 w/ Backplate
		Backplate	
1	MB1	M2N250T3L	Noark 250amp 208v 3 Pole Circuit Breaker
1	CB1	M1N100T3L	Noark 100amp 208v 3 Pole Circuit Breaker
1	CB2	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB3	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB4	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB5	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB6	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB7	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB8	M1N70T3L	Noark 70amp 208v 3 Pole Circuit Breaker
1	CB9	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB10	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB11	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB12	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB13	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB14	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB15	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB16	B1NQ1D10	Noark 10amp 120v Single Pole Circuit Breaker
1	CB17	B1NQ1D6	Noark 6amp 120v Single Pole Circuit Breaker
1	GB1	PK5GTA	Square D Equipment Grounding Bar Kit
1	GB4	OEC99001	Single Grounding Lug 4-14AWG
AS NEEDED			60X80 Wire Duct

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE:
LOAD CENTER
LAYOUT & BILL OF MATERIAL

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

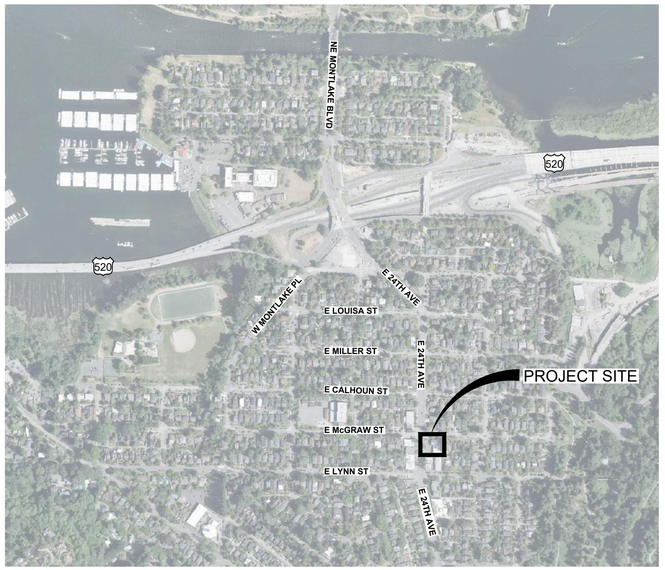
NO.	REVISION	DATE
1	As Built	1/26/24

DRAWING NUMBER:
CP-10

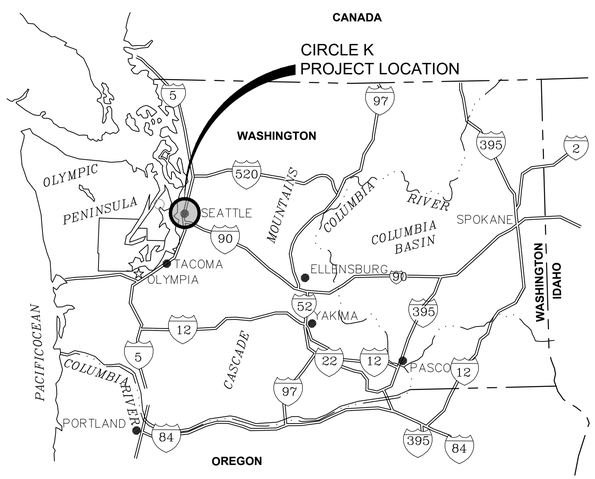
Appendix B

Record Drawings

Plot Date: 5/19/2025 10:14 AM
User: RICHARD HILLS
File: C:\bms\kjce-pw\d0181581\21960080\0-G-01.DWG



LOCATION MAP
SCALE: NTS



VICINITY MAP
SCALE: NTS

DEPARTMENT OF ECOLOGY
State of Washington

SITE: CIRCLE K 1461, CSID #5089

PROJECT: ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION

LOCATION: 2350 24TH AVE E,
SEATTLE, KING COUNTY, WASHINGTON 98112

BUILDING	CODE SUMMARY - 2018 SBC (SEATTLE BUILDING CODE)	
	2018 SEBC (SEATTLE EXISTING BUILDING CODE)	
FILTRATION SEABOX	HISTORIC PERMIT NUMBER	674948
	PROJECT DESCRIPTION	A TEMPORARY TREATMENT SYSTEM ENCLOSURE, ALONG WITH ACCESSORY EQUIPMENT FOR REMEDIATION OF ON-SITE GROUNDWATER CONTAMINATION, WILL BE PLACED IN THE PARKING LOT OF AN EXISTING RETAIL BUSINESS. TEMPORARY FENCING TO BE PLACED AROUND THE ENCLOSURE AND ACCESSORY EQUIPMENT.
	CONSTRUCTION TYPE	TYPE V-B PER SBC 602.5
		MODIFIED METAL SHIPPING CONTAINER TO HOUSE
		REMEDIATION PROCESSING EQUIPMENT AND SUPPLIES
	BUILDING ELEMENT FIRE RESISTANCE	0-HOUR RATING AS PER SBC TABLE 601 FOR TYPE V-B CONSTRUCTION.
	EXTERIOR WALL FIRE RESISTANCE	0-HOUR RATING AS PER CBC TABLE 602 FOR TYPE V-B CONSTRUCTION.
	(BASED ON SEPARATION DISTANCE)	
	ALLOWABLE AREA	8,500 SF PER SBC TABLE 506.2
	ACTUAL AREA	160 SF
	ALLOWABLE HEIGHT	40'-0" FEET / 1-STORY PER SBC TABLES 504.3 AND 504.4
	ACTUAL HEIGHT / STORY	9'-0"+/- FEET / 1-STORY
	OCCUPANCY CLASSIFICATIONS	F-1 MODERATE HAZARD INDUSTRIAL PER SBC 306.1
	OCCUPANCY SEPARATIONS	NOT APPLICABLE
	OCCUPANT LOAD	2 PER SBC TABLE 1004.5
	HVAC	CONDITIONED FOR FREEZE PROTECTION
	VENTILATION	PROVIDED PER SBC SECTION 1202.1
	ALLOWABLE OPENING AREA	10% PER SBC TABLE 705.8
	ENERGY CODE	
	INSULATION - ROOF	R-10 RIGID INSULATION
	INSULATION - ABOVE GRADE WALLS	R-13 RIGID INSULATION
	ACCESSIBILITY	NOT REQUIRED PER SBC SECTION 1103.2.9
	CHEMICAL STORAGE	NON-HAZARDOUS; SEE ATTACHED CHEMICAL LIST
	SPRINKLER SYSTEM	NOT REQUIRED PER SBC SECTION 903.2.4
	SMOKE DETECTION	NOT REQUIRED PER SBC SECTION 909
	SMOKE AND HEAT VENTS	NOT REQUIRED PER SBC SECTION 910
	FIRE ALARM	NOT REQUIRED PER SBC SECTION 907.2.4
	FIRE PROTECTION REQUIREMENTS	1 HYDRANT WITHIN 250' OF STRUCTURE
	FIRE FLOW	1,500 GPM FOR 2 HOURS PER SFC TABLE B105.1(2)
APPLICABLE CODES	2018 SEATTLE BUILDING CODE (SBC)	
	2018 SEATTLE EXISTING BUILDING CODE (SEBC)	
	2020 NATIONAL ELECTRICAL CODE (NEC)	
	WITH 2020 SEATTLE ELECTRICAL CODE REPLACEMENT PAGES	
	2018 SEATTLE ENERGY CODE	
	2018 SEATTLE FIRE CODE	
	2024 SEATTLE MUNICIPAL CODE, TITLE 23 - LAND USE CODE	
	2018 SEATTLE MECHANICAL CODE	
	2018 SEATTLE PLUMBING CODE	

4455 REGISTERED ARCHITECT MARK R. RESTUM STATE OF WASHINGTON

DRAWING INDEX

SHEET NO	DWG NO	DRAWING TITLE
GENERAL		
1	G-01	TITLE SHEET, VICINITY AND LOCATION MAPS, AND DRAWING INDEX
2	G-02	NOTES AND ABBREVIATIONS
3	G-03	LEGEND AND SYMBOLS
4	G-04	TREATMENT SYSTEM SCHEMATIC
5	G-05	PROCESS FLOW DIAGRAM
CIVIL		
6	C-01	OVERALL SITE PLAN AND SYSTEM LAYOUT
7	C-02	SITE PLAN STAGING AREAS
8	C-03	REMEDIATION SYSTEM LAYOUT
9	C-04	CIVIL SECTIONS AND DETAILS - I
10	C-05	CIVIL SECTIONS AND DETAILS - II
11	C-06	SITE PLAN PARKING AREAS
12	C-07	CONTAINER ELEVATION VIEWS
ELECTRICAL		
13	E-01	GENERAL ELECTRICAL ABBREVIATIONS AND NOTES
14	E-02	GENERAL ELECTRICAL LEGEND - I
15	E-03	GENERAL ELECTRICAL LEGEND - II
16	E-04	ELECTRICAL PANEL SCHEDULE AND THREE LINE DIAGRAM
17	E-05	ELECTRICAL SITE PLAN
INSTRUMENTATION		
18	I-01	P&ID LEGEND
19	I-02	P&ID - I
20	I-03	P&ID - II
21	I-04	P&ID - III
STORMWATER, DRAINAGE, AND WASTEWATER CONTROL		
22	SDW-01	CONSTRUCTION STORMWATER CONTROL AND POST CONSTRUCTION SOIL MANAGEMENT (CSC/SOIL) PLAN
23	SDW-02	DRAINAGE AND WASTEWATER CONTROL (DWC) PLAN
STRUCTURAL (FOR REFERENCE ONLY; PREPARED BY SSF STRUCTURAL ENGINEERING)		
24	S-1.10	GENERAL STRUCTURAL NOTES, FRAMING PLANS, AND DETAILS
MECHANICAL (FOR REFERENCE ONLY; PREPARED BY PRM FILTRATION)		
25	M-1	SEABOX GENERAL ARRANGEMENT
26	M-2	REINJECTION / DPE / SSD MANIFOLD ELEVATION DETAILS
27	M-3	STORAGE TANK SKIDS
28	M-4	LGAC TREATMENT SKID
PROCESS AND INSTRUMENTATION (FOR REFERENCE ONLY; PREPARED BY PRM FILTRATION)		
29	P&ID-1	PROCESS & INSTRUMENTATION DIAGRAM LEGEND
30	P&ID-2	PROCESS & INSTRUMENTATION DIAGRAM INLET MANIFOLDS, MS TANK, & LRP
31	P&ID-3	PROCESS & INSTRUMENTATION DIAGRAM VGACS & 500 GALLON STORAGE TANK SKID
32	P&ID-4	PROCESS & INSTRUMENTATION DIAGRAM BFH & LGAC SKID
33	P&ID-5	PROCESS & INSTRUMENTATION DIAGRAM 300 GALLON STORAGE TANK SKID
34	P&ID-6	PROCESS & INSTRUMENTATION DIAGRAM BIO-REMEDIATION
CONTROLS (FOR REFERENCE ONLY; PREPARED BY PRM FILTRATION)		
35	CP-1	CONTROL SCHEMATIC
36	CP-2	CONTROL SCHEMATIC
37	CP-3	CONTROL SCHEMATIC
38	CP-4	CONTROL SCHEMATIC & NETWORKING MAP
39	CP-5	LINE TERMINAL DEFINITIONS
40	CP-6	LINE TERMINAL DEFINITIONS
41	CP-7	INTRINSICALLY SAFE TERMINAL DEFINITIONS
42	CP-8	LAYOUT & BILL OF MATERIAL
43	CP-9	LAYOUT & BILL OF MATERIAL
44	CP-10	LOAD CENTER LAYOUT & BILL OF MATERIAL

RECORD DRAWING

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NO	REVISION	DATE	BY

DESIGNED
DRAWN
CHECKED

DEPARTMENT OF ECOLOGY State of Washington

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

TITLE SHEET, VICINITY AND LOCATION MAPS, AND DRAWING INDEX

SCALE: AS SHOWN
JOB NO: 2196008.00
DATE: MAY 2025
SHEET 1 OF 24
G-01

ABBREVIATIONS

'	FOOT, FEET
"	INCH, INCHES
&	AND
AC	ASPHALTIC CONCRETE, ALTERNATING CURRENT
ACFM	ACTUAL CUBIC FEET PER MINUTE
AW	ASPHALT WALK
BGS	BELOW GROUND SURFACE
BLRD	BOLLARD
CB	CATCH BASIN, CIRCUIT BREAKER
CFM	CUBIC FEET PER MINUTE
CLR	CLEARANCE
CONC	CONCRETE
CRZ	CRITICAL ROOT ZONE
CSBC	CRUSHED SURFACING BASE COURSE
CW	CONCRETE WALK
DO	DISSOLVED OXYGEN
DRWY	DRIVEWAY
DS	DOWN SPOUT
ECAB	ELECTRICAL CABINET
EHH	ELECTRIC HANDHOLE
EM	ELECTRIC METER
EXIST	EXISTING
FF	FINISHED FLOOR
FFE	FINISHED FLOOR ELEVATION
FLT	FILTER
FT	FEET
G	GAS
GAC	GRANULAR ACTIVATED CARBON
GAL	GALLON(-S)
GPM	GALLONS PER MINUTE
HDPE	HIGH DENSITY POLYETHYLENE
HG	MERCURY
HP	HIGH-PERFORMANCE POLYPROPYLENE
HYD	HYDRANT
IBC	INTERNATIONAL BUILDING CODE
IE	INVERT ELEVATION
LB(-S)	POUND(-S)
MAX	MAXIMUM
MIC	MONUMENT IN CASE
MIL(-S)	ONE-THOUSANDTH OF AN INCH
MIN	MINIMUM
MPT	MALE PIPE THREAD
MW	MONITORING WELL
(N)	NEW
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NTS	NOT TO SCALE
OP	OVERHEAD POWER
O2	OXYGEN
OX	OXIDIZER
P	UNDERGROUND POWER
PED SIG	PEDESTRIAN SIGNAL
PLC	PROGRAMMABLE LOGIC CONTROLLER
PSE	PUGET SOUND ENERGY
PPLT	POWER POLE WITH LUMINAIRE
PVC	POLYVINYL CHLORIDE
RW	REMEDIATION WELL
SCADA	SUPERVISORY CONTROL AND DATE ACQUISITION
SCFM	STANDARD CUBIC FEET PER MINUTE
SD	STORM DRAIN
SDMH	STORM DRAIN MANHOLE
SDOT	SEATTLE DEPARTMENT OF TRANSPORTATION
SS	SANITARY SEWER
SSD	SUB-SLAB DEPRESSURIZATION
SW	SLANT WELL
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE (AC)
VP	VAPOR PIN
W	WATER, WIDE, WIDTH, WIRE
WM	WATER METER
WV	WATER VALVE
YD	YARD DRAIN

NOTES

GENERAL

1. PORTIONS OF THIS PROJECT ARE WITHIN CITY OF SEATTLE RIGHT OF WAY. CONTRACTOR SHALL CONFORM TO CITY OF SEATTLE ENCROACHMENT PERMIT REQUIREMENTS.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH WSDOT STANDARDS.
3. ALL WORK SHALL CONFORM TO THE 2023 EDITION OF THE CITY OF SEATTLE STANDARD SPECIFICATIONS, THE 2023 EDITION OF THE CITY OF SEATTLE STANDARD PLANS; AND SEATTLE DEPARTMENT OF TRANSPORTATION DIRECTOR'S RULE 01-2017 RIGHT-OF-WAY OPENING AND RESTORATION RULES. A COPY OF THESE DOCUMENTS SHALL BE ON SITE DURING CONSTRUCTION.
4. THESE DESIGN DOCUMENTS HAVE BEEN PREPARED BASED ON INFORMATION PRESENTED IN THE REPORT TITLED "GEOTECHNICAL ENGINEERING SERVICES" PREPARED BY HWA GEOSCIENCES DATED 15 JULY 2021 (GEOTECHNICAL REPORT). CONTRACTOR SHALL COMPLY WITH THE RECOMMENDATIONS INCLUDED IN THIS REPORT.
5. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE FROM DAMAGE. ALL IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED AT THE CONTRACTOR'S EXPENSE WITHOUT ADDITIONAL COMPENSATION.
6. ALL BUILDING COORDINATES ARE TO OUTSIDE CORNER OF COLUMN OR BUILDING.
7. CONTRACTOR SHALL RESTORE ALL SURVEY MONUMENTS THAT ARE DAMAGED OR DESTROYED DURING CONSTRUCTION.
8. PROJECT WORK OCCURS IN A STORE PARKING LOT AND ADJACENT SIDEWALK. CONTRACTOR SHALL PROVIDE SPACE FOR PUBLIC PARKING AND MAINTAIN PEDESTRIAN ACCESS TO THE STORES AT ALL TIMES DURING CONSTRUCTION. SEE SHEET C-02 FOR FURTHER DETAIL.

UTILITIES

1. LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM AVAILABLE RECORDS AND ARE SHOWN IN THEIR APPROXIMATE LOCATION. THERE IS NO GUARANTEE THAT ALL EXISTING PIPELINES AND OBSTRUCTIONS ARE SHOWN OR THAT LOCATIONS INDICATED ARE ACCURATE. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL POTHOLE TO DETERMINE ACTUAL LOCATION AND ELEVATION OF ALL EXISTING UTILITIES IN AND AROUND THE AREAS OF NEW CONSTRUCTION.
2. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT ALL REMAINING EXISTING UTILITIES WHETHER SHOWN OR NOT SHOWN.
3. PRIOR TO ANY CONNECTION TO AN EXISTING UTILITY, THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER.
4. PRIOR TO ANY EXCAVATION IN THE VICINITY OF ANY EXISTING UNDERGROUND FACILITIES, INCLUDING ALL WATER, SEWER, STORM DRAIN, GAS, PETROLEUM PRODUCTS, OR OTHER PIPELINES; ALL BURIED ELECTRIC POWER, COMMUNICATIONS, OR TELEVISION CABLES; ALL TRAFFIC SIGNAL AND STREET LIGHTING FACILITIES; AND ALL ROADWAY, STATE HIGHWAY, AND RAILROAD RIGHTS-OF-WAY, THE CONTRACTOR SHALL NOTIFY THE RESPECTIVE AUTHORITIES REPRESENTING THE OWNERS OR AGENCIES RESPONSIBLE FOR SUCH FACILITIES TO FACILITATE A TIMELY MANNER OF WORK SO THAT A REPRESENTATIVE OF SAID OWNERS OR AGENCIES CAN BE PRESENT DURING SUCH WORK IF THEY SO DESIRE. IN THE CASE OF THE UNDERGROUND UTILITY SERVICE ALERT CENTER, THIS NOTICE WILL GIVE THEM TIME TO MARK THE LOCATION OF THE UTILITIES. THE CONTRACTOR SHALL ALSO NOTIFY UNDERGROUND SERVICES ALERT (USA) AT (811) IN ACCORDANCE WITH THE SPECIFICATIONS TO FACILITATE A TIMELY MANNER OF WORK, PRIOR TO SUCH EXCAVATION.
5. MAINTAIN A MINIMUM OF 1' VERTICAL SEPARATION WHEN CROSSING GAS MAINS OR SERVICES. MAINTAIN A MINIMUM OF 3' HORIZONTAL SEPARATION WHEN RUNNING PARALLEL TO GAS MAINS OR SERVICES.
6. IF HP PIPE OR GREATER THAN 4 INCH DIAMETER PIPE IS ENCOUNTERED, PLEASE CONTACT PSE INSPECTOR PRIOR TO WORKING NEAR THE ENCOUNTERED PIPES. PSE PI INSPECTOR CONTACT INFORMATION:
   GLENN HUDEN: 206-396-4159, GLENN.HUDEN@PSE.COM.
7. COORDINATE WITH PSE CUSTOMER CONSTRUCTION SERVICES (1-888-321-7779) AND A PSE PROJECT MANAGER FOR RELOCATION OF GAS MAINS AND SERVICES AS NEEDED.
8. WORK WITHIN 10 FEET OF ACTIVE TROLLEY LINES OR WHERE WORK IMPACTS THE TROLLEY ROUTE REQUIRES DEACTIVATION OF TROLLEY LINES. CONTRACTOR SHALL COORDINATE WITH KING COUNTY FOR DEACTIVATION. TROLLEY IMPACTS CONTACT INFORMATION:
   PHONE: 206-477-1150, EMAIL: TROLLEY.IMPACTS@KINGCOUNTY.GOV

PERMITTING

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF ALL PERMITS OBTAINED FOR THE PROJECT.
2. THE FOLLOWING PERMITS HAVE BEEN OBTAINED BY ECOLOGY AND ARE INCORPORATED INTO THE CONTRACT:
   A. UNDERGROUND INJECTION CONTROL PERMIT.
   B. STATE ENVIRONMENTAL POLICY ACT REVIEW.
3. THE FOLLOWING PERMITS HAVE BEEN OBTAINED BY ECOLOGY AND WILL BE TRANSFERRED OVER TO THE CONTRACTOR:
   A. CITY OF SEATTLE DEPARTMENT OF TRANSPORTATION STREET-USE PERMIT.
   B. KING COUNTY METRO TRANSIT OVERHEAD BUS POWER SHUTDOWN.
4. THIS PROJECT IS EXEMPT FROM THE AIR DISCHARGE PERMIT FROM THE PUGET SOUND CLEAN AIR AGENCY. THE CONTRACTOR DOES NOT HAVE TO APPLY FOR THIS PERMIT BUT MUST COMPLY WITH THE SUBSTANTIVE REQUIREMENTS OF THE PERMIT.
5. THE FOLLOWING PERMITS SHALL BE OBTAINED DIRECTLY BY THE CONTRACTOR. THIS LIST IS NOT ALL-INCLUSIVE. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING WHAT PERMITS APPLY TO THE WORK AND OBTAINING THEM IN A TIMELY MANNER TO SUPPORT THE OVERALL PROJECT SCHEDULE.
   A. NOTIFICATION OF WELL CONSTRUCTION.
   B. DISCHARGE PERMITS.
   C. CITY OF SEATTLE BUILDING PERMITS.
   D. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM CONSTRUCTION STORMWATER GENERAL PERMIT.
   E. CITY OF SEATTLE DEPARTMENT OF TRANSPORTATION PARKING PERMITS.

NOISE CONTROL

1. SEE SPECIFICATION 01 57 19.12 NOISE CONTROL FOR NOISE LIMITATIONS DETAILS. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE NOISE LIMITATIONS INCLUDED IN THIS SPECIFICATION.
2. CONSTRUCTION NOISE SHALL BE LIMITED TO THE FOLLOWING TIMES:
   7:00 AM TO 10:00PM, WEEKDAYS
   9:00 AM TO 10:00PM, WEEKENDS AND HOLIDAYS.
3. CONTRACTOR SHALL SUBMIT A NOISE CONTROL WORK PLAN MEETING THE REQUIREMENTS SPECIFIED IN SPECIFICATIONS 01 57 19.12.

TREE PROTECTION NOTES

1. CONTRACTOR SHALL PREPARE A TREE, VEGETATION AND SOIL PROTECTION PLAN (TVSPP), IF WORK FALLS WITHIN CRITICAL ROOT ZONE A. NOTE AND PHOTOGRAPH CONDITIONS AND MATERIALS IN EXISTING TREE PITS INCLUDING PAVERS FOR REVIEW BY SDOT URBAN FORESTRY.
2. CONTRACTOR SHALL NOTIFY THE ENGINEER AND SDOT URBAN FORESTRY 72 HOURS MIN. PRIOR TO BOTH DEMOLITION AND EXCAVATION WITHIN THE TREE DRIP LINE.
3. AIR SPADING REQUIRED
   ALL TRENCH EXCAVATION IN THE TREE DRIPLINE SHALL BE PERFORMED TO FULL DEPTH AND WIDTH OF EXCAVATION WITH AN AIRSPADE UNDER THE SUPERVISION OF SDOT URBAN FORESTRY ARBORIST. WATER SLUICING IS NOT ALLOWED. RETAIN ALL STRUCTURAL ROOTS (1 INCH OR GREATER) ACROSS TRENCHES. SDOT URBAN FORESTRY ARBORIST TO DIRECT ROOT PRUNING IF NECESSARY.
4. AVOID DAMAGE TO ROOTS DURING CONCRETE SAWCUTTING, DEMOLITION, EXCAVATION AND TRENCHING.
5. REMOVE PAVEMENT WITHIN TREE DRIPLINE BY SAWCUTTING FREQUENTLY (12 TO 18-INCHES O.C.) TO ALLOW SMALL PIECES TO BREAK OUT. IF PART OF PAVEMENT IS FIRMLY ATTACHED TO ROOTS GREATER THAN 1-INCH, PRUNE ROOTS UNDER SUPERVISION OF SDOT URBAN FORESTRY ARBORIST.
6. PROTECT TREE ROOTS AFTER EXPOSURE DUE TO CONCRETE REMOVAL, AIRSPADING AND OTHER CONSTRUCTION ACTIVITY. ONLY EXCAVATE AND EXPOSE AREAS OF ROOTS THAT CAN BE BACKFILLED AND COVERED WITHIN ONE WORKING DAY. MAINTAIN MOIST SUBGRADE CONDITIONS UNTIL NEW CONCRETE IS INSTALLED.
7. TRENCH BACKFILL IN CRITICAL ROOT ZONE SHALL BE COS MINERAL AGGREGATE TYPE 24 OR 22. USE OF BACKHOE IN TREE DRIPLINE IS PROHIBITED.
8. KEEP TREE ADEQUATELY WATERED UNTIL SIDEWALK IS REPLACED.

GENERAL NOTES FOR SDOT STREET IMPROVEMENT PLANS

1. ALL WORK SHALL CONFORM TO THE 2023 EDITION OF CITY OF SEATTLE STANDARD SPECIFICATIONS, THE 2023 EDITION OF THE CITY OF SEATTLE STANDARD PLANS; AND SEATTLE DEPARTMENT OF TRANSPORTATION DIRECTOR'S RULE 01-2017 RIGHT-OF-WAY OPENING AND RESTORATION RULES. A COPY OF THESE DOCUMENTS SHALL BE ON SITE DURING CONSTRUCTION.
2. A COPY OF THE APPROVED PLAN MUST BE ON SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
3. ERRORS AND OMISSIONS ON THE PERMITTED PLANS MUST BE CORRECTED BY THE ENGINEER AND APPROVED BY THE CITY OF SEATTLE.
4. ALL PERMITS REQUIRED FOR WORK WITHIN THE PUBLIC RIGHT OF WAY MUST BE OBTAINED PRIOR TO THE START OF CONSTRUCTION.
5. PRIOR TO THE START OF CONSTRUCTION WITHIN THE RIGHT OF WAY, THE PERMITTEE SHALL SCHEDULE AND ATTEND A PRECONSTRUCTION MEETING WITH THE CITY OF SEATTLE DEPARTMENT OF TRANSPORTATION.
6. PERMITTEE SHALL CONTACT SEATTLE DEPARTMENT OF TRANSPORTATION, STREET USE INSPECTOR A MINIMUM OF 2 BUSINESS DAYS PRIOR TO NEEDING AN INSPECTION.
7. ALL DAMAGE TO CITY INFRASTRUCTURE CAUSED BY THE CONSTRUCTION SHALL BE IMMEDIATELY REPORTED AND REPAIRED AS REQUIRED BY THE SEATTLE DEPARTMENT OF TRANSPORTATION. TO REPORT DAMAGE TO SPU INFRASTRUCTURE, INCLUDING ANY SEWAGE RELEASE OR BLOCKAGE, CALL 206-386-1800.
8. THE APPROVED PLANS SHALL SHOW THE APPROXIMATE AREA OF PAVEMENT RESTORATION BASED ON THE DEPTH OF UTILITY CUTS AND/OR THE AREA OF CURB AND/OR PAVEMENT TO BE REMOVED AND REPLACED. THE ACTUAL LIMITS OF THE PAVEMENT RESTORATION SHALL BE PER THE DIRECTOR'S RULE 01-2017, RIGHT-OF-WAY OPENING AND RESTORATION RULE AND WILL BE DETERMINED IN THE FIELD BY THE SEATTLE DEPARTMENT OF TRANSPORTATION STREET USE INSPECTOR PRIOR TO THE PAVEMENT RESTORATION. FOR SPU WATER SERVICES, APPLICANT MUST SHOW THE PAVEMENT RESTORATION LIMITS FOR THE PROPOSED AND THE EXISTING WATER SERVICES TO BE RETIRED, INCLUDING SERVICES THAT ARE OUTSIDE THE PROJECT AREA, BUT SERVE THE PARCEL.
9. DATUM: NAVD88 AND NAD 83 (2011) 2010.00 EPOCH.
10. SURVEYING AND STAKING OF ALL IMPROVEMENTS IN THE PUBLIC RIGHT OF WAY SHALL BE COMPLETED PRIOR TO CONSTRUCTION. PERMITTEE TO STAKE THE CURB AT THE CENTERLINE OF DRAINAGE GRATES PER STANDARD PLAN 260A. SURVEY GRADE SHEETS MUST BE SUBMITTED AND APPROVED BY THE SEATTLE DEPARTMENT OF TRANSPORTATION AT LEAST 2 BUSINESS DAYS PRIOR TO CONSTRUCTION.
11. IF AN EXISTING CURB IS TO BE REMOVED AND REPLACED IN THE SAME LOCATION THE PERMITTEE SHALL PROVIDE THE STREET USE INSPECTOR A PLAN WITH EXISTING FLOW LINE AND TOP OF CURB ELEVATIONS IDENTIFIED. PERMITTEE TO STAKE THE LOCATION OF THE EXISTING CURB PRIOR TO DEMOLITION.
12. THE PERMITTEE MUST BE RESPONSIBLE FOR REFERENCING AND REPLACING ALL SURVEY MONUMENTS THAT MAY BE DISTURBED, DESTROYED OR REMOVED BY THE PROJECT AND 2 WORKING DAYS, PRIOR TO THE WORK, MUST FILE AN APPLICATION FOR PERMIT TO REMOVE OR DESTROY A SURVEY MONUMENT WITH THE WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES, PURSUANT TO WAC 332-120. THE PERMITTEE MUST PROVIDE THE ENGINEER AND SPU LAND SURVEY WITH A COPY OF THE APPROVED PERMIT AND COMPLETION REPORT. SEE STANDARD SPECIFICATION 1- 07.28 ITEM 17.
13. THE PERMITTEE SHALL SUBMIT ALL APPLICABLE DOCUMENTS REQUIRED UNDER SECTION 1-05.3 OF THE STANDARD SPECIFICATIONS PRIOR TO CONSTRUCTION. A MATERIAL SOURCE FORM FOR ALL MATERIALS TO BE PLACED IN THE RIGHT OF WAY AND MIX DESIGNS FOR ALL ASPHALT, CONCRETE AND AGGREGATES TO BE PLACED IN THE RIGHT OF WAY MUST BE SUBMITTED TO THE SEATTLE DEPARTMENT OF TRANSPORTATION FOR REVIEW AND APPROVAL PRIOR TO BEGINNING CONSTRUCTION. A REVISED MATERIAL SOURCE FORM AND MIX DESIGNS MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT OF ANY SUBSTITUTE MATERIALS.
14. THE PERMITTEE SHALL NOTIFY THE SEATTLE FIRE DEPARTMENT DISPATCHER (206-386-1495) AT LEAST TWENTY-FOUR (24) HOURS IN ADVANCE OF ALL WATER SERVICE INTERRUPTIONS, HYDRANT SHUTOFFS, AND STREET CLOSURES OR OTHER ACCESS BLOCKAGE. THE PERMITTEE SHALL ALSO NOTIFY THE DISPATCHER OF ALL NEW, RELOCATED, OR ELIMINATED HYDRANTS RESULTING FROM THIS WORK.
15. THE PERMITTEE SHALL LOCATE AND PROTECT ALL CASTINGS AND UTILITIES DURING CONSTRUCTION.
16. THE PERMITTEE SHALL CONTACT THE UNDERGROUND UTILITIES LOCATOR SERVICE (811) AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
17. IT IS THE SOLE RESPONSIBILITY OF THE PERMITTEE TO VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS SHOWN AND TO FURTHER DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.
18. THE PERMITTEE SHALL ADJUST ALL EXISTING MAINTENANCE HOLE RIMS, DRAINAGE STRUCTURE LIDS, VALVE BOXES, AND UTILITY ACCESS STRUCTURES TO FINISH GRADE WITHIN AREAS AFFECTED BY THE PROPOSED IMPROVEMENTS.
19. THE PERMITTEE SHALL FOLLOW SPU CORE TAP PROCEDURES FOR ALL NEW CONNECTIONS TO EXISTING SEWER OR DRAINAGE MAINS OR STRUCTURES. CONTRACTORS ARE NOT ALLOWED TO CORE INTO MAINS OR STRUCTURES WITHOUT PRIOR APPROVAL FROM SPU- DWW. TO SCHEDULE CORE CUT CONTACT SPU-DWW AT 206-615-0511 A MINIMUM OF 2 BUSINESS DAYS IN ADVANCE.
20. ALL UTILITY SERVICE CONNECTIONS SHOWN ON THIS PLAN REQUIRE SEPARATE PERMITS.
21. THE PERMITTEE SHALL PROVIDE FOR ALL TESTING AS REQUIRED BY THE STREET USE INSPECTOR.
22. INSPECTION AND ACCEPTANCE OF ALL WORK IN THE PUBLIC RIGHT-OF-WAY SHALL BE DONE BY REPRESENTATIVES OF THE CITY OF SEATTLE. IT SHALL BE THE PERMITTEE'S RESPONSIBILITY TO COORDINATE AND SCHEDULE APPROPRIATE INSPECTIONS ALLOWING FOR PROPER ADVANCE NOTICE. THE SEATTLE DEPARTMENT OF TRANSPORTATION STREET USE INSPECTOR MAY REQUIRE REMOVAL AND RECONSTRUCTION OF ANY ITEMS PLACED IN THE RIGHT OF WAY THAT DO NOT MEET CITY STANDARDS OR THAT WERE CONSTRUCTED WITHOUT APPROPRIATE INSPECTIONS.
23. THE PERMITTEE SHALL PROVIDE A PLAN FOR STORMWATER AND EROSION CONTROL AND INSTALL, MAINTAIN AND REMOVE TEMPORARY FACILITIES PER SECTION 8-01. AS CONSTRUCTION PROGRESSES AND CONDITIONS DICTATE, ADDITIONAL CONTROL FACILITIES MAY BE REQUIRED. DURING THE COURSE OF CONSTRUCTION IT SHALL BE THE OBLIGATION AND RESPONSIBILITY OF THE PERMITTEE TO ADDRESS ANY NEW CONDITIONS THAT MAY BE CREATED BY THE PERMITTEE'S ACTIVITIES AND TO PROVIDE ADDITIONAL FACILITIES THAT MAY BE NEEDED TO PROTECT ADJACENT PROPERTIES.
24. ALL DISTURBED SOILS MUST BE AMENDED PER STANDARD PLAN 142 AND SECTION 8-02 OF THE STANDARD SPECIFICATIONS UNLESS WITHIN ONE FOOT OF A CURB OR SIDEWALK, THREE FEET OF A UTILITY STRUCTURE (E.G. WATER METER, UTILITY POLE, HAND HOLE, ETC.), OR THE DRIPLINE OF AN EXISTING TREE.
25. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE CITY OF SEATTLE TRAFFIC CONTROL MANUAL FOR IN-STREET WORK. AN APPROVED TRAFFIC CONTROL PLAN WILL BE REQUIRED FOR ALL ARTERIAL STREETS, HIGH IMPACT AREAS AND CONSTRUCTION HUBS PRIOR TO BEGINNING CONSTRUCTION.
26. PERMITTEE SHALL NOTIFY KING COUNTY METRO AT 206- 477-1140 FOURTEEN DAYS IN ADVANCE OF ANY IMPACT TO TRANSIT OPERATIONS. CALL 206-477-1150 FOR ANY COORDINATION RELATED TO KING COUNTRY METRO TROLLEY (INCLUDING SLU AND FIRST HILL STREET CAR). CONTACT KING COUNTY METRO TWO MONTHS PRIOR FOR ANY TROLLEY DE-ENERGIZING REQUESTS.
27. COORDINATE PARKING/LOADING SIGN(S) AND PAY STATION REMOVAL / RELOCATION AND INSTALLATION WITH SEATTLE DEPARTMENT OF TRANSPORTATION CURB SPACE MANAGEMENT AT 206-684-5370 WITH AT LEAST 10 BUSINESS DAYS' NOTICE. SIGNPOSTS ARE TO BE INSTALLED IN ACCORDANCE WITH STANDARD PLANS 616, 620, 621A, 621B, 625, & 626.
28. ALL STREET NAME SIGNS MUST BE INSTALLED BY SEATTLE DEPARTMENT OF TRANSPORTATION AT THE PERMITTEE'S EXPENSE.
29. ALL WORK PERFORMED BY SEATTLE CITY LIGHT, SEATTLE PUBLIC UTILITIES, AND OTHER UTILITIES TO INSTALL, REPAIR, REMOVE OR RELOCATE UTILITIES SHALL BE DONE AT THE PERMITTEE'S EXPENSE.
30. PERMITTEE MUST CONTACT THE SEATTLE DEPARTMENT OF PARKS AND RECREATION TO APPLY FOR A SEPARATE PERMIT IF WORKING WITHIN A DESIGNATED PARK BOULEVARD.
31. CARE SHALL BE EXERCISED WHEN EXCAVATING OR REMOVING PAVEMENT NEAR EXISTING CHARGED WATER MAINS. CAST IRON WATER MAINS ARE KNOWN TO BE SENSITIVE TO EXCESSIVE VIBRATION. COORDINATE PROTECTION METHODS WITH SPU.

EXCAVATION

1. PETROLEUM-IMPACTED SOIL IS PRESENT AT THE SITE. PETROLEUM-IMPACTED SOIL AND OTHER NATIVE MATERIAL GENERATED FROM EXCAVATIONS WILL BE FIELD SCREENED TO CONFIRM THE PRESENCE OF VOLATILE COMPOUNDS IN ACCORDANCE WITH SPECIFICATION 01 75 19. SOIL WILL BE PROFILED AND DISPOSED OF OFFSITE IN ACCORDANCE WITH SPECIFICATION 31 00 00.
2. TRENCH EXCAVATION DEPTHS SHALL BE LESS THAN 3 FEET DEEP IN ALL AREAS. TRENCH SIDES SHALL BE VERTICAL IN PAVED AREAS, IN ACCORDANCE WITH SPECIFICATION 31 00 00. IN ACCORDANCE WITH SPECIFICATION 31 00 00 1.07, IF PEA GRAVEL IS ENCOUNTERED WITHIN TRENCH EXCAVATIONS, CONTRACTOR SHALL SLOPE TRENCH SIDES AT MINIMUM 1.5H:1V TO MAINTAIN SLOPE STABILITY OR USE TRENCH BOXES OR OTHER TEMPORARY SHORING EQUIPMENT, AS NEEDED.
3. BUILDING FOUNDATIONS SHALL BE PROTECTED IN PLACE. CONTRACTOR SHALL STOP WORK IF BUILDING FOUNDATION IS DISCOVERED AND NOTIFY THE ENGINEER.
4. CONTRACTOR SHALL BACKFILL AND COMPACT IN ACCORDANCE WITH SPECIFICATION 31 00 00 AND THE GEOTECHNICAL REPORT.

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NO	REVISION	DATE	BY

DESIGNED
DRAWN
CHECKED

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

NOTES AND ABBREVIATIONS

SCALE AS SHOWN
JOB NO 2196008.00
DATE MAY 2025
SHEET 2 OF 24
G-02

Plot Date: 5/6/2025 8:02 AM
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File: C:\bms\kjce-pwd\0181581\219600800-G-02.DWG

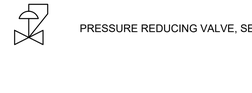
Plot Date: 5/6/2025 8:09 AM

User: RICHARD HILLS

CALLOUTS AND SHORTHAND SYMBOLS

- A — SHEET KEYNOTE
- ℄ — CENTERLINE
- Ø — DIAMETER
- ± — APPROXIMATELY
- ∠ — ANGLE
- 1 — BUILDING GRID LABEL OR ACCESSORY NUMBER
- ##-## — DOOR
- XXX — ROOM
- ## — WALL
- ##-## — WINDOW

REVISION SYMBOLS



CLOUDED AREA INDICATES CHANGED INFORMATION; NUMBER IN TRIANGLE INDICATES THE DRAWING VERSION AND MATCHES WITH REVISION INFORMATION IN THE REVISION BLOCK WITHIN THE DRAWING BORDER

PIPING - SINGLE LINE

- OR — CONNECTED
- NOT CONNECTED

VALVES AND GATES

- GATE VALVE (NORMALLY OPEN, NORMALLY CLOSED)
- GLOBE VALVE (NORMALLY OPEN, NORMALLY CLOSED)
- CHECK VALVE
- BUTTERFLY VALVE
- BALL VALVE (NORMALLY OPEN, NORMALLY CLOSED)
- VACUUM RELIEF/AIR INLET VALVE (AV)
- PRESSURE RELIEF VALVE (PREL)
- 3-WAY VALVE
- PNEUMATIC ACTUATOR
- PRESSURE REDUCING VALVE, SELF-CONTAINED

SYMBOLOGY

- NORTH ARROW
- NEW
- EXISTING
- FUTURE
- EXISTING LINEAR ELEMENTS TO BE REMOVED OR DEMOLISHED
- EXISTING NON-LINEAR ELEMENTS TO BE REMOVED OR DEMOLISHED
- BREAK LINE
- NATIVE EARTH (IN SECTION)
- ENGINEERED FILL (IN SECTION)
- SAND OR GROUT (IN PLAN AND SECTION)
- GRAVEL (IN PLAN AND SECTION)
- AGGREGATE BASE (IN PLAN AND SECTION)
- CRUSHED ROCK (IN PLAN AND SECTION)
- CONCRETE (IN PLAN AND SECTION)
- CROSSING UTILITIES — UTILITY CROSSING UNDERNEATH / UTILITY CROSSING OVER

EQUIPMENT

CENTRIFUGAL PUMPS

- HORIZONTAL

MIXERS

- VERTICAL

CROSS-REFERENCING SYMBOLS

FOUND ON DRAWING WHERE DETAIL, SECTION, OR ELEVATION IS CALLED OUT

- DETAIL NUMBER
- 1 / C-15 — SHEET ON WHICH DETAIL IS DRAWN
- SECTION LETTER
- A / A-13 — SHEET ON WHICH SECTION IS DRAWN

FOUND ON DRAWING WHERE DETAIL, SECTION, OR ELEVATION IS DRAWN

- DETAIL NUMBER
- 1 / C-4 — DETAIL TITLE, SCALE — SHEET ON WHICH DETAIL IS CALLED OUT
- SECTION LETTER
- A / A-5 — SECTION TITLE, SCALE — SHEET ON WHICH SECTION IS CUT

PIPING ACCESSORIES AND FITTINGS

- FLANGE
- Y STRAINER
- CHEMICAL PIPING FLEXIBLE CONNECTION/ FLEXIBLE HOSE
- DRAIN

VALVE AND GATE OPERATORS

- S — SOLENOID
- M — MOTOR
- DIAPHRAGM

MISCELLANEOUS

- PLATE AND FRAME HEAT EXCHANGER
- M

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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON

CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

LEGEND AND SYMBOLS

SCALE: AS SHOWN

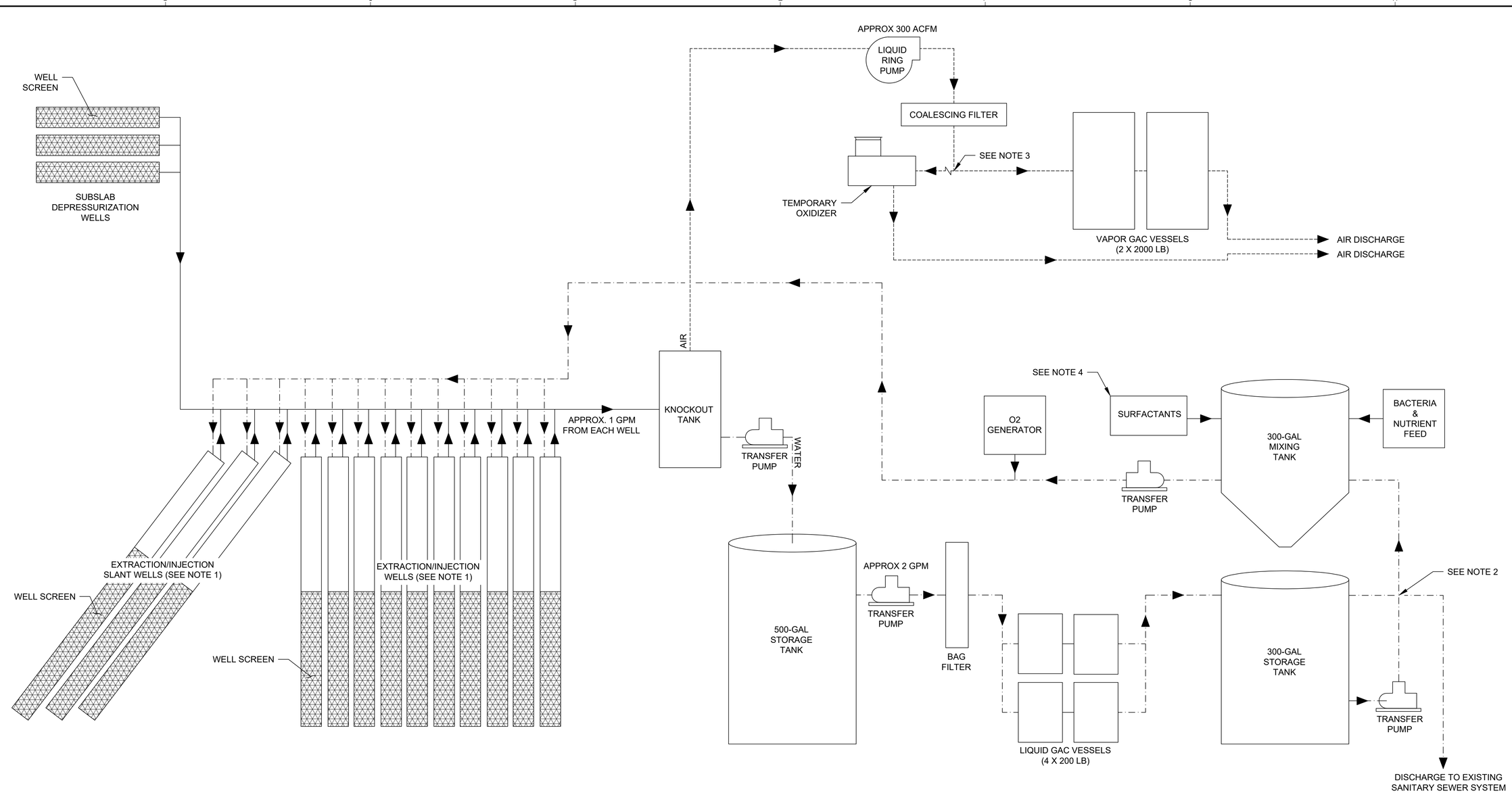
JOB NO: 2196008.00

DATE: MAY 2025

SHEET 3 OF 24

G-03

File: C:\bms\kjce-pw\d0181581\2196008\00-G-03.DWG



REMEDIATION SYSTEM OPERATION NOTES:

THE FOLLOWING NOTES DESCRIBE SYSTEM OPERATIONS AFTER CONSTRUCTION, AND ARE INTENTED SOLELY TO INFORM THE CONTRACTOR OF DESIGN INTENTIONS AND GUIDE CONSTRUCTION EFFORTS.

1. SYSTEM WILL BE OPERATED TO ALLOW WELLS USED FOR EXTRACTION TO ALSO BE USED FOR REINJECTION AND VICE VERSA. OPERATION OF WELLS FOR EXTRACTION OR REINJECTION WILL BE BASED ON SITE CONDITIONS, WELL LOCATIONS, CONCENTRATIONS OF THE CONTAMINANTS OF CONCERN, AND THE OVERALL REMEDIATION PROGRESS.
2. GROUNDWATER INITIALLY EXTRACTED FROM THE SYSTEM IS EXPECTED TO BE DISCHARGED TO THE SANITARY SEWER VIA GRAVITY. ONCE GROUNDWATER CONCENTRATIONS ARE AMENABLE TO BIOREMEDIATION VIA REINJECTION, WATER WILL BE TRANSFERRED TO MIXING TANK FOR AMENDMENT PRIOR TO REINJECTION. EXCESS WATER WILL GRAVITY FLOW TO THE SANITARY SEWER. VOLUMES AND FLOW RATES WILL BE DETERMINED DURING OPERATION.
3. VAPOR WILL BE DIRECTED THROUGH THE TEMPORARY OXIDIZER FOR THE FIRST SEVERAL MONTHS OF OPERATION UNTIL CONCENTRATIONS OF THE CONTAMINANTS OF CONCERN HAVE DECREASED TO A LEVEL SUITABLE FOR TREATMENT VIA THE VAPOR GAC VESSELS. THE OXIDIZER WILL THEN BE REMOVED AND VAPOR WILL BE DIRECTED THROUGH THE GAC VESSELS PRIOR TO DISCHARGE.
4. SURFACTANTS WILL BE ADDED FIRST TO THE WATER PRIOR TO REINJECTION TO RELEASE ADDITIONAL HYDROCARBONS FROM THE SOIL. THEN BACTERIA AND NUTRIENT FEED WILL BE ADDED TO THE WATER PRIOR TO REINJECTION TO CREATE A MICROBIAL POPULATION TO DEGRADE THE HYDROCARBONS IN SITU.

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BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

TREATMENT SYSTEM SCHEMATIC

SCALE AS SHOWN
JOB NO 2196008.00
DATE MAY 2025
SHEET 4 OF 24
G-04

Plot Date: 5/6/2025 8:10 AM
User: RICHARD HILLS
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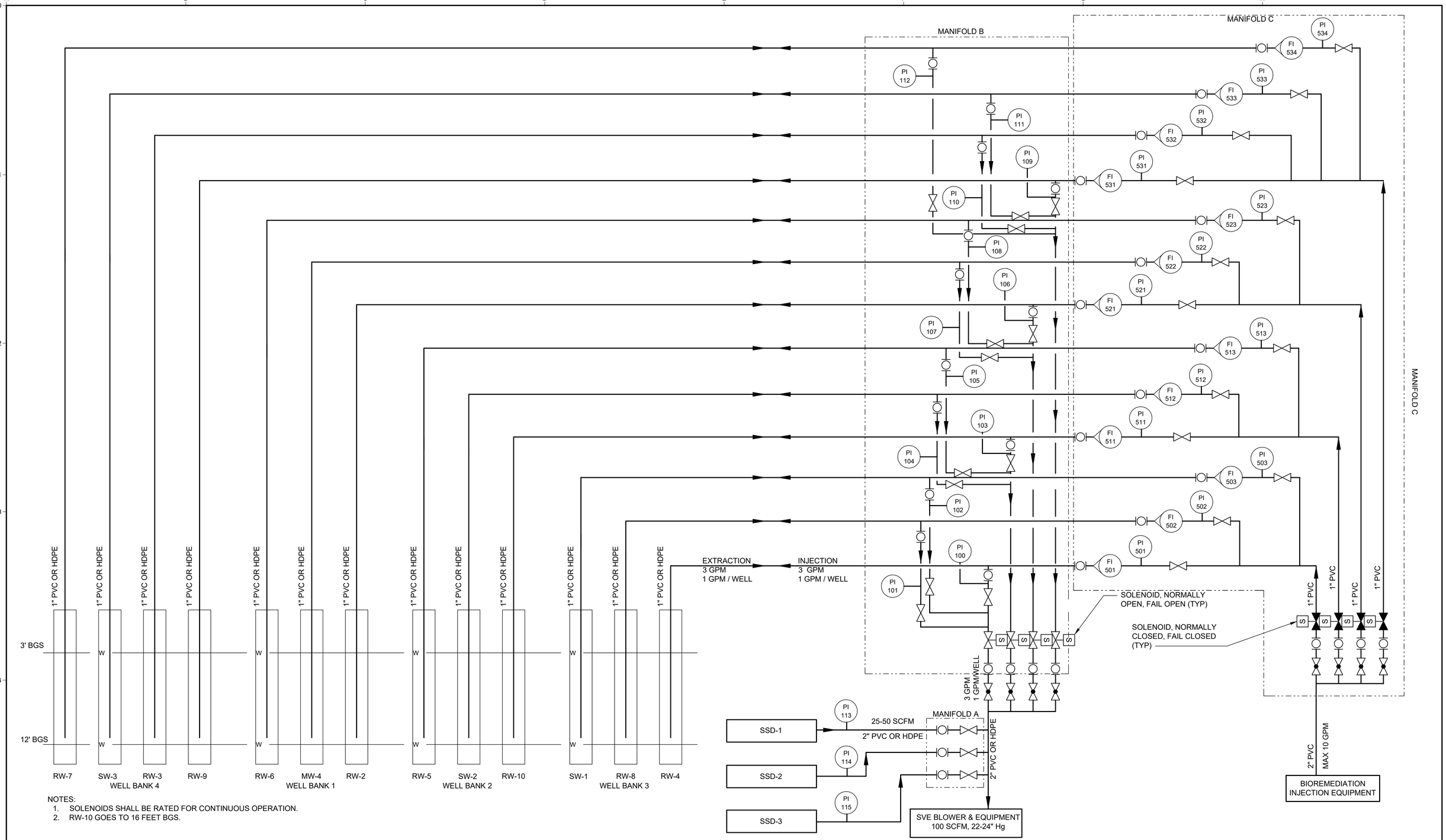

NOTES:
1. SOLENOIDS SHALL BE RATED FOR CONTINUOUS OPERATION.
2. RW-10 GOES TO 16 FEET BGS.

RECORD DRAWING

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BELLEVUE, WASHINGTON

CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

PROCESS FLOW DIAGRAM

SCALE: AS SHOWN
JOB NO: 2196008.00
DATE: MAY 2025
SHEET 5 OF 24
G-05

Plot Date: 5/6/2025 8:11 AM
User: RICHARD HILLS
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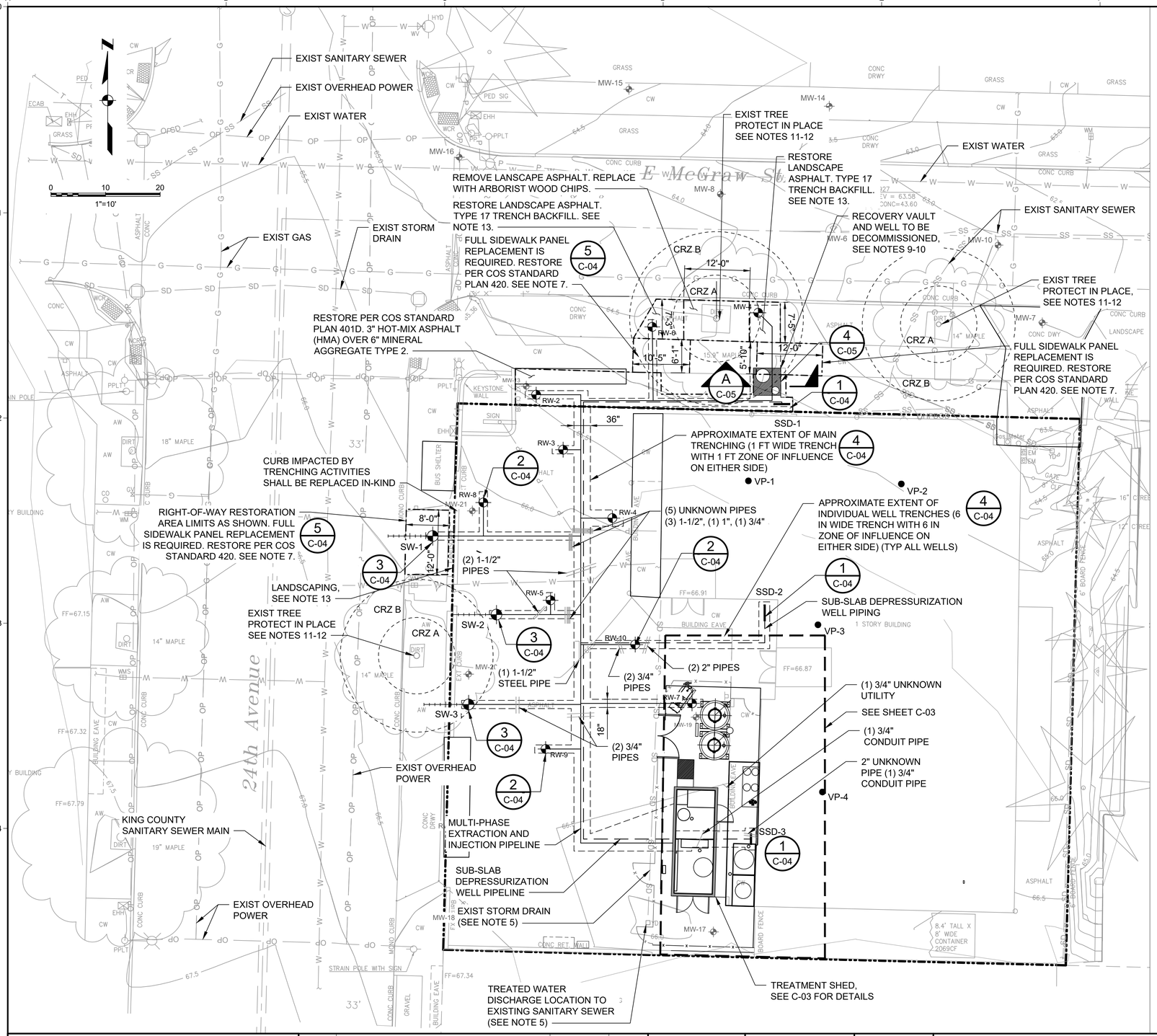

GENERAL SHEET NOTES

1. WELL TERMINOLOGY:
   1A. MW = EXISTING MONITORING WELL
   1B. RW = REMEDIATION WELL (EITHER EXISTING OR TO BE INSTALLED)
   1C. VP = VAPOR MONITORING PIN TO BE INSTALLED
   1D. SW = SLANT WELL TO BE INSTALLED
2. SLANT WELLS SHALL BE INSTALLED AT 30 DEGREES TO A DEPTH OF 20 FEET. HORIZONTAL EXTENT (APPROXIMATELY 10 FEET) SHOWN ON PLAN VIEW. RADIUS OF INFLUENCE OF SLANT WELLS CENTERED OVER MIDPOINT OF WELL CASING SHOWN.
3. VAPOR PINS ARE SHOWN AT APPROXIMATE LOCATIONS. EXACT LOCATIONS SHALL BE COORDINATED WITH ENGINEER AND OWNER.
4. ABOVEGROUND REMEDIATION SYSTEM PIPING IS SHOWN ON SHEET C-02.
5. STORM DRAIN IS CONNECTED TO SANITARY SEWER.
6. CONTRACTOR SHALL RELOCATE ALL EXISTING SIGNAGE TO CHAIN LINK FENCE, OR TO POSTS WEST OF THE FENCE.
7. TRENCHING LIMITS THAT IMPACT CONCRETE SIDEWALK SHALL BE RESTORED PER CITY OF SEATTLE (COS) STANDARD PLAN NO. 420 (SEE DETAIL 5 ON SHEET C-04). ASPHALT WALKWAY AND SIDEWALK PANEL TO BE REPLACED PER SEATTLE DEPARTMENT OF TRANSPORTATION DIRECTOR'S RULE 01-2017. TRENCH BACKFILL SHALL CONSIST OF CONTROL DENSITY FILL PER CITY OF SEATTLE STANDARD SPECIFICATION 2-10.2(3)A2 (EXCEPT WITHIN 10 FEET OF STEAM PIPES PER DIRECTOR'S RULE 01-2017 7.4.2.1) OR MINERAL AGGREGATE TYPE 17 PER STANDARD SPECIFICATION 9-03.14 AND COMPACTED PER STANDARD SPECIFICATION 2.11.3(1).
8. TRENCHING LIMITS SHOWN HEREON WITHIN PROPERTY BOUNDARY ARE APPROXIMATIONS ONLY. TRENCHING LIMITS IN RIGHT-OF-WAY SHALL BE ADHERED TO DURING CONSTRUCTION. EXACT TRENCHING LIMITS SHALL BE AT THE DISCRETION OF THE CONTRACTOR AND MINIMIZED TO THE EXTENT NECESSARY TO COMPLETE THE WORK. TRENCHING SHALL ONLY OCCUR WITHIN THE CIRCLE K PARKING LOT AND SURROUNDING SIDEWALK. TRENCHING SHALL NOT EXTEND INTO THE PAVED ROADWAYS. IF TRENCHING IMPACTS EXTRUDED CURB ON SITE, REPLACE CURBS TO MATCH EXISTING.
9. WELL SHALL BE DECOMMISSIONED IN ACCORDANCE WITH ECOLOGY WAC 173-160-381 BY A DRILLER LICENSED IN THE STATE OF WASHINGTON. DRILLER SHALL FILE A NOTICE OF INTENT TO ECOLOGY TO DECOMMISSION THE WELL AND SUBMIT A DECOMMISSIONING REPORT TO ECOLOGY WITHIN 30 DAYS OF COMPLETION, PER WAC 173-160-141.
10. WITHIN THE VAULT, NEATLY CUT AND REMOVE ANY EQUIPMENT AND PLUG ALL CONNECTIONS (INLETS, OUTLETS, OPENINGS, ETC.) PER DETAIL 4 ON SHEET C-05. FILL VAULT TO GRADE WITH BACKFILL PER DETAIL 4 ON SHEET C-04 ON SHEET C-04 AND SPECIFICATION SECTION 31 00 00. RESURFACE AND PAVE VAULT FOOTPRINT AND IMPACT SURROUNDING AREA IN ACCORDANCE WITH SPECIFICATION SECTION 32 12 16.13.
11. CONTRACTOR SHALL PROTECT TREES AND VEGETATION IN RIGHT-OF-WAY DURING DRILLING AND TRENCHING IN ACCORDANCE WITH CITY OF SEATTLE STANDARD SPECIFICATION 8-01.3(2)B AND STANDARD PLAN 133. EXCAVATION IS NOT ALLOWED IN CRITICAL ROOT ZONE A (CRZ A). FIELD ADJUSTMENTS MAY BE ALLOWED TO MODIFY TRENCH LIMITS AND/OR DRILLING LOCATIONS IF NECESSARY TO PROTECT TREE ROOTS IN PLACE. PROPOSED FIELD ADJUSTMENTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.
12. CONTRACTOR SHALL PROTECT TREES IN ACCORDANCE WITH CITY OF SEATTLE STANDARD PLAN 132A FOR WORK LASTING MORE THAN 30 DAYS AND PLAN 132B FOR WORK LASTING 30 DAYS OR LESS. IF PAVEMENT AROUND TREE IS IMPACTED, RESTORE TREE PIT IN ACCORDANCE WITH CITY OF SEATTLE STANDARD PLAN 424B.
13. ANY LANDSCAPING (PLANTS, SOIL, MULCH, ETC.) IMPACTED BY CONTRACTOR ACTIVITIES SHALL BE RESTORED PER CITY OF SEATTLE STANDARD SPECIFICATION 8-01.3(2)B AND PLAN NO. 142. TRENCH BACKFILL SHALL CONSIST OF MINERAL AGGREGATE TYPE 17 PER CITY OF SEATTLE STANDARD SPECIFICATION 9-03.14 AND COMPACTED PER STANDARD SPECIFICATION 2.11.3(1).
14. CONTRACTOR SHALL MAINTAIN A MINIMUM 4 FOOT WIDE WALKWAY BETWEEN EDGE OF WELLHEAD SKIRT AND FRONT OR BACK OF CURB, AS APPLICABLE.

NEW REMEDIATION WELLS TO BE INSTALLED

RW-8	N:236950.38	E:1278394.71
RW-9	N:236909.25	E:1278406.10
RW-10	N:236924.38	E:1278422.51

NEW SLANT WELLS TO BE INSTALLED

SW-1	N:236943.23	E:1278385.44
SW-2	N:236929.86	E:1278397.11
SW-3	N:236913.40	E:1278392.00

EXISTING MONITORING AND REMEDIATION WELLS

MW-4	N:236985.00	E:1278447.91
RW-2	N:236970.10	E:1278404.38
RW-3	N:236960.04	E:1278409.31
RW-4	N:236947.52	E:1278418.32
RW-5	N:236932.47	E:1278407.00
RW-6	N:236982.51	E:1278425.63
RW-7	N:236913.61	E:1278432.90

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES BELOW)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 2)
- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION PIPING
- SUB-SLAB DEPRESSURIZATION WELL
- APPROXIMATE EXTENT OF TRENCH (SEE NOTE 7 AND 8)
- CHAIN LINK FENCE
- VAPOR MONITORING PIN (SEE NOTE 3)
- G — EXISTING GAS LINE
- W — EXISTING WATER LINE
- OP — EXISTING OVERHEAD POWER LINE
- SS — EXISTING SANITARY SEWER LINE
- P — EXISTING UNDERGROUND ELECTRICAL LINE
- SD — EXISTING STORM DRAIN
- PROPERTY BOUNDARY
- RIGHT-OF-WAY RESTORATION (SEE NOTES 7, 8, 11, 12 AND 13)
- CRITICAL ROOT ZONE EXTENTS
- UNKNOWN/UNMARKED UTILITY ENCOUNTERED DURING TRENCHING

RECORD DRAWING

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NO	REVISION	DATE	BY

SCALES 0 — 10"

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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

OVERALL SITE PLAN AND SYSTEM LAYOUT

SCALE 1" = 10'
JOB NO 2196008.00
DATE MAY 2025
SHEET 6 OF 24
C-01

Plot Date: 5/20/2025 6:56 AM
User: RICHARD HILLS
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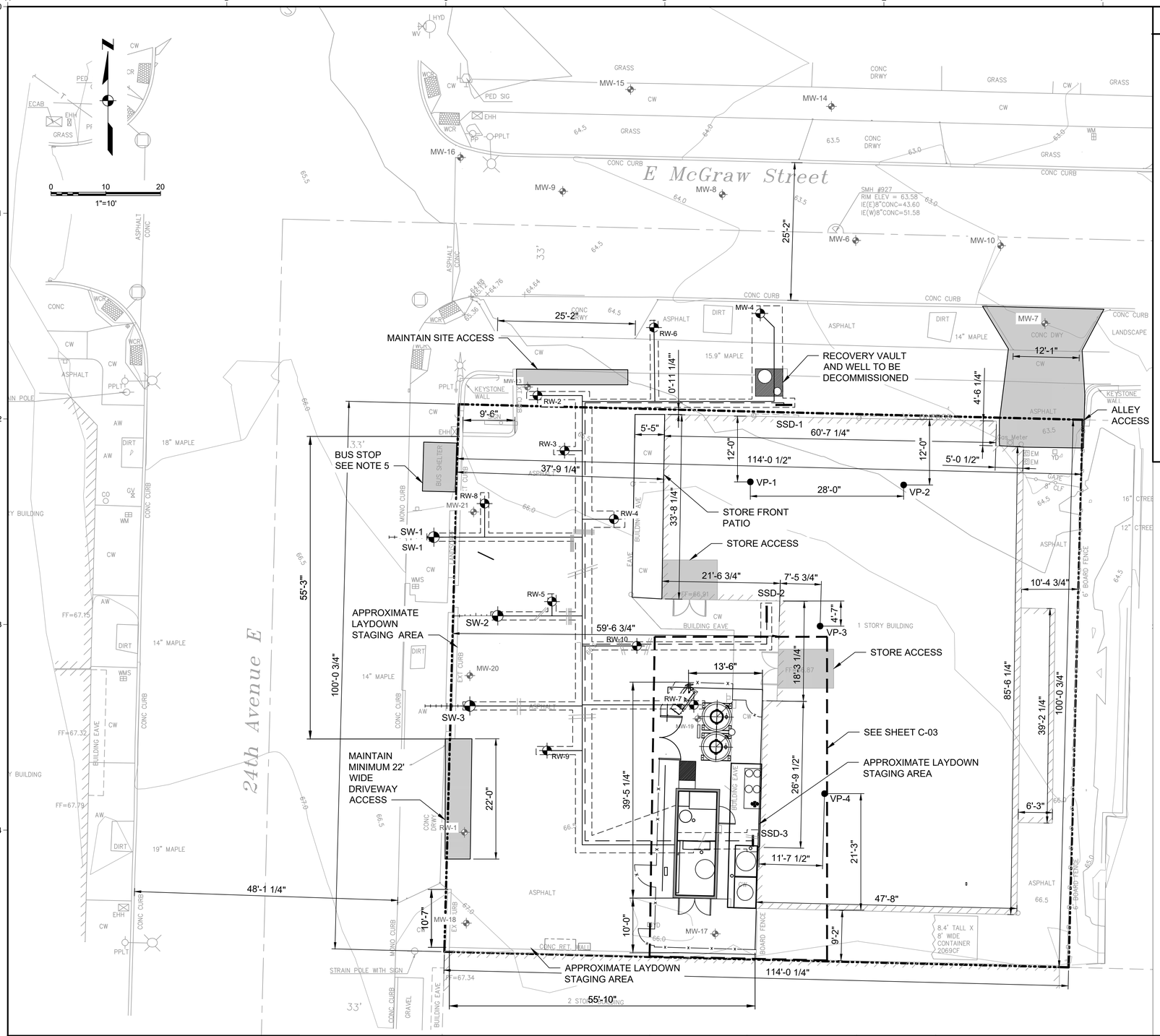

SITE PLAN INFORMATION

ADDRESS: 2350 24TH AVE E, SEATTLE, WA 98112; INTERSECTION OF 24TH AVE E AND E MCGRAW ST. (ADDRESS ALSO IDENTIFIED AS 2401 E MCGRAW ST, SEATTLE, WA 98112).

OWNER'S NAME: CHOUNG KUK JIN AND KATHY KYUNG
PROPERTY NAME: JAY'S DRY CLEANERS

LEGAL DESCRIPTION: PIKES 2ND ADD TO UNION CITY 1 & 2 LESS E 6 FT
PLAT BLACK: 29
PLAT LOT: 1-2
QUARTER-SECTION-TOWNSHIP-RANGE: NW-21-25-4
KING COUNTY ASSESSOR'S PARCEL NUMBER: 678820-1335

HISTORIC RELATED PERMIT NUMBERS:
674948

TOTAL RESTORATION SURFACE AREA: 1,215 SF
TOTAL VOLUME OF EXCAVATION AND BACKFILL: 160 CY

DISCHARGE AUTHORIZATION:
KING COUNTY INDUSTRIAL WASTE (KCIW) WASTEWATER DISCHARGE AUTHORIZATION (WDA) NO. 4614-01 TO JAY'S CLEANERS - CIRCLE K 1461 TREATMENT SYSTEM. ISSUED MARCH 31, 2023.
EFFECTIVE DATE: APRIL 7, 2023
EXPIRATION DATE: APRIL 6, 2028

GENERAL SHEET NOTES

1. DIMENSIONS SHOWN ARE THE MAXIMUM ALLOWABLE FOR LAYDOWN STAGING AREAS. AREAS MAY NEED TO BE REDUCED TO ALIGN WITH EXISTING FEATURES SUCH AS CURBS OR ALLOW FOR VEHICLE AND PEDESTRIAN TRAFFIC AND SHALL BE SECURED BY TEMPORARY FENCING.
2. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL USING CONTRACTOR MEANS AND METHODS SUCH AS PHASED CONSTRUCTION, TRAFFIC RATED TRENCH LIDS, SIGNAGE, TEMPORARY FENCING, AND OTHER, AS NEEDED TO MAINTAIN VEHICLE AND PEDESTRIAN ACCESS TO THE STORES.
3. CONTRACTOR WORK AREA SHALL BE CLEARLY DELINEATED AND FENCED OFF TO PREVENT PUBLIC ENTRANCE, WHILE STILL MAINTAINING STORE ACCESS AT ALL TIMES DURING CONSTRUCTION.
4. CONTRACTOR SHALL SECURE ANY CITY PERMITTING RELATED TO TRAFFIC CONTROL INCLUDING PROVIDING TRAFFIC CONTROL PLANS, CITY RIGHT OF WAY WORK, AND KING METRO FOR WORK NEAR THE BUS STOP WHICH MAY REQUIRE WEEKEND WORK.
5. CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY FOR CONSTRUCTION WITHIN THE RIGHT-OF-WAY AND MAINTAIN FULL ACCESS TO THE BUS STOP AT ALL TIMES DURING CONSTRUCTION.
6. PIPE ROUTING IS APPROXIMATE. CONTRACTOR SHALL PROVIDE INDIVIDUAL LINES TO EACH WELL PER P&ID DRAWINGS.
7. CONTRACTOR SHALL SUBMIT A WORK SEQUENCING PLAN DESCRIBING THE METHOD IN WHICH ALL REQUIRED ACCESS POINTS SHALL BE PROPERLY MAINTAINED. DETAILS ON THE WORK SEQUENCING PLAN REQUIREMENTS ARE INCLUDED IN SPECIFICATION SECTION 01 33 00.
8. CONTRACTOR SHALL NOT PLACE HEAVY EQUIPMENT IN LAYDOWN STAGING AREA ALONG SOUTH SIDE OF THE PROPERTY BOUNDARY.
9. VAPOR PINS ARE SHOWN AT APPROXIMATE LOCATIONS.

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-01)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 2)
- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION PIPING
- SUB-SLAB DEPRESSURIZATION WELL
- APPROXIMATE EXTENT OF TRENCH
- CHAIN LINK FENCE
- VAPOR MONITORING PIN
- SITE AND STORE ACCESS AREAS
- PROPERTY LINE

RECORD DRAWING

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NO	REVISION	DATE	BY

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BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

SITE PLAN STAGING AREAS

SCALE 1" = 10'
JOB NO 2196008.00
DATE MAY 2025
SHEET 7 OF 24
C-02

Plot Date: 5/19/2025 1:13 PM
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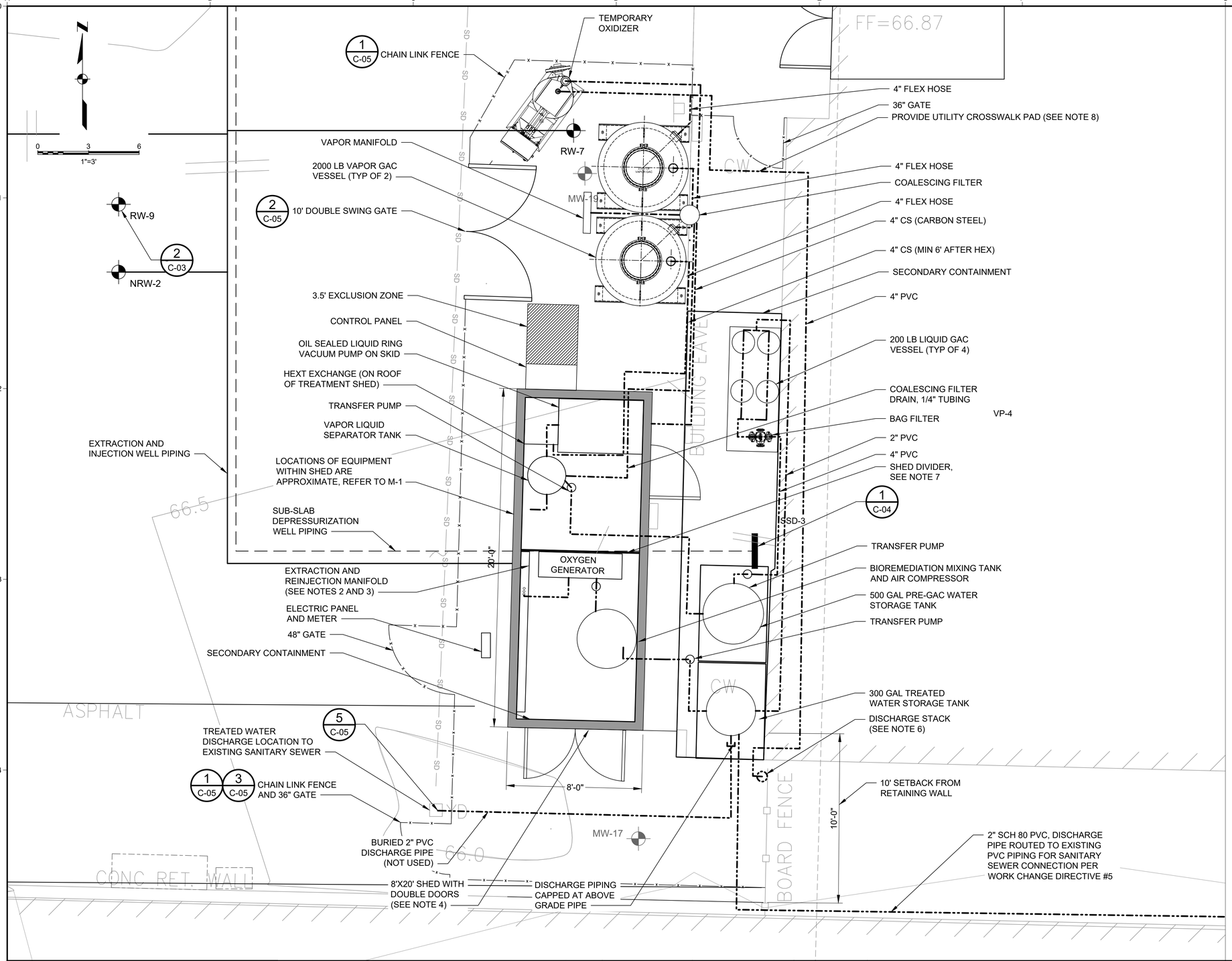
File: C:\bms\jce-pw\d0181574\2196008\00-C-02.dwg



GENERAL SHEET NOTES

1. WELL TERMINOLOGY:
   1A. MW = EXISTING MONITORING WELL
   1B. RW = REMEDIATION WELL (EITHER EXISTING OR TO BE INSTALLED
2. ALL MANIFOLDS SHALL BE EQUIPPED WITH GATE VALVE, SAMPLE PORTS, AND 1/4" TAP FOR FLOW INSERTION.
3. EXTRACTION AND REINJECTION MANIFOLDS SHALL BE EQUIPPED WITH CONTROL VALVES AND FLOW METER FOR EACH WELL.
4. PIPING AND VALVES SHALL BE STACKED VERTICALLY ALONG EQUIPMENT ENCLOSURE WALL FOR ACCESS TO FLOW PATH AND MEASUREMENTS.
5. CONTRACTOR SHALL RECREATE ALL PARKING SPACES AFFECTED BY THE REMEDIATION SYSTEM AS SHOWN ON SHEET C-06 INCLUDING REPAINTING PARKING LOT STRIPING AND HANDICAP SYMBOLS, AND REPLACING EXISTING CURBS WITH NEW CURBS.
6. INSTALL ANY NECESSARY PIPE SUPPORTS TO DISCHARGE STACK TO EXTEND TOP OF STACK TO 3 FEET ABOVE THE ROOF. DISCHARGE STACK PIPE SUPPORTS SHALL BE CONTRACTOR DESIGNED AND SUBMITTED TO THE ENGINEER FOR APPROVAL.
7. DIVIDER AND SHED CONSTRUCTION SHALL MEET IBC AND NFPA REQUIREMENTS TO SEPARATE ZONES. SHED CONSTRUCTION SHALL INCLUDE DIVIDER TO SEPARATE UNCLASSIFIED AND CLASS 1, DIVISION 2 RATED EQUIPMENT OR CONTRACTOR SHALL PROVIDE TWO SEPARATE SHEDS INSTALLED ADJACENT TO EACH OTHER.
8. PIPE ROUTING IS APPROXIMATE. FIELD ROUTE AS NEEDED TO MAINTAIN PATHWAYS AND ACCESS TO EQUIPMENT AND VALVES. PROVIDE STEP OVERS/RAMPS WHERE REQUIRED OR ELEVATE TO MINIMUM 7 FEET ABOVE GROUND TO MAINTAIN ACCESS PER SPECIFICATIONS. PROVIDE LOW POINT DRAINS AND HIGH POINT VENTS AS NEEDED. CONTRACTOR DESIGNED SUPPORTS SHALL BE FAVORABLY APPROVED BY ENGINEER. EXCEPT AS MAY BE REQUIRED FOR THE DISCHARGE STACK, SUPPORTS SHALL NOT BE ANCHORED TO THE BUILDING WALL, AWNING, ROOF, OR COLUMNS.
9. TREATMENT SYSTEM SHALL BE COMMISSIONED IN ACCORDANCE WITH SPECIFICATION SECTION 01 77 00.
10. EQUIPMENT AND PIPING LOCATIONS ARE SHOWN FOR CONCEPTUAL PURPOSES ONLY. ACTUAL EQUIPMENT AND PIPING LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR.

LEGEND

- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION WELL PIPING
- REMEDIATION SYSTEM PROCESS PIPING (SEE NOTE 4)
- CHAIN LINK FENCE
- SUB-SLAB DEPRESSURIZATION WELL
- VAPOR MONITORING PIN
- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-01)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION

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NO	REVISION	DATE	BY
1	SEATTLE DEPARTMENT OF TRANSPORTATION PERMIT	10/09/2023	CMW

SCALES 0 — 10"

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BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

REMEDIATION SYSTEM LAYOUT

SCALE 1" = 10'
JOB NO 2196008.00
DATE MAY 2025
SHEET 8 OF 24
C-03

Plot Date: 5/7/2025 7:44 AM
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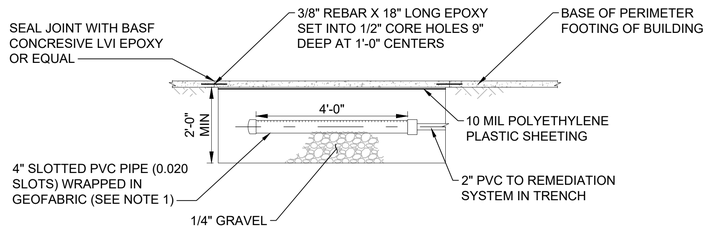
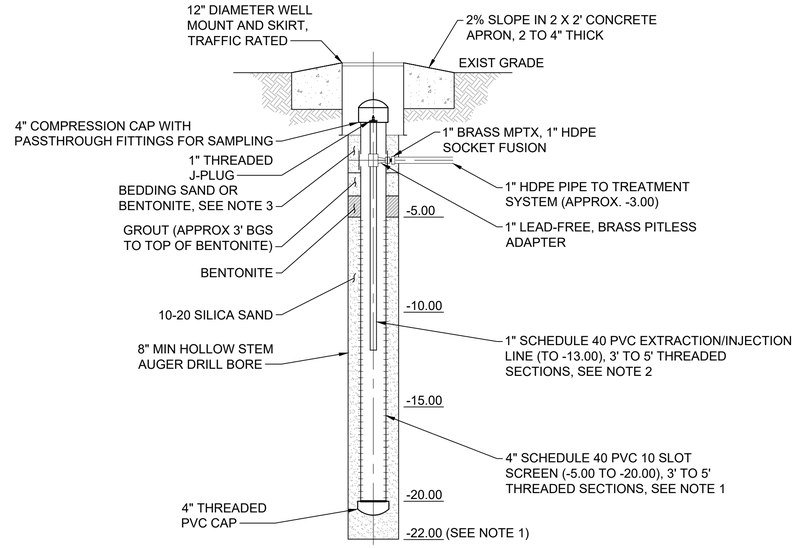


NOTES:

1. GEOFABRIC SHALL BE NONWOVEN POLYPROPYLENE GEOTEXTILE, SUCH AS MIRAFI 140N, OR EQUAL.
2. SUB-SLAB DEPRESSURIZATION (SSD) WELL SHALL BE INSTALLED AT LEAST 1 FOOT BELOW THE BOTTOM OF ANY PERIMETER FOOTING OF THE BUILDING.

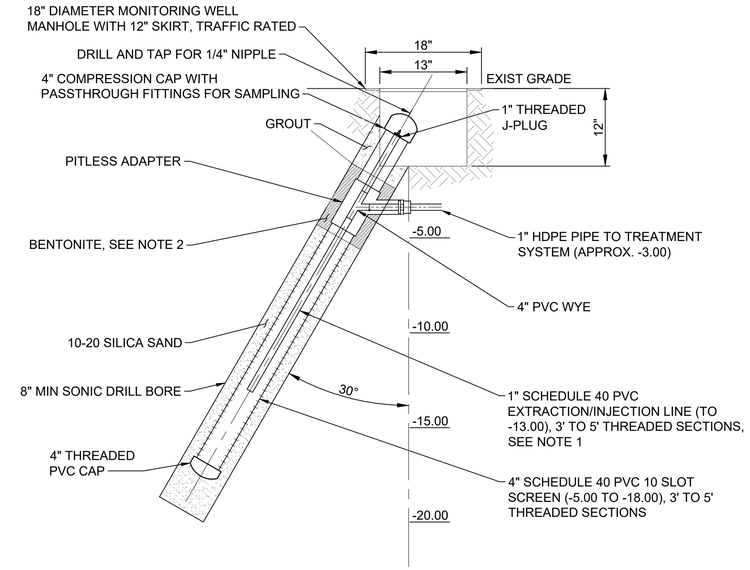
1 C-01 SUB-SLAB DEPRESSURIZATION WELL
SCALE: 1/2" = 1'



NOTES:

1. WELL RW-10 DRILLED TO 30 FT BGS WITH A SCREEN INTERVAL FROM 25 TO 30 FT BGS. IN RW-10 THE EXTRACTION/INJECTION LINE SHALL EXTEND TO - 16 FT BGS.
2. PIPING SHALL EXTEND TO LOW GROUND WATER ELEVATION OR A MINIMUM OF 13' BGS.
3. AFTER INSTALLATION OF COUPLING AND PITLESS ADAPTER, CONTRACTOR SHALL BACKFILL WITH MINIMUM 3" BENTONITE AND THEN COMPACT PER SPECIFICATIONS.

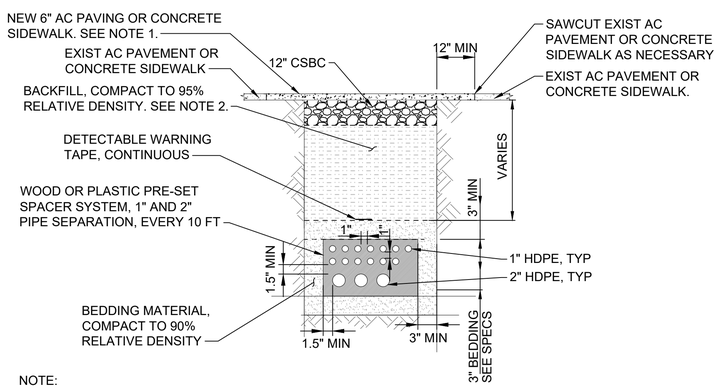
2 C-01 VERTICAL WELL
SCALE: NTS



NOTES:

1. PIPING SHALL EXTEND TO LOW GROUND WATER ELEVATION OR A MINIMUM OF 13' BGS.
2. AFTER INSTALLATION OF WYE, CONTRACTOR SHALL BACKFILL WITH MINIMUM 3" BENTONITE AND THEN COMPACT PER SPECIFICATIONS.

3 C-01 SLANT WELL
SCALE: NTS



NOTE:

1. NEW AC PAVING OVER CRUSHED SURFACING BASE COURSE COMPACTED TO 95% RELATIVE DENSITY. AC PAVING SHALL BE MINIMUM OF 6" THICK. REMOVE EXISTING PAVEMENT AND BASE FOR THE FULL WIDTH OF THE TRENCH. RESTORE SIDEWALK PER CITY OF SEATTLE STANDARD PLAN 420 (SEE DETAIL 5 ON THIS SHEET). FULL SIDEWALK PANEL REPLACEMENT REQUIRED PER SEATTLE DEPARTMENT OF TRANSPORTATION DIRECTOR'S RULE 01-2017.
2. TRENCH BACKFILL SHALL CONSIST OF CONTROL DENSITY FILL PER CITY OF SEATTLE STANDARD SPECIFICATION 2-10.2(3)A2 (EXCEPT WITHIN 10-FT OF STEAM PIPES PER DIRECTOR'S RULE 01-2017 7.4.2.1) OR MINERAL AGGREGATE TYPE 17 PER STANDARD SPECIFICATION 9-03.14 AND COMPACTED PER STANDARD SPECIFICATION 2.11.3(1).
3. ARRANGEMENT OF 1" HDPE AND 2" PVC PIPES IN PRE-SET SPACER SYSTEM SHALL BE AT THE DISCRETION OF THE CONTRACTOR. SEPARATION AROUND 1" PIPE SHALL BE 1" MINIMUM. SEPARATION AROUND 2" PIPE SHALL BE 1.5" MINIMUM.

4 C-01 TRENCH SECTION
SCALE: NTS

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CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

CIVIL SECTIONS AND DETAILS - I

SCALE AS SHOWN
JOB NO 2196008.00
DATE MAY 2025
SHEET 9 OF 24
C-04

Plot Date: 5/7/2025 7:51 AM
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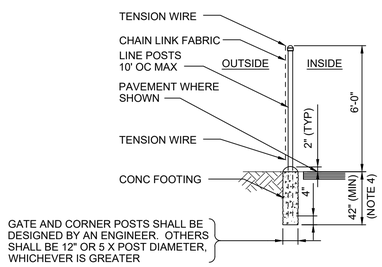
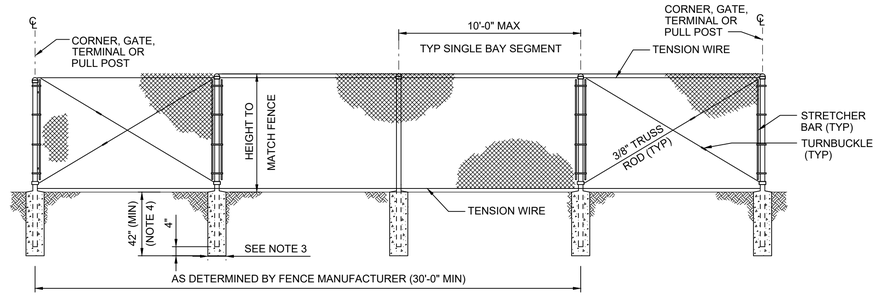
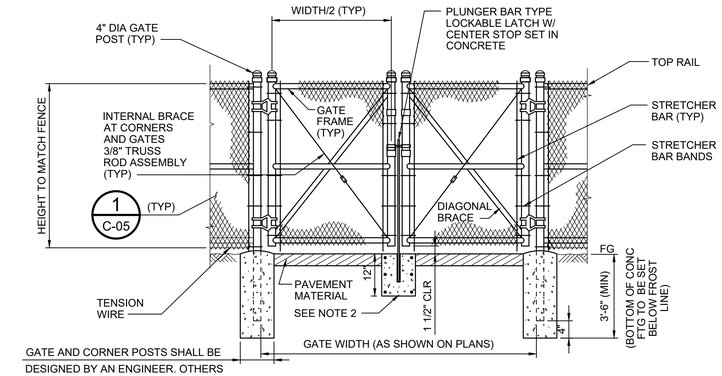




NOTES:

1. SEE SPECIFICATIONS FOR FENCE MATERIAL, COATINGS, AND INSTALLATION REQUIREMENTS.
2. EXTENSION ARM MAY BE TURNED IN AT OPTION OF OWNER.
3. LINE POSTS FOOTINGS SHALL BE 12" OR 5 X POST DIAMETER, WHICHEVER IS GREATER.
4. BOTTOM OF CONC FTG TO BE SET BELOW FROST LINE.
5. FENCE SHALL INCLUDE PRIVACY SCREEN MATERIAL WOVEN INTO CHAIN LINK FENCE. PRIVACY SCREEN MATERIAL SHALL BE DARK GREY COLOR OR OTHER COLOR AGREED UPON WITH THE OWNER.
6. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI AS MEASURED IN ACCORDANCE WITH ASTM C39.
7. MIX DESIGN
   7.1 FIELD TEST RECORDS: SUBMIT IN ACCORDANCE WITH ACI 318 CHAPTER 5.3
   7.2 WATER/CEMENT RATIO: 0.5 MAX
   7.3 AIR CONTENT: 4% +/- 1% IN ACCORDANCE WITH ASTM C231
8. CEMENTITIOUS MATERIALS
   8.1 MINIMUM CONTENT: 570 LBS/CU YD
   8.2 PORTLAND CEMENT: ASTM C150, TYPE II LOW ALKALI
   8.3 FLYASH: ASTM C618, CLASS F, NOT TO EXCEED 20% OF TOTAL CEMENTITIOUS MATERIALS.
9. AGGREGATE
   9.1 COARSE: CONFORM TO ASTM C33, 1-INCH MAX AGGREGATE
   9.2 FINE: CONFORM TO TABLE 1 OF ASTM C33
10. ADMIXTURES
   10.1 AIR ENTRAINING: ASTM C260
   10.2 WATER REDUCING: ASTM C494, TYPE A
11. CONCRETE CONSTRUCTION SHALL CONFORM TO ACI 301-10, 318-11, AND ACI 347.
12. CONCRETE SHALL BE PLACED AND CURED BETWEEN 50 AND 90 DEGREES F.
13. PROVIDE SF-2.0 FINISH AT FORMED SURFACES IN ACCORDANCE WITH ACI 301.
14. PROVIDE TROWEL FINISH AT HORIZONTAL SURFACES IN ACCORDANCE WITH ACI 301.
15. UNLESS OTHERWISE NOTED, ALL EXPOSED EDGES AND CORNERS SHALL BE CHAMFERED 3/4-INCH.
16. REINFORCING BARS SHALL BE ASTM A615-GRADE 60.
17. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
18. ARRANGEMENT AND DETAINING OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI 315 DETAILING MANUAL.
19. REINFORCING SHALL LAP IN ACCORDANCE WITH ACI 318-11.
20. DIMENSIONS TO REINFORCING ARE TO BAR CENTERLINES, UNLESS NOTED OTHERWISE BAR COVER IS CLEAR DISTANCE BETWEEN THE BAR AND THE CONCRETE SURFACE. UNLESS SHOWN OTHERWISE, BAR COVER SHALL NOT BE LESS THE 1 1/2 INCH.
21. POST DIAMETER SHALL BE DEFERRED SUBMITTAL BY THE CONTRACTOR.

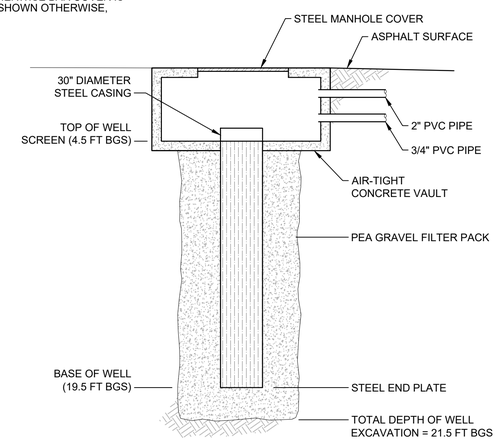
1 C-03 CHAIN LINK FENCE
SCALE: NTS



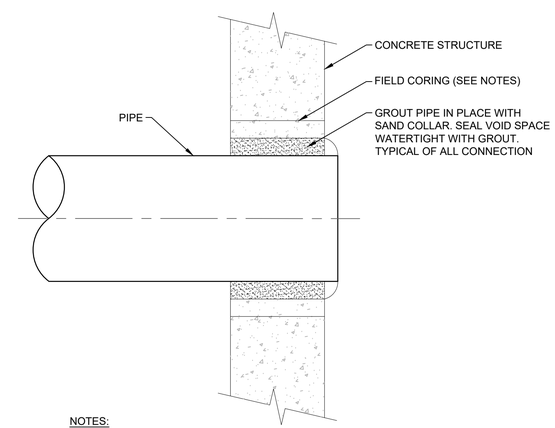
NOTES:

1. SEE SPECIFICATIONS FOR FENCE MATERIAL, COATINGS, AND INSTALLATION REQUIREMENTS.
2. 12" DIAMETER X 18" DEEP CONCRETE STOP W/ 20 GA STEEL PLUNGER SLEEVE, DIA = ROD OD +1/2".
3. POST DIAMETER SHALL BE DEFERRED SUBMITTAL BY THE CONTRACTOR.

2 C-03 DOUBLE LEAF SWING GATE
SCALE: NTS



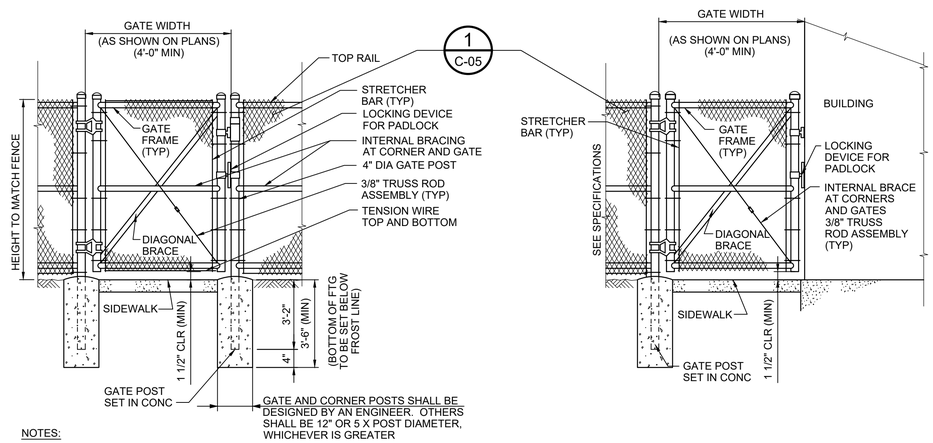
A C-01 RECOVERY WELL AND VAULT
SCALE: NTS



NOTES:

1. CONTRACTOR SHALL NEATLY CORE DRILL OPENINGS FOR THESE UTILITY CONNECTION IN THE FIELD BASED ON SPECIFIC UTILITY SIZE AND LOCATION. CORE DRILL OPENING SIZES SHALL BE MINIMIZED AS NECESSARY TO MAKE THE UTILITY CONNECTION.
2. CONTRACTOR SHALL MAKE ALL CORE DRILLED OPENINGS WATERTIGHT WITH NON-SHRINK GROUT.
3. GROUT SHALL MEET THE REQUIREMENTS OF ASTM C 1107 FOR HYDRAULIC-CEMENT NON-SHRINK GROUT, HAVE A 25 TO 30 SECOND FLUID CONSISTENCY ACCORDING TO ASTM C 939, HAVE A MINIMUM WORKING TIME OF 30 MINUTES, HAVE MINIMUM COMPRESSIVE STRENGTH OF 7,500 PSI @ 28 DAYS WHEN PREPARED IN FLUID CONSISTENCY, AND NOT CONTAIN POWDERED ALUMINUM.

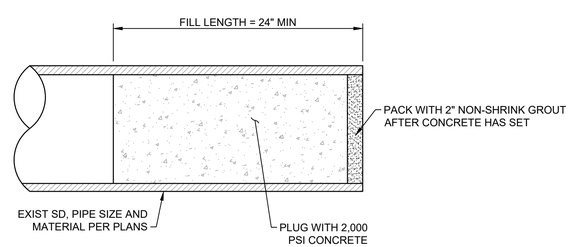
5 C-03 PIPE TO CATCH BASIN CONNECTOR
SCALE: NTS



NOTES:

1. SEE SPECS FOR FENCE MATERIAL, COATINGS, AND INSTALLATION REQUIREMENTS.
2. GATE TO BE INSTALLED WITH KEEPER TO SECURE IN OPEN POSITION.
3. GATES LESS THAN 8'-0" IN WIDTH SHALL BE SINGLE LEAF.
4. POST DIAMETER SHALL BE DEFERRED SUBMITTAL BY THE CONTRACTOR.

3 C-03 SINGLE LEAF SWING GATE
SCALE: NTS



4 C-01 PIPE PLUG
SCALE: NTS

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NO	REVISION	DATE	BY

SCALES
0 — 1"
0 — 25mm
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

DESIGNED RJA
DRAWN RJA
CHECKED BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

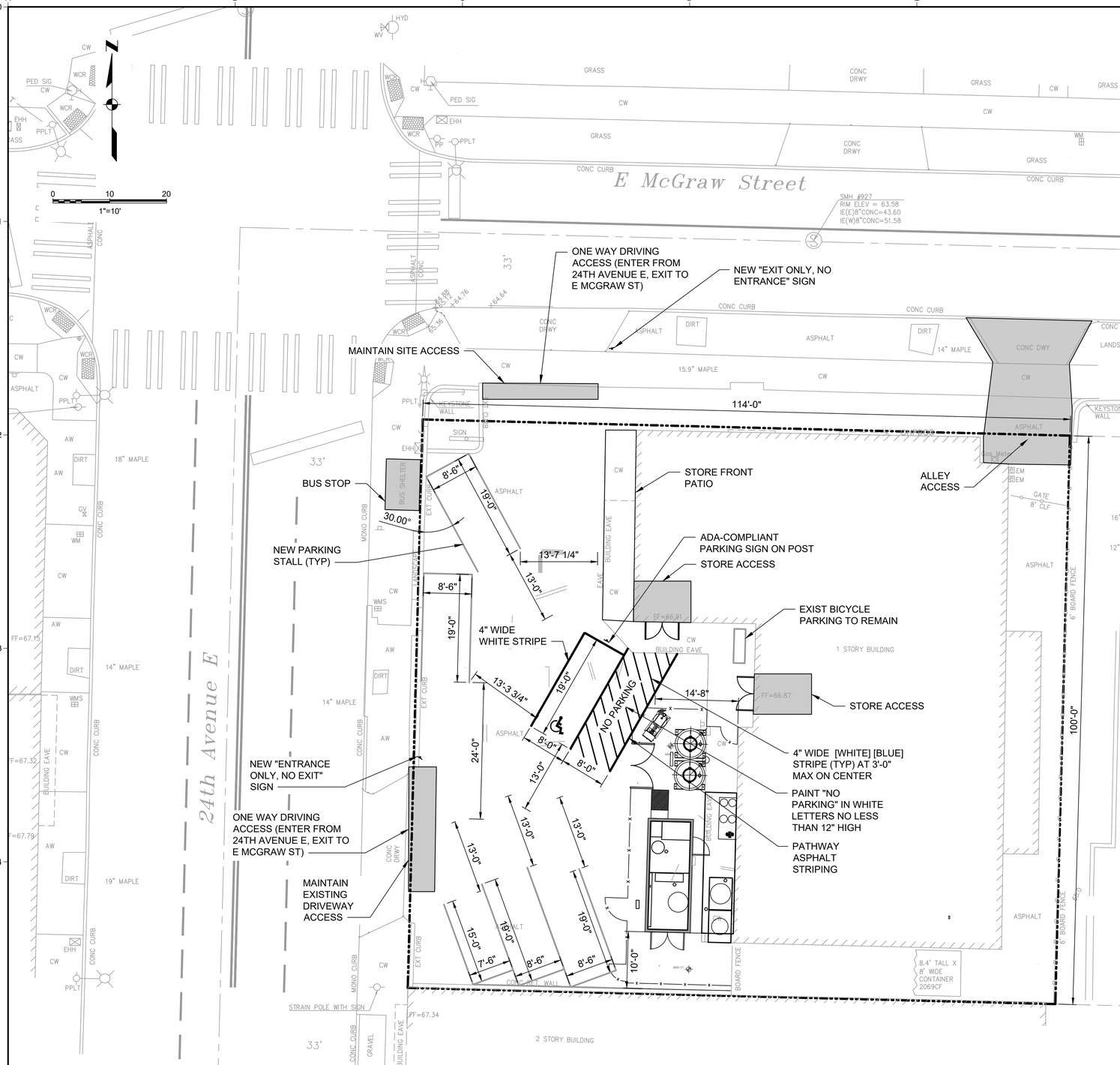
CIVIL SECTIONS AND DETAILS - II

SCALE
JOB NO 2196008.00
DATE MAY 2025
SHEET 10 OF 24
C-05

Plot Date: 5/6/2025 8:48 AM
User: RICHARD HILLS
File: \\Cjbrpal\projects\by\d0\k8\E2\4\A\f3\a0\b6\05-C-05.dwg
\\WA Department of Ecology\Projects\Circle K Cleanup_2196008.00\10-Design\10.06-Drawings\Civil\219600800-C-05

Plot Date: 5/6/2025 8:50 AM

User: RICHARD HILLS



GENERAL SHEET NOTES

FLOOR AREA RATIO PER SMC 23.47A.013:
SITE AREA: 11,400 S.F.
EXISTING BUILDING AREA: 4,770 S.F.
NEW CONTAINER AREA: 160 S.F.
TOTAL FLOOR AREA: 4,930 S.F.
BUILDING HEIGHT: 16'± (LESS THAN 30')

FAR PER TABLE A, SMC 23.47.013: 2.5
FAR RATIO: 4,930 / 11,400 = .433 < 2.5 - COMPLIES

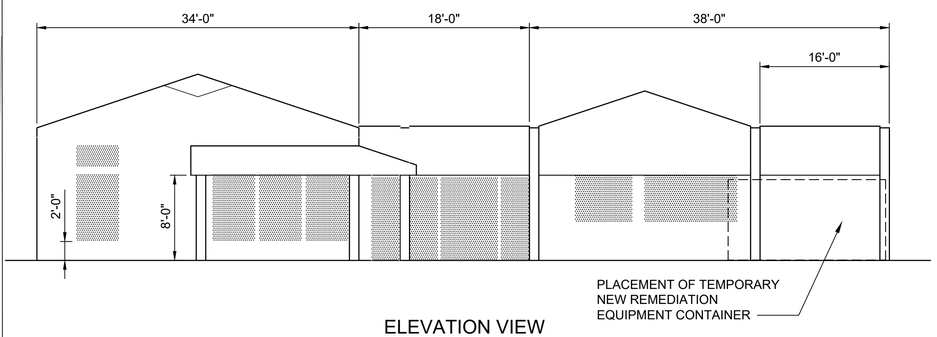
PARKING PER SMC 23.54.015
TOTAL FLOOR AREA: 4,930 S.F.
(LESS FLOOR AREA DISCOUNT PER SMC 23.54.015.D.1 OF 1,500 S.F.)
CALCULATED FLOOR AREA: 3,430 S.F.

REQUIRED PARKING PER TABLE A, SMC 23.54.015, USE B.10:
(1) SPACE PER 500 SQUARE FEET.
CALCULATED PARKING: 6.86; USE (7) STALLS
50% PARKING STALL REDUCTION PER SMC 23.54.020.F.2 = 3.5; USE (6) STALLS.

EXISTING NON-CONFORMING PARKING LOCATION PERMITTED UNDER 674948

EXISTING (1) LONG-TERM AND (1) SHORT-TERM BICYCLE PARKING AT BUILDING ENTRANCE TO REMAIN UNCHANGED. (SMC 23.54.015 TAB LE D, USE A.6)

SEATTLE ENERGY CODE (SEC):
PER SEC C402.1.2 EQUIPMENT BUILDINGS:
NEW CONTAINER IS TO BE CONDITIONED (HEAT ONLY, NO COOLING)
NEW CONTAINER AREA: 160 S.F.
NOT INTENDED FOR HUMAN OCCUPANCY
HEATING SYSTEM: 0.5 KW
HEATING THERMOSTAT SET POINT: NOT MORE THAN 50 DEGREES F.
AVERAGE WALL AND ROOF U-FACTOR: LESS THAN 0.200



ELEVATION VIEW
SCALE: NOT TO SCALE

SBC: 503.1.2 - BUILDINGS ON THE SAME LOT

THESE STRUCTURES WILL BE CONSIDERED AS PORTIONS OF ONE BUILDING PER 503.1.2.

AGGREGATE AREA OF ALL OCCUPANCIES (F-2, B, AND M): 4,930 SF
MINIMUM ALLOWABLE AREA PER TABLE 506.2 (NS, TYPE V B, F-2 OCCUPANCY): 13,000 SF
MINIMUM ALLOWABLE AREA PER TABLE 506.2 (NS, TYPE V B, B OCCUPANCY): 9,000 SF
MINIMUM ALLOWABLE AREA PER TABLE 506.2 (NS, TYPE V B, M OCCUPANCY): 9,000 SF

REQUIRED SEPARATION OF OCCUPANCIES PER TABLE 508.4:
F-2 AND B OCCUPANCIES - NO SEPARATION REQUIREMENT
B AND M OCCUPANCIES - NO SEPARATION REQUIREMENT
M AND F-2 OCCUPANCIES - NOT APPLICABLE AT THIS BUILDING

STREET LEVEL DEVELOPMENT STANDARDS PER SMC 23.47A.008:

A.2A ALL BUILDING STREET-FACING FACADES HAVE WINDOWS AND ENTRYWAYS.

A.2B SINGLE BLANK SEGMENT OF 16' LENGTH AT SOUTH END OF FACADE. NEW TEMPORARY CONTAINER TO BE PLACED IN THIS LOCATON.

A.2C BLANK FACADE SEGMENTS EQUAL 38.8 PERCENT OF THE WIDTH OF THE STRUCTURE FACADE ALONG THE STREET.

B.2A TRANSPARENT STREET FACING FACADE EQUALS 61.2 PERCENT.

B.3A NEW NON-RESIDENTIAL STRUCTURE (TEMPORARY CONTAINER) OF 160 S.F. IS LESS THAN 600 S.F. THRESHOLD FOR DEPTH PROVISION REQUIREMETS.

C.1 CURRENT BUILDING USE IS MINI-MARKET AND LAUNDRY.

C.4 OVERHEAD WEATHER PROTECTION IS PROVIDED ALONG 80 PERCENT OF THE STREET FRONTAGE OF THE STRUCTURE.

TABLE A FOR 23.471.008.C: TWO (2) SMALL COMMERCIAL SPACES ARE PROVIDED IN THE EXISTING 4,770 S.F. STRUCTURE

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NO	REVISION	DATE	BY
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SCALES
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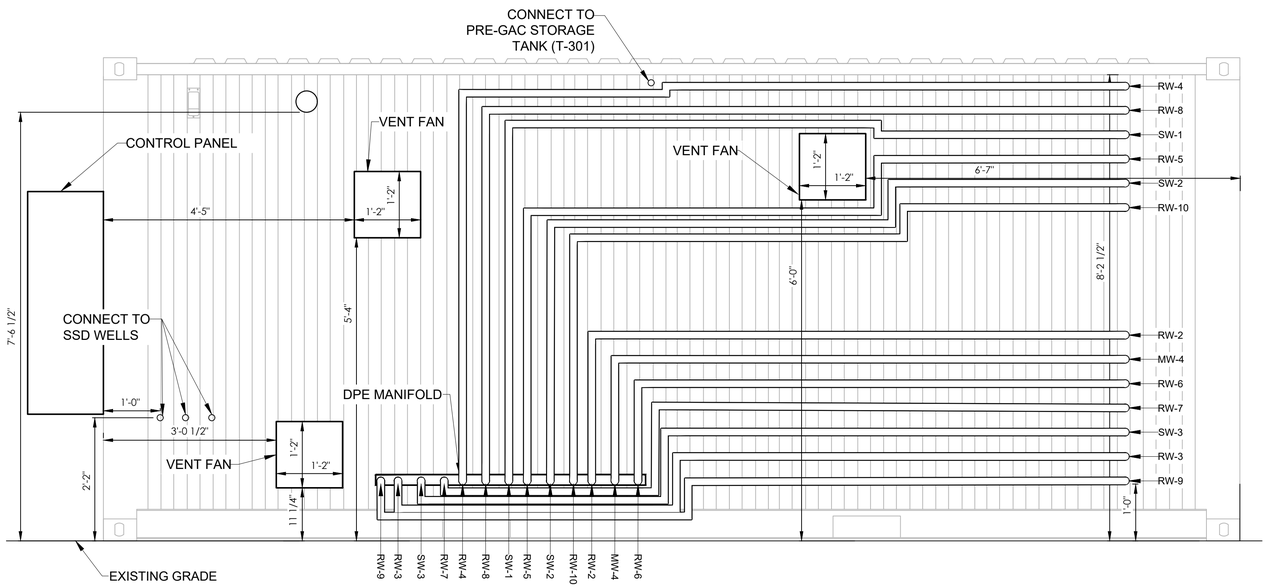
WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

SITE PLAN PARKING AREAS

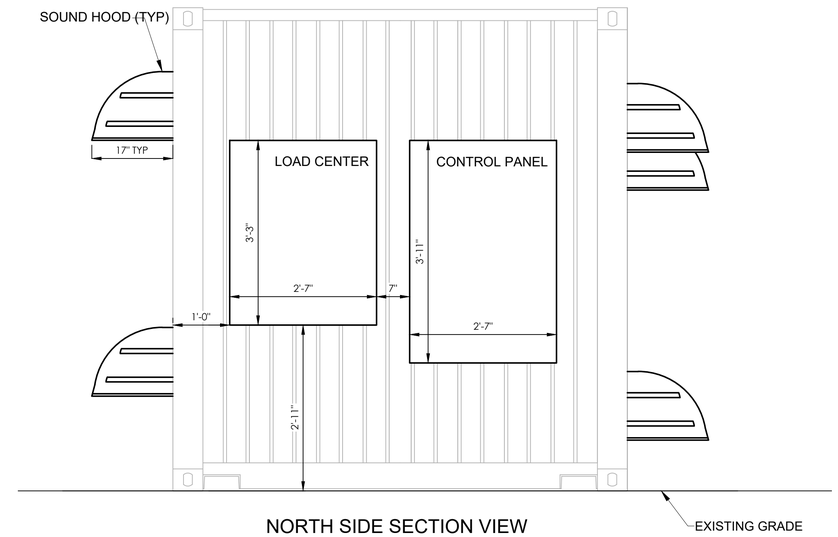
SCALE 1" = 10'
JOB NO 2196008.00
DATE MAY 2025
SHEET 11 OF 24
C-06

File: C:\bms\kjce-pw\d0181574\2196008\00-C-06.dwg



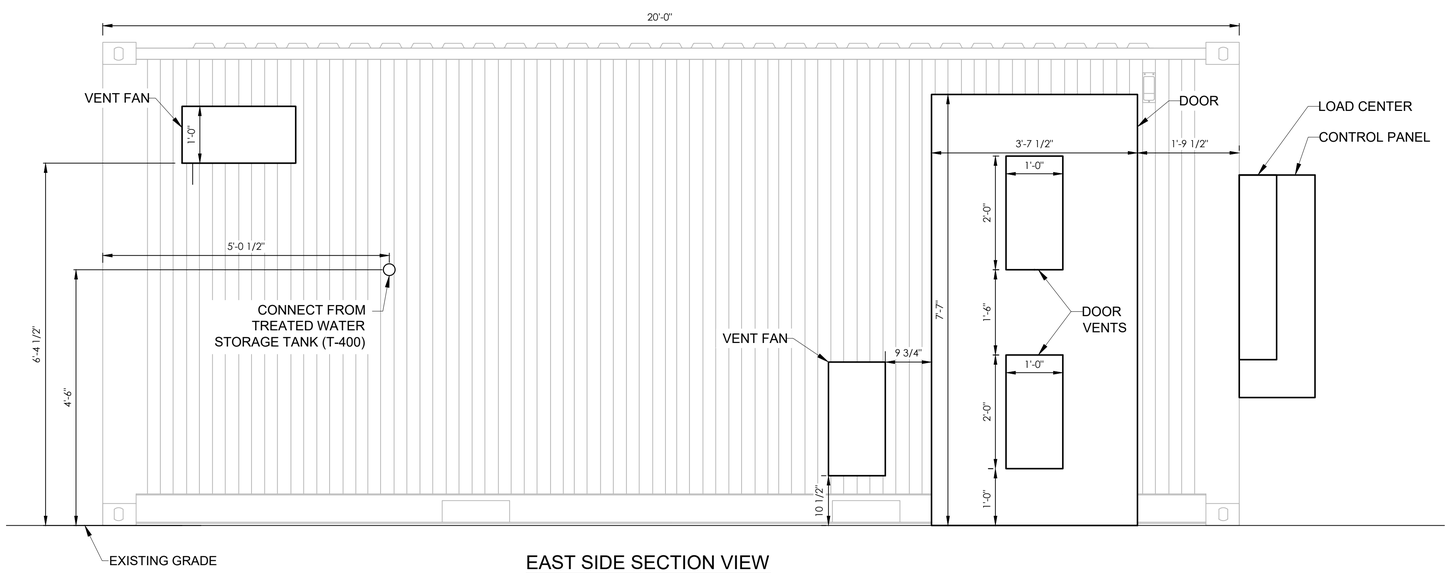
WEST SIDE SECTION VIEW

SCALE: 3/4" = 1'-0"



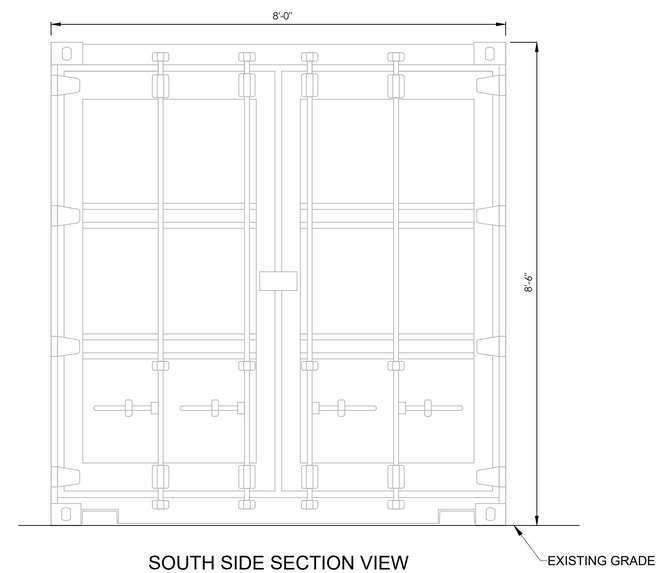
NORTH SIDE SECTION VIEW

SCALE: 3/4" = 1'-0"



EAST SIDE SECTION VIEW

SCALE: 3/4" = 1'-0"



SOUTH SIDE SECTION VIEW

SCALE: 3/4" = 1'-0"

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SCALES
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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

CONTAINER ELEVATION VIEWS

SCALE 1" = 10'
JOB NO 2196008.00
DATE MAY 2025
SHEET 12 OF 24
C-07

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File: C:\bms\kjce-pw\d0181574219600800-C-07.dwg

Plot Date: 5/9/2025 9:26 AM
User: RICARDO MEJIA
pw:\\kjce-pw.bentley.com:kjce-pw\Documents\Clients\WA Department of Ecology\Projects\Circle K Cleanup_2196008.00\10-Design\10.06-Drawings\Electrical\219600800-E-01

ABBREVIATIONS

'	FOOT, FEET
"	INCH, INCHES
#	NUMBER
%	PERCENT
&	AND
@	AT
±	APPROXIMATELY
<	LESS THAN
=	EQUALS
>	GREATER THAN
A	AMPERE(-S)
A/C	AIR CONDITIONING
A/D	ANALOG TO DIGITAL
A/M	AUTO/MANUAL
ABAN(-D)	ABANDON(-ED)
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFCI	ARC-FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AI	ANALOG INPUT
AIC	AMPERES INTERRUPTING CAPACITY
ANN	ANNUNCIATOR
ANT	ANTENNA
AO	ANALOG OUTPUT
APPROX	APPROXIMATE(-LY)
ARCH	ARCHITECT(-URAL)
AS	AMMETER SWITCH
ASD	ADJUSTABLE SPEED DRIVE (DC)
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AWG	AMERICAN WIRE GAGE
BATT	BATTERY
BC	BARE COPPER
BKR	BREAKER
C	CONDUCTOR, CONTACT
C/S	CONSTANT SPEED
CAB	CABINET
CALC(S)	CALCULATION(S)
CAT	CATEGORY
CB	CATCH BASIN
CCTV	CLOSED-CIRCUIT TELEVISION
CHEM	CHEMI(-CAL, -STRY)
CID1	CLASSIFICATION I, DIVISION 1
CID2	CLASSIFICATION I, DIVISION 2
CKT	CIRCUIT
CLR	CLEAR(-ANCE)
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CO	CONDUIT ONLY
COAX	COAXIAL
COM	COMMON
COMM	COMMUNICATION
COND	CONDUIT
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
CTRL	CONTROL
CU IN	CUBIC INCH(-ES)
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DEG	DEGREE(-S)
DEG C	DEGREES CELSIUS
DEG F	DEGREES FARENHEIT
DEMO	DEMOLISH
DI	DISCRETE INPUT
DIA	DIAMETER
DIAG	DIAGRAM
DISC	DISCONNECT
DISTR	DISTRIBUTION
DO	DISCRETE OUTPUT
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DR	DOOR
DTL(-S)	DETAIL(-S)
DUP	DUPLEX
EFFIC	EFFICIENCY
EFFL	EFFLUENT
ELEC	ELECTRIC(-AL)
ELEM	ELEMENTARY
EMERG	EMERGENCY
ENCL	ENCLOSURE
ENET	ETHERNET
ENGR	ENGINEER
EPA	ENVIRONMENTAL PROTECTION AGENCY
EQPM	EQUIPMENT
EST	ESTIMATE(-D)
E-STOP	EMERGENCY STOP
ETC	ET CETERA
ETM	ELAPSED TIME METER
EUSERC	ELECTRIC UTILITY SERVICE EQUIPMENT REQUIREMENTS COMMITTEE
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERNAL
FA	FIRE ALARM
FACIL	FACILIT(-Y, -IES)
FC	FAIL CLOSED
FDR	FEEDER
FIG	FIGURE
FLA	FULL LOAD AMPERES
FLEX	FLEXIBLE
FO	FIBER OPTIC, FAIL OPEN
FREQ	FREQUENCY
FT	FOOT, FEET
FU	FUSE
FUT	FUTURE
FVNR	FULL VOLTAGE, NON REVERSING
FVR	FULL VOLTAGE, REVERSING
FWD	FORWARD
G	GROUND (ELECTRICAL)
GAC	GRANULAR ACTIVATED CARBON
GAL	GALLON(-S)
GFCI	GROUND-FAULT CIRCUIT INTERRUPTER
GND	GROUND
GRS	GALVANIZED RIGID STEEL
H	HIGH, HEIGHT
HD	HEAT DETECTOR
HDPE	HIGH DENSITY POLYETHYLENE
HGR	HANGER
HH	HANDHOLE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTOMATIC
HOR	HAND-OFF-REMOTE
HP	HORSEPOWER
HR(S)	HOUR(-S)
HTR	HEATER
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HZ	HERTZ (CYCLES PER SECOND)
I&C	INSTRUMENTATION AND CONTROL
I/O	INPUT/OUTPUT
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IL	INDICATING LIGHT
IN	INCH(-ES)
INST	INSTANTANEOUS
INSTR	INSTRUMENT(-ATION)
IP	INTERNET PROTOCOL
IR	INFRARED
IS	INTRINSICALLY SAFE
ISA	INTERNATIONAL SOCIETY OF AUTOMATION
ISO	ISOLAT(-E, -ION)
ISR	INTRINSICALLY SAFE RELAY
JB	JUNCTION BOX
KA	KILOAMPERE(-S)
KCMIL	THOUSANDS OF CIRCULAR MILS
KHZ	KILOHERTZ
KV	KILOVOLT(-S)
KVA	KILOVOLT-AMPERE(-S)
KVAR	KILOVOLT-AMPERE(-S) REACTIVE
KVARH	KILOVOLT-AMPERE REACTIVE HOUR(-S)
KW	KILOWATT(-S)
KWH	KILOWATT HOUR(-S)
L	LENGTH, LINE
LA	LIGHTNING ARRESTER
LAN	LOCAL AREA NETWORK
LB(-S)	POUND(-S)
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LEL	LOWER EXPLOSIVE LIMIT
LOC	LOCATION
LOR	LOCAL-OFF-REMOTE
LOTO	LOCK-OUT, TAG-OUT
LP	LIGHTING PANELBOARD
L-R	LOCAL-REMOTE
LS	LIMIT SWITCH
LT	LIGHT
LTG	LIGHTING
LV	LOW VOLTAGE
mA	MILLIAMPERE(-S)
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MHZ	MEGAHERTZ
MIL(-S)	ONE-THOUSANDTH OF AN INCH
MIN	MINIMUM, MINUTE(-S)
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
MM	MULTIMODE
MOCP	MAXIMUM OVERCURRENT PROTECTION
MOD(-S)	MODIF(-Y, -ICATIONS)
MOV	MOTOR OPERATED VALVE
MT(-D, -G)	MOUNT(-ED, -ING)
MTR	MOTOR
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
N	NORTH, NEUTRAL
N/A	NOT APPLICABLE
NAOCL	SODIUM HYPOCHLORITE
NAOH	SODIUM HYDROXIDE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE (NFPA 70)
NECA	NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NETA	INTERNATIONAL ELECTRICAL TESTING ASSOCIATION
NFC	NOT FOR CONSTRUCTION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NH3	AMMONIA
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NORM	NORMAL
NTS	NOT TO SCALE
O/C	OPEN/CLOSE
O3	OZONE
ODP	OPEN DRIP PROOF
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OIT	OPERATOR INTERFACE TERMINAL
OL	THERMAL OVERLOAD RELAY
ORIG	ORIGINAL
OSC	OPEN/STOP/CLOSE
OT	OVER TEMPERATURE
P	POLE
PA	PUBLIC ADDRESS
PB	PULLBOX, PUSHBUTTON
PC(-S)	PIECE(-S), PHOTOCELL
PCC	POINT OF COMMON COUPLING
PE	PHOTOELECTRIC
PF	POWER FACTOR
PFR	POWER FACTOR RELAY
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PNL	PANEL
PNLBD	PANELBOARD
POE	POWER OVER ETHERNET
PP	POWER POLE
PRI	PRIMARY
PRV	PRESSURE RELIEF VALVE, PRESSURE REDUCING VALVE
PS	POWER SUPPLY
PT(-S)	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
PWR	POWER
R, RAD	RADIUS
RCPT	RECEPTACLE
RCT	REPEAT CYCLE TIMER
RIO	REMOTE INPUT/OUTPUT
RM	ROOM
RMT	REMOTE
RPM	REVOLUTIONS PER MINUTE
RST	RESET
RT	RESET TIMER
RTU	REMOTE TELEMETRY UNIT
RVSS	REDUCED VOLTAGE, SOLID STATE
S/S	START/STOP
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
SEC	SECONDARY
SER	SERVICE ENTRANCE RATED
SGNL	SIGNAL
(SH)	SHIELDED
SHT	SHEET
SM	SINGLEMODE
SP	SET POINT
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
SPEC(-S)	SPECIFICATION(-S)
SS	STAINLESS STEEL, SOLID STATE
STB	SHORTING TERMINAL BLOCK
STD(-S)	STANDARD(-S)
STL	STEEL
STP	SHIELDED TWISTED PAIR
STRC	STRUCTUR(-E, -AL)
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYNC	SYNCHRONIZING
T	TIME(-R)
TB	TERMINAL BLOCK
TC	TRAY CABLE
TCP	TRANSMISSION CONTROL PROTOCOL
TEFC	TOTALLY ENCLOSED FAN COOLED
TEL	TELEPHONE
TEMP	TEMPERATURE, TEMPORARY
TENV	TOTALLY ENCLOSED NON-VENTILATED
THRU	THROUGH
TOT	TOTAL, TOTALIZE(R)
TSTAT	THERMOSTAT
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UNKN	UNKNOWN
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
UV	ULTRAVIOLET
V	VOLTS
V/S	VARIABLE SPEED
VA	VOLT-AMPERES
VAR	VARIES, VARIABLE, VOLT-AMPERES REACTIVE
VCP	VENDOR CONTROL PANEL
VFD	VARIABLE FREQUENCY DRIVE (AC)
VFI	VACUUM FAULT INTERRUPTER
VS	VOLTMETER SWITCH
W	WIDE, WIDTH, WIRE, WATTS, WEST
W/	WITH
W/O	WITHOUT
WAN	WIDE AREA NETWORK
WHDM	WATT-HOUR DEMAND METER
WHM	WATT-HOUR METER
WP	WEATHERPROOF, WEATHER PROTECTED
WR	WEATHER RESISTANT
WTP	WATER TREATMENT PLANT
WTR	WATER
WW	WASTEWATER
WWTP	WASTEWATER TREATMENT PLANT
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

ELECTRICAL NOTES

1. THIS IS A GENERALIZED LEGEND SHEET. THIS CONTRACT MAY NOT USE ALL INFORMATION SHOWN.
2. THE INSTALLATION OF ALL EQUIPMENT, RACEWAYS, CONDUCTORS, AND CABLES SHOWN ON THESE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN THE LATEST EDITIONS OF THE NATIONAL ELECTRICAL CODE AND ALL APPLICABLE LOCAL CODES AND UTILITY COMPANY STANDARDS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE UTILITY COMPANY AND VERIFY THEIR REQUIREMENTS.
3. ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE PROJECT TO VERIFY THE SCOPE OF WORK WITH FIELD CONDITIONS. PARTICULAR ATTENTION SHOULD BE GIVEN TO NEW CONDUIT RUNS IN EXISTING BUILDINGS.
4. NOTIFY THE ENGINEER IMMEDIATELY IN WRITING IF CONFLICTS IN EQUIPMENT LOCATIONS ARE DISCOVERED OR IF PROBLEMS ARISE DUE TO FIELD CONDITIONS, LACK OF INFORMATION OR ANY OTHER REASON. NO PAYMENT WILL BE MADE FOR CHANGES WHICH HAVE NOT BEEN FAVORABLY REVIEWED BY THE ENGINEER.
5. CONDUIT ROUTING SHOWN ON PLAN DRAWINGS IS DIAGRAMMATIC ONLY. RACEWAYS SHALL BE INSTALLED IN A MANNER TO PREVENT CONFLICTS WITH EQUIPMENT OR STRUCTURAL CONDITIONS. EXPOSED RACEWAYS SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO BEAMS AND WALLS. REFER ALSO TO THE CONTRACT SPECIFICATIONS.
6. VERIFY THE EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES TO ALL EQUIPMENT AGAINST APPROVED SHOP DRAWINGS BEFORE STUBBING UP CONDUITS. CONDUIT STUB-UPS SHALL NOT BE MORE THAN 6 INCHES FROM THE CENTERLINE OF TERMINAL BOXES.
7. CONNECTIONS BETWEEN RIGID CONDUIT AND MOTOR TERMINAL BOXES OR SIMILAR EQUIPMENT SUBJECT TO VIBRATION SHALL BE FLEXIBLE LIQUID-TIGHT CONDUIT.
8. CONDUITS SHALL BE TERMINATED SO AS TO PERMIT NEAT CONNECTION TO MOTORS AND OTHER EQUIPMENT.
9. CONDUITS FOR FUTURE EQUIPMENT OR EXTENSIONS SHALL BE TERMINATED AS SHOWN IN THE DETAILS OR AS SPECIFIED.
10. LOCATIONS OF PULLBOXES ARE APPROXIMATE. COORDINATE EXACT LOCATION IN THE FIELD TO ENSURE 6 INCHES (MINIMUM) CLEARANCE FROM MECHANICAL PIPING FLOW LINES.
11. ONLY MAJOR PULLBOXES ARE SHOWN. PROVIDE ADDITIONAL PULLBOXES WHERE REQUIRED TO MAKE A WORKABLE INSTALLATION.
12. PERFORM WORK IN ACCORDANCE WITH THE DETAILS WHETHER OR NOT THEY ARE REFERENCED ON THE DRAWINGS.
13. VERIFY ALL COLOR REQUIREMENTS BEFORE ORDERING MATERIALS.
14. THE WIRING DIAGRAMS, QUANTITY AND SIZE OF WIRES AND CONDUIT REPRESENT A SUGGESTED ARRANGEMENT BASED UPON SELECTED STANDARD COMPONENTS OF ELECTRICAL EQUIPMENT. MODIFICATIONS ACCEPTABLE TO THE ENGINEER MAY BE MADE BY THE CONTRACTOR TO ACCOMMODATE EQUIPMENT ACTUALLY PURCHASED. THE BASIC SEQUENCE AND METHOD OF CONTROL MUST BE MAINTAINED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS.
15. REFER TO THE MECHANICAL DRAWINGS FOR CERTAIN CONTROL DIAGRAMS, EXACT LOCATIONS OF MECHANICAL EQUIPMENT, AND FOR CERTAIN CONNECTIONS TO BE MADE TO ELECTRICAL CIRCUITS.
16. CONDUIT SIZE AND FILL SHALL BE AS INDICATED ON THE CONDUIT AND CABLE SCHEDULES. WHERE NO SIZE IS SHOWN, THE CONDUIT SHALL BE SIZED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE ADOPTED BY THE AUTHORITY HAVING JURISDICTION. MINIMUM CONDUIT SIZE IS 3/4 INCH, EXCEPT WHERE ENCASED OR BURIED. MINIMUM ENCASED OR BURIED CONDUIT SIZE IS 1 INCH.
17. PROVIDE EXPANSION OR EXPANSION AND DEFLECTION FITTINGS FOR ALL CONDUIT RUNS CROSSING EXPANSION JOINTS. REFER TO THE STRUCTURAL DRAWINGS FOR LOCATIONS OF EXPANSION JOINTS.
18. PROVIDE 3/16 INCH NYLON PULL ROPE IN EACH EMPTY CONDUIT.
19. FOR LIGHTING AND RECEPTACLE SYSTEMS, ONLY CIRCUIT NUMBERS ARE SHOWN. PROVIDE ALL NECESSARY CONDUITS, WIRES, FITTINGS, JUNCTION BOXES AND NECESSARY COMPONENTS SHOWN OR NOT SHOWN ON THE DRAWINGS, TO MAKE THE ELECTRICAL INSTALLATION COMPLETE AND OPERATIONAL. SIZE CONDUITS AND WIRING IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. ALL CONDUIT RUNS SHALL BE CONCEALED UNLESS INDICATED OTHERWISE. CIRCUIT LOADING SHALL BE AS INDICATED IN THE PANEL SCHEDULES. ALL LIGHTING AND RECEPTACLE CIRCUITS SHALL INCLUDE GROUND WIRE.
20. MOUNT LUMINAIRES ACCORDING TO THE MOUNTING HEIGHT GIVEN ON THE DRAWINGS, WITH THE DISTANCE BEING MEASURED FROM THE BOTTOM OF THE LUMINAIRE TO THE FINISHED FLOOR. PROVIDE APPROPRIATE BRACKETS AND HARDWARE FOR MOUNTING.
21. ALL RECEPTACLES IN OUTDOOR AND ANTICIPATED WET AREAS SHALL BE GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLES WITH WEATHERPROOF WHILE IN-USE COVERS.
22. ALL FREE STANDING ELECTRICAL EQUIPMENT AND CONTROL PANELS SHALL BE SET ON CONCRETE HOUSEKEEPING PADS WITH LEVELING CHANNELS EMBEDDED IN THE PAD.
23. ALL PANELBOARDS SHALL BE MOUNTED SO THAT THE DISTANCE FROM THE CENTERLINE OF THE TOP CIRCUIT BREAKER OPERATING HANDLE IN THE UPPERMOST POSITION TO THE FINISHED FLOOR SHALL NOT EXCEED 6'-7".
24. ALL SURFACE MOUNTED PANELS AND PANELBOARDS ON THE INTERIOR OF EXTERIOR WALLS ABOVE GRADE OR IN OTHER LOCATIONS CONSIDERED DAMP OR WET SHALL BE MOUNTED SO AS TO MAINTAIN A 1/4 INCH (MINIMUM) AIR SPACE BETWEEN THE ENCLOSURE AND THE WALL.
25. PROVIDE LOCKOUTS IN STRICT ACCORDANCE WITH OWNER'S REQUIREMENTS.
26. REFER TO THE SINGLE LINE DIAGRAMS, EQUIPMENT ELEVATIONS, PANELBOARD SCHEDULES, AND COMPONENT/DEVICE LABELS IN THE CONTROL SCHEMATICS FOR NAMEPLATE INFORMATION. SEE THE CONTRACT SPECIFICATIONS FOR NAMEPLATE SIZE, COLOR, MATERIAL, AND PLACEMENT REQUIREMENTS.
27. "NORMAL" STATUS OF SWITCHES OR CONTACTS SHOWN IN CONTROL SCHEMATICS IS THE SHELF POSITION.

ELECTRICAL DEMOLITION NOTES

1. BIDDING CONTRACTORS SHALL VISIT THE SITE TO ASSESS THE SCOPE OF DEMOLITION, REMOVAL AND MODIFICATION WORK.
2. ELECTRICAL CONTRACTOR AND THE OWNER SHALL DE-ENERGIZE ALL WIRING PRIOR TO REMOVAL OF EQUIPMENT, DEVICES, MOTORS INSTRUMENTATION, CONTROL PANELS, ETC. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE OWNER.
3. EXPOSED RACEWAYS: REMOVE CONDUIT, WIRES, AND BOXES. PATCH TO MATCH EXISTING. FINISH ALL OPENINGS LEFT IN WALLS AND FLOORS.
4. CONCEALED CONDUITS IN THE SLAB: REMOVE EXISTING WIRES TO THE EXTENT POSSIBLE AND ABANDON CONDUITS IN THE SLAB. CUT CONDUIT FLUSH AND PATCH THE FLOOR TO MATCH EXISTING.
5. CONTROL PANELS: ELECTRICAL CONTRACTOR SHALL DE-ENERGIZE AND REMOVE ALL CONDUIT AND WIRE AS DESCRIBED IN NOTES 3 AND 4. CONTRACTOR SHALL REMOVE PANELS AS NOTED ON THE CONTRACT DRAWINGS.
6. MOTOR CONTROL CENTERS: DISCONNECT AND REMOVE ALL CONDUITS AND WIRING TO EXISTING STARTERS AND/OR BREAKERS, PANELBOARDS, BRANCH CIRCUITS, INTERLOCKS AND STATUS WIRING WITHIN MCC.
7. REFER TO THE CONTRACT SPECIFICATIONS FOR ADDITIONAL ELECTRICAL DEMOLITION AND REMOVAL REQUIREMENTS.

RECORD DRAWING

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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

GENERAL ELECTRICAL ABBREVIATIONS AND NOTES

SCALE AS SHOWN
JOB NO 2196008.00
DATE MAY 2025
SHEET 13 OF 24
E-01

SINGLE LINE DIAGRAM SYMBOLS

- BUS
- BUS (EXISTING)
- FEEDER
- FEEDER (EXISTING)
- X / 100A / 70A — AMPS FRAME; LOW VOLTAGE THERMAL-MAGNETIC CIRCUIT BREAKER; 3-POLE EXCEPT WHERE NOTED; X = CIRCUIT NUMBER OR LOCATION (SEE ELEVATION); AMPS TRIP
- X / 100A / MCP — AMPS CONTINUOUS; LOW VOLTAGE MOTOR CIRCUIT PROTECTOR; 3-POLE EXCEPT WHERE NOTED; X = CIRCUIT NUMBER OR LOCATION (SEE ELEVATION)
- 400AF / 200AT — LOW VOLTAGE DRAWOUT CIRCUIT BREAKER INCLUDING L-S-I-G SETTINGS UNLESS NOTED OTHERWISE; L = LONG TIME; S = SHORT TIME; I = INSTANTANEOUS; G = GROUND FAULT
- 52 — MEDIUM VOLTAGE DRAWOUT CIRCUIT BREAKER
- FVNR # — FULL VOLTAGE COMBINATION STARTER WITH CONTROL POWER TRANSFORMER; # = NEMA SIZE; FVR = REVERSING TYPE; FVNR = NON-REVERSING TYPE
- RVSS A — REDUCED VOLTAGE STARTER WITH CONTROL POWER TRANSFORMER RATING IN AMPERES AS INDICATED; RVSS = SOLID STATE TYPE; RVAT = AUTO-TRANSFORMER TYPE
- VFD A — VARIABLE FREQUENCY DRIVE WITH CONTROL POWER TRANSFORMER RATING IN AMPERES AS INDICATED
- 30A — DISCONNECT SWITCH 3 POLE EXCEPT WHERE NOTED RATING IN AMPERES AS INDICATED
- 30A / 25A — FUSED DISCONNECT SWITCH 3 POLE EXCEPT WHERE NOTED RATINGS IN AMPERES AS INDICATED
- 480:120 (3) — POTENTIAL TRANSFORMER RATIO AND NUMBER OF PT'S AS INDICATED
- (3) — CURRENT TRANSFORMER RATIO AND NUMBER OF CT'S AS INDICATED
- METERING DEVICE; * = METER TYPE; WHM = WATT HOUR METER; WM = WATT METER; AM = AMMETER; VM = VOLTMETER; PFM = POWER FACTOR METER; SSM = SOLID STATE METER
- # — RELAY DEVICE FUNCTION # PER ANSI NUMBER C37.2

15/25	AUTO SYNCHRONIZER RELAY	50/51N	INST/TIME RESIDUALLY CONNECTED GND OVERCURRENT
25	SYNCHRONISM CHECK RELAY	51G	GND FAULT RELAY
27	UNDERVOLTAGE RELAY	52	POWER CIRCUIT BREAKER
27/59	UNDER/OVERVOLTAGE RELAY	55	POWER FACTOR TRIP RELAY
32	DIRECTIONAL POWER RELAY	60	VOLTAGE BALANCE
37	UNDERCURRENT RELAY	62	TIME DELAY
38	HIGH TEMP (BEARING)	65	GOVERNOR LOAD SHARING/SOFT LANDING CONTROL
39	VIBRATION RELAY		
40	LOSS OF FIELD/UNDER EXCITATION RELAY	66	TIME BETWEEN STARTS RELAY
		67	DIRECTIONAL REVERSE VAR/KW RELAY
41	FIELD CONTACTOR		
43	SELECTOR SWITCH	71L	LOW OIL LEVEL RELAY
46	CURRENT IMBALANCE RELAY	81O/U	OVER/UNDER FREQUENCY RELAY
47	PHASE SEQUENCE/FAILURE RELAY	83	CONTROL POWER TRANSFORMER
		86	UTILITY LOCKOUT RELAY
48	GROUND FAULT INCOMPLETE SEQUENCE RELAY	87TL	TRANSFORMER DIFFERENTIAL RELAY
49	HIGH TEMP (OIL OR STATOR)	87M	MOTOR DIFFERENTIAL RELAY
50/51	INST/TIME OVERCURRENT RELAY	90	VAR/PF AND CROSS CURRENT COMPENSATION CONTROLLER
50/51G	INST/TIME DIRECTLY CONNECTED GND OVERCURRENT RELAY		

- K — KEY INTERLOCK
- ST — SHUNT TRIP
- SSMP — SOLID STATE MOTOR PROTECTIVE DEVICE
- SPD — SURGE PROTECTIVE DEVICE
- EARTH GROUND CONNECTION
- LIGHTNING ARRESTOR AND SURGE CAPACITOR
- FLA / HP — MOTOR HORSEPOWER AND FULL LOAD AMPERES AS INDICATED
- # KW — A — PACKAGED EQUIPMENT LOAD (IN KW OR KVA) AND AMPERES AS INDICATED
- MOV — ELECTRICAL MOTOR OPERATED VALVE WITH INTEGRAL REVERSING STARTER
- TERMINATOR / POTHEAD
- POWER OR DISTRIBUTION TRANSFORMER CONFIGURATION AND RATING AS INDICATED
- DELTA-WYE
- DELTA-WYE GROUNDED
- DELTA-DELTA
- GEN — GENERATOR RATINGS AS INDICATED
- AUTOMATIC OR MANUAL TRANSFER SWITCH RATING AND CONFIGURATION AS INDICATED
- 5 — CAPACITOR RATING IN KVAR AS INDICATED
- A / SEC — NEUTRAL GROUNDING RESISTOR CURRENT RATING IN AMPERES AS NOTED TIME RATING IN SECONDS AS NOTED
- # — CONTACTOR NUMBER INDICATES NEMA SIZE
- OVERLOAD (THERMAL OR SOLID STATE)
- 5A — FUSE SIZE AS INDICATED
- AS — AMMETER SWITCH
- VS — VOLTMETER SWITCH
- RECEPTACLE, 120V
- SPECIAL RECEPTACLE, 208V OR 240V, 1-PHASE
- SPECIAL/WELDING RECEPTACLE, 208V OR 240V, 3-PHASE
- SPECIAL RECEPTACLE, 480V, 3-PHASE

CONTROL SCHEMATIC SYMBOLS

- CONDUCTORS - NOT CONNECTED
- CONDUCTORS - CONNECTED
- TERMINAL
- ** / # — CONTROL DEVICE COIL; ** = TYPE; CR = CONTROL RELAY; TD = TIME DELAY RELAY; ISR = INTRINSICALLY SAFE RELAY; PC = PHOTOCELL
- CR 1 — XXXX, XXXX — NORMALLY OPEN CONTACT LINE REFERENCE; NORMALLY CLOSED CONTACT LINE REFERENCE
- SV-# — SOLENOID COIL
- CR# CR# — CONTACT NORMALLY OPEN / CLOSED
- MCP / 5A — CIRCUIT BREAKER OR MCP AS NOTED 1-POLE / 3-POLE
- OL — OVERLOAD (THERMAL OR SOLID STATE)
- DISCONNECT SWITCH 1-POLE / 3-POLE
- M — MOTOR
- CONTROL POWER TRANSFORMER
- BATTERY
- 5A — FUSE RATING IN AMPERES
- EARTH GROUND CONNECTION
- CHASSIS GROUND CONNECTION (NOT NECESSARILY EARTH GROUNDED)
- DI — DIGITAL INPUT TO PLC/RTU/DCS
- DIGITAL OUTPUT FROM PLC/RTU/DCS NORMALLY OPEN
- DIGITAL OUTPUT FROM PLC/RTU/DCS NORMALLY CLOSED
- AI — ANALOG INPUT TO PLC/RTU/DCS 4-20 mA (UNLESS INDICATED OTHERWISE)
- AO — ANALOG OUTPUT FROM PLC/RTU/DCS 4-20 mA (UNLESS INDICATED OTHERWISE)
- SINGLE POLE SWITCH NORMALLY OPEN / CLOSED
- H O A / XOO / OOX — THREE-POSITION SELECTOR SWITCH; X: INDICATES CONTACTS CLOSED; H-O-A: HAND-OFF-AUTO; L-O-R: LOCAL-OFF-REMOTE; O-S-C: OPEN-STOP-CLOSE
- L R / XOO / OOX — TWO-POSITION SELECTOR SWITCH; X: INDICATES CONTACTS CLOSED; L-R: LOCAL-REMOTE; O-C: OPEN-CLOSE; A-M: AUTO-MANUAL
- O S C / XOO / OOX — THREE-POSITION SELECTOR SWITCH WITH SPRING-RETURN MOMENTARY CONTACT
- E-STOP E-STOP — EMERGENCY PUSHBUTTON NORMALLY OPEN / CLOSED
- PUSHBUTTON NORMALLY OPEN / CLOSED
- MULTI-POSITION SELECTOR SWITCH
- X — PUSH-TO-TEST INDICATING LIGHT; X = COLOR; A = AMBER; B = BLUE; G = GREEN; R = RED; W = WHITE
- X — INDICATING LIGHT
- ETM — ELAPSED TIME METER
- BUZZER
- BELL
- HORN
- RESISTANCE TEMPERATURE DETECTOR (RTD)
- HEATER
- COMMUNICATION JACK (ETHERNET UNLESS INDICATED OTHERWISE)
- RECEPTACLE, 120V
- 2.0Ω — NEUTRAL GROUNDING RESISTOR
- 1 — LOCATION SYMBOL; LEGEND SHOWN ON SCHEMATIC DRAWINGS; ALL DEVICES ARE LOCATED IN THE MCC UNLESS INDICATED OTHERWISE
- POTENTIOMETER
- REACTOR (LINE OR LOAD DEPENDING ON PLACEMENT)

SENSING SWITCHES		
CLOSE ON		SENSED VARIABLE
RISING	FALLING	
FS	FS	FLOW
LS	LS	LEVEL
PS	PS	PRESSURE
TS	TS	TEMPERATURE
LIMIT SWITCHES		
ZS	NORMALLY OPEN,CLOSE ON REACHING LIMIT	
ZS	NORMALLY CLOSED, OPEN ON REACHING LIMIT	
TORQUE SWITCH		
	NORMALLY CLOSED, OPEN ON INCREASING TORQUE	

TIMED CONTACTS			
SYMBOL	NORMAL	OPEN TO CLOSED	CLOSED TO OPEN
TR	OPEN	DELAYED	INSTANTANEOUS
TR	CLOSED	INSTANTANEOUS	DELAYED
TR	OPEN	INSTANTANEOUS	DELAYED
TR	CLOSED	DELAYED	INSTANTANEOUS

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BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON
Kennedy Jenks

GENERAL ELECTRICAL LEGEND - I

SCALE: AS SHOWN
JOB NO: 2196008.00
DATE: MAY 2025
SHEET 14 OF 24
E-02

Plot Date: 5/9/2025 9:25 AM
User: RICARDO MEJIA
pw:\\kjce-pw.bentley.com:kjce-pw\Documents\Clients\WA Department of Ecology\Projects\Circle K Cleanup_2196008.00\10-Design\10.06-Drawings\Electrical\219600800-E-02

PLAN SYMBOLS

CONDUIT AND RACEWAYS

- CONDUIT - MULTIPLE IN DUCT BANK
- MULTIPLE CONDUIT RUN
- CONDUIT - ENCASED OR UNDERGROUND
- CONDUIT - EXPOSED OR CONCEALED
- P-135 — CALLOUT INDICATING CONDUIT PER SCHEDULE
- HOME RUN TO PANELBOARD OR AS INDICATED (3/4 " CONDUIT, 2 #12, 1 #12 GND UNLESS INDICATED OTHERWISE)
- FLEXIBLE CONDUIT
- CONDUIT RUN, CONTINUES ON SAME SHEET OR AS NOTED
- CONDUIT - CAPPED OR SEALED
- OPEN CIRCLE DENOTES UPWARD CONDUIT RISER
- SEMI CIRCLE DENOTES DOWNWARD CONDUIT RISER
- J — JUNCTION BOX
- HH-# — UNDERGROUND RACEWAY HANDHOLE DIMENSIONS AS NOTED
- MH-# — UNDERGROUND RACEWAY MANHOLE DIMENSIONS AS NOTED

EQUIPMENT

- M — MOTOR
- PANEL OR CABINET - AS LABELED SWBD, SWGR, MCC, LP, PNLBD, PLC, ETC

GROUNDING

- BARE COPPER GROUND TO GROUND WIRE IN SLAB, OR UNDERGROUND GROUND GRID, SIZE AS NOTED
- GROUND CONNECTION - BOLTED
- GROUND CONNECTION - EXOTHERMICALLY WELDED
- GROUND ROD - IN WELL WITH BOX
- GROUND ROD - BURIED

FIRE PROTECTION

- F — FIRE ALARM PULL STATION
- F — FIRE ALARM STROBE
- F — FIRE ALARM HORN
- F — FIRE ALARM HORN/STROBE
- SD — SMOKE DETECTOR
- HD — HEAT DETECTOR

LIGHTING

- A / * — LUMINAIRE CALLOUT
  A = LUMINAIRE TYPE
  * = APPROXIMATE MOUNTING HEIGHT AFF
  CLG = CEILING MOUNT
  (SEE LUMINAIRE SCHEDULE FOR MORE DETAILS)
- X-#a — LUMINAIRE - STRIP OR TROFFER TYPE (SWITCHED/UNSWITCHED)
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  a = SWITCH DESIGNATION
- WALL MOUNTED LUMINAIRE (SWITCHED/UNSWITCHED)
- PENDANT/CEILING MOUNTED LUMINAIRE (SWITCHED/UNSWITCHED)
- POLE, BRACKET, ARM, AND MOUNTED LUMINAIRE
- RECESSED CAN LUMINAIRE (SWITCHED/UNSWITCHED)
- EMERGENCY LUMINAIRE WITH SELF CONTAINED BATTERY
- WALL/CEILING MOUNTED EXIT LIGHT DIRECTIONAL ARROW WHERE INDICATED, SHADED AREA INDICATES ILLUMINATED FACE
- $ X-#a * — LIGHT SWITCH
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  a = SWITCH DESIGNATION
  * = SWITCH TYPE
  1 1 WAY
  3 3 WAY
  4 4 WAY
  D DIMMER
- M — MOTION SENSOR
- O — OCCUPANCY SENSOR
- PC — PHOTOCELL
- TC — TIME CLOCK

RECEPTACLES

- X-# * — DUPLEX RECEPTACLE, 120V, WALL MOUNT NEMA 5-20R CONFIGURATION
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  * = RECEPTACLE TYPE
  WP WEATHERPROOF
  XP EXPLOSION PROOF
  GFCI GROUND FAULT CIRCUIT INTERRUPTER
- X-# * — DUPLEX RECEPTACLE, 120V, FLOOR MOUNT NEMA 5-20R CONFIGURATION
- X-# A — SINGLE SPECIAL RECEPTACLE, 208V OR 240V, 1-PHASE
  X = PANEL DESIGNATION
  # = CIRCUIT NUMBER
  A = AMPERAGE
- X-# A — SINGLE SPECIAL/WELDING RECEPTACLE, 208V OR 240V, 3-PHASE
  X = PANEL DESIGNATION
  # = CIRCUIT NUMBER
  A = AMPERAGE
- X-# A — SINGLE SPECIAL RECEPTACLE, 480V, 3-PHASE
  X = PANEL DESIGNATION
  # = CIRCUIT NUMBER
  A = AMPERAGE

SECURITY AND COMMUNICATION

- ANTENNA
- * VC — VIDEO CAMERA
  * = TYPE
  F FIXED
  PTZ PAN-TILT-ZOOM
  360 360 DEGREE FIXED
- * — SECURITY ACCESS DEVICE
  * = TYPE
  CR CARD READER
  KS KEY SWITCH
  KP KEYPAD
  RF RADIO FREQUENCY ID
- TELEPHONE OUTLET WALL MOUNTED/FLOOR MOUNTED
- DATA OUTLET WALL MOUNTED/FLOOR MOUNTED
- TELEPHONE/DATA COMBINATION OUTLET WALL MOUNTED/FLOOR MOUNTED
- TV — TELEVISION ANTENNA/CABLE OUTLET

MISCELLANEOUS

- DISCONNECT SAFETY SWITCH
- INSTRUMENT
- $ X-# * — SWITCH - SPECIAL PURPOSE
  X = LIGHTING PANEL DESIGNATION
  # = CIRCUIT NUMBER
  * = SWITCH TYPE
  M MOTOR RATED
  K KEY OPERATED
  T TIMER
- T — THERMOSTAT

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BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

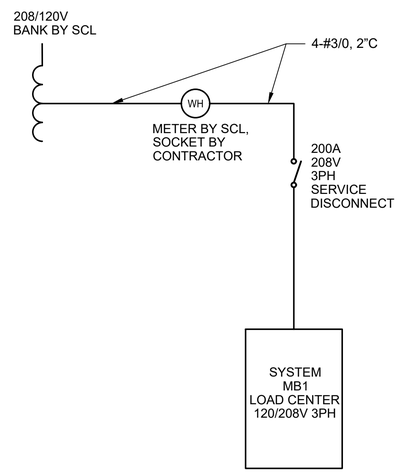
GENERAL ELECTRICAL LEGEND - II

SCALE: AS SHOWN
JOB NO: 2196008.00
DATE: MAY 2025
SHEET 15 OF 24
E-03

Plot Date: 5/9/2025 9:25 AM
User: RICARDO MEJIA
pw:\\kjce-pw.bentley.com:kjce-pw\Documents\Clients\WA Department of Ecology\Projects\Circle K Cleanup_2196008.00\10-Design\10.06-Drawings\Electrical\219600800-E-03

GENERAL SHEET NOTES

1. ELECTRICAL LOADS ARE DOCUMENTED ON CP-1.



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SEATTLE, WASHINGTON

Kennedy Jenks

ELECTRICAL
PANEL SCHEDULE AND THREE LINE DIAGRAM

SCALE AS SHOWN
JOB NO 2196008.00
DATE MAY 2025
SHEET 16 OF 24
E-04

Plot Date: 5/9/2025 9:23 AM
User: RICARDO MEJIA
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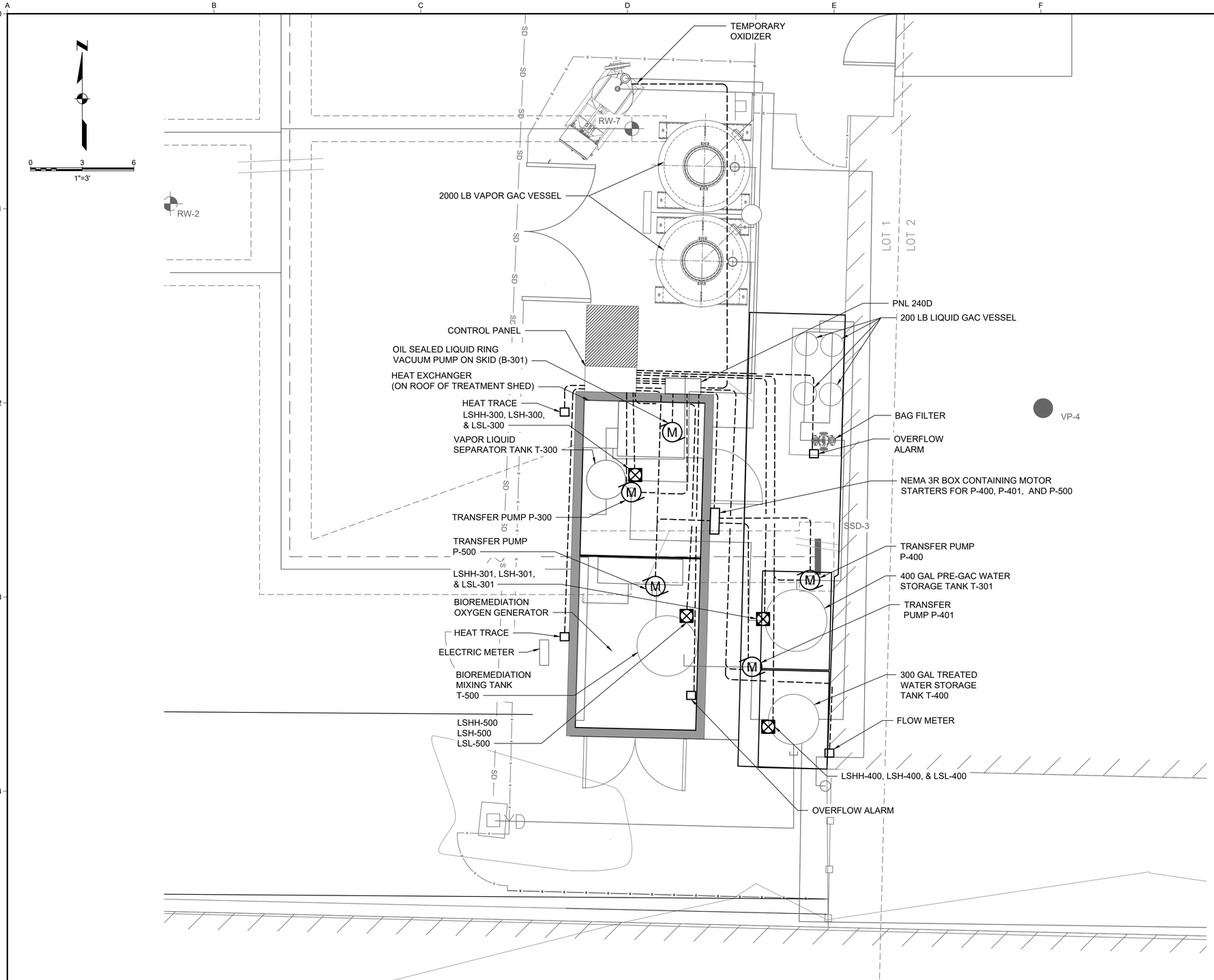

GENERAL SHEET NOTES

1. ALL CONDUITS SHOWN ARE SCHEMATIC, AND NOT THE ACTUAL PATH FROM ONE END TO THE OTHER. ROUTE ALL CONDUITS UNDER PAVEMENT OR OVERHEAD AS NECESSARY TO AVOID TRIPPING OR OTHER HAZARDS. UNDER PAVEMENT CONDUIT MAY BE PVC SCHEDULE 80. ABOVE GROUND AND TRANSITIONAL PIECES SHALL BE RIGID GALVANIZED STEEL CONDUIT. SIZE IN COMPLIANCE WITH CONDUIT FILL REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
2. PROVIDE EQUIPMENT AS SHOWN IN PREFABRICATED SHELTER STRUCTURE. PREWIRED TO ALL INTERNAL ELECTRICAL COMPONENTS, AND WIRED TO EXTERNAL ABUTTING PANELS FOR CONTROL AND POWER. THE "VACUUM BLOWER" UNIT AND ASSOCIATED EQUIPMENT HAVE BEEN EVALUATED AS MAKING THE ENCLOSED SPACE CLASS 1, GROUP D, DIVISION 2 PER NEC ARTICLE 501, AND MUST BE INSTALLED IN COMPLIANCE WITH INSTALLATIONS IN SUCH A SPACE. THE "DO-IT" UNIT AND ASSOCIATED EQUIPMENT ARE UNCLASSIFIED IN AN ENCLOSED SPACE. THE CONTRACTOR MAY MITIGATE THE CLASSIFIED SPACE BY MAKING ALL EQUIPMENT IN A SINGLE SPACE SUITABLE FOR DIVISION 2 OR MAY SEPARATE THE EQUIPMENT INTO TWO SPACES. PROVIDE ALL SEALS AND OTHER APPURTENANCES REQUIRED BY NEC AT THE BOUNDARY BETWEEN THE CLASSIFIED SPACE AND THE EXTERIOR OF THE SHELTER.
3. PROVIDE CONTROL PANEL WITH PROGRAMMABLE LOGIC CONTROLLER (PLC) FOR ALL EQUIPMENT AT THE SITE. CONTRACTOR SHALL COORDINATE INTERNAL SHELTER WIRING AND EXTERNAL WIRING AS SHOWN. PROVIDE LOCAL HMI FUNCTIONALITY AND AUTODIALING OF ALARM CONDITIONS. SEE SPECIFICATION 02 71 00 (GROUNDWATER TREATMENT) FOR DETAILS REGARDING FUNCTION OF CONTROL AND COMMUNICATION SYSTEM.
4. PANEL PNL-240D IS SHOWN WITH ALL CIRCUITS FOR THE SITE ANTICIPATED, BOTH INTERNAL AND EXTERNAL TO THE SHELTER. CONNECT ALL INTERNAL LOADS FROM THE SHELTER AND ALL EXTERNAL LOADS AS SHOWN. IF ACTUAL LOADS DEVIATE FROM INDICATED LOADS, OR ADDITIONAL LOADS ARE ADDED OR INDICATED LOADS ARE DELETED, CONTRACTOR SHALL PREPARE REVISED PANEL SCHEDULE AND LOAD SUMMARY TO SUBMIT TO AHJ FOR APPROVAL.
5. LOCATIONS SHOWN ARE FOR CONCEPTUAL PURPOSES ONLY. ACTUAL EQUIPMENT AND PIPING LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR.

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BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

ELECTRICAL SITE PLAN

SCALE 1" = 3'
JOB NO 2196008.00
DATE MAY 2025
SHEET 17 OF 24
E-05

Plot Date: 5/9/2025 8:37 AM
User: RICARDO MEJIA
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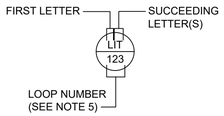
INSTRUMENT CALLOUTS AND TAG SCHEMA



TYPICAL TAG FORMAT

LIT-123	INSTRUMENT TAG NUMBER
LIT	FUNCTIONAL IDENTIFICATION
L	FIRST LETTER
IT	SUCCEEDING LETTER(S)
123	LOOP NUMBER

EXPANDED TAG FORMAT

20LIT-123A	INSTRUMENT TAG NUMBER
20	AREA NUMBER
LIT	FUNCTIONAL IDENTIFICATION
L	FIRST LETTER
IT	SUCCEEDING LETTER(S)
123	LOOP NUMBER
A	OPTIONAL SUFFIX

	FIRST LETTER (1)		SUCCEEDING LETTERS (15)		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (2)(3)(4)		ALARM		
B	BURNER, COMBUSTION (2)		USER'S CHOICE (5)	USER'S CHOICE (5)	USER'S CHOICE (5)
C	USER'S CHOICE (3a)(5)			CONTROL (23a)(23e)	CLOSED (27b)
D	DENSITY	DIFFERENTIAL	DAMPER		
E	VOLTAGE (2)		SENSOR (PRIMARY ELEMENT)		
F	FLOW, FLOW RATE (2)	RATIO (FRACTION) (2b)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE (16)		
H	HAND (2)				HIGH (27A)(28A)(29)
I	CURRENT (ELECTRICAL)(2)		INDICATE (17)		
J	POWER (2)		SCAN (18)		
K	TIME, TIME SCHEDULE (2)	TIME RATE OF CHANGE (12c)(13)		CONTROL STATION (24)	
L	LEVEL (2)		LIGHT (19)		LOW (27b)(28)(29)
M	MOISTURE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE (5)		USER'S CHOICE (5)	USER'S CHOICE (5)	USER'S CHOICE (5)
O	USER'S CHOICE (5)		ORIFICE, RESTRICTION		OPEN (27a)
P	PRESSURE, VACUUM (2)		POINT (TEST) CONNECTION		
Q	QUANTITY (2)	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION (2)		RECORD (20)		RUN
S	SPEED, FREQUENCY (2)	SAFETY (14)		SWITCH (23b)	STOP
T	TEMPERATURE (2)			TRANSMIT	
U	MULTI VARIABLE (2)(6)		MULTIFUNCTION (21)	MULTIFUNCTION (21)	MULTIFUNCTION (21)
V	VIBRATION, MECHANICAL ANALYSIS (2)(4)(7)			VALVE, DAMPER, OR LOUVER (23c)(23e)	
W	WEIGHT, FORCE (2)		WELL, PROBE		
X	UNCLASSIFIED (8)	X AXIS (11c)	ACCESSORY DEVICES (22) UNCLASSIFIED (8)	UNCLASSIFIED (8)	UNCLASSIFIED (8)
Y	EVENT, STATE, PRESENCE (2)(9)	Y AXIS (11c)		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION (2)	Z AXIS (11c), SAFETY INSTRUMENTED SYSTEM (30)		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

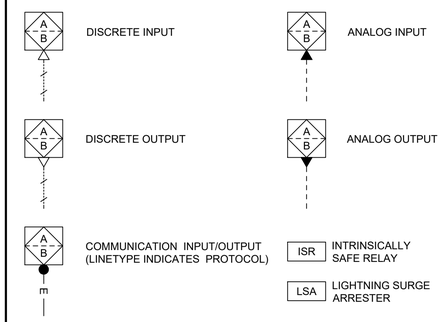
NOTE: NUMBERS IN PARANTHESES REFER TO EXPLANATORY NOTES IN ANSI/ISA-5.1-2009, SECTION 4.2

	LOCATED IN FIELD VISIBLE AT LOCATION OPERATOR ACCESSIBLE	LOCATED ON MAIN PANEL VISIBLE ON PANEL FRONT OPERATOR ACCESSIBLE	LOCATED IN MAIN PANEL CABINET NOT VISIBLE ON PANEL FRONT NOT OPERATOR ACCESSIBLE	LOCATED ON SECONDARY PANEL VISIBLE ON PANEL FRONT OPERATOR ACCESSIBLE	LOCATED IN SECONDARY PANEL CABINET NOT VISIBLE ON PANEL FRONT NOT OPERATOR ACCESSIBLE
SHARED DISPLAY SHARED CONTROL	A B	A B	A B	A B	A B
PROGRAMMABLE LOGIC CONTROL	A B	A B	A B	A B	A B
COMPUTER FUNCTION	C A B D	C A B D	C A B D	C A B D	C A B D
INSTRUMENT	C A B D	C A B D	C A B D	C A B D	C A B D
PILOT LIGHT	C A B D	C A B D		C A B D	

DISPLAY AND CONTROL SYMBOLS FOR ANALOG MEASURED VARIABLES MAY ALSO INDICATE THE PRESENCE OF DERIVED SETPOINTS USED FOR ALARM GENERATION

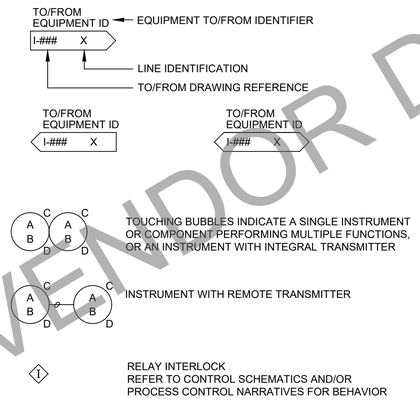
LETTER MAPPING:
A: IDENTIFICATION LETTERS (SEE TABLE OR REFER TO ANSI/ISA-5.1-2009; TABLE 4.1)
B: LOOP NUMBER
C: USER DESCRIPTOR/FUNCTION DESIGNATION (SEE LIST THIS SHEET)
D: MEASUREMENT (REFER TO ANSI/ISA-5.1-2009; TABLE 5.2.2)
E: PROCESS CONTROL DESCRIPTOR LINE 1
F: PROCESS CONTROL DESCRIPTOR LINE 2
G: PROCESS CONTROL DESCRIPTOR LINE 3

PLC I/O



MISCELLANEOUS

OFF-SHEET CONNECTORS (ARROW IN DIRECTION OF PROCESS OR CONTROL)



FUNCTION DESIGNATIONS

SWITCHES

A/M	AUTO-MANUAL
ESTOP	EMERGENCY STOP
F-R	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
L/R	LOCAL-REMOTE
LOR	LOCAL-OFF-REMOTE
O/C	OPEN-CLOSE
OCA	OPEN-CLOSE-AUTO
O-O	ON-OFF
OSC	OPEN-STOP-CLOSE
POT	POTENTIOMETER
RST	RESET
S-S	START-STOP

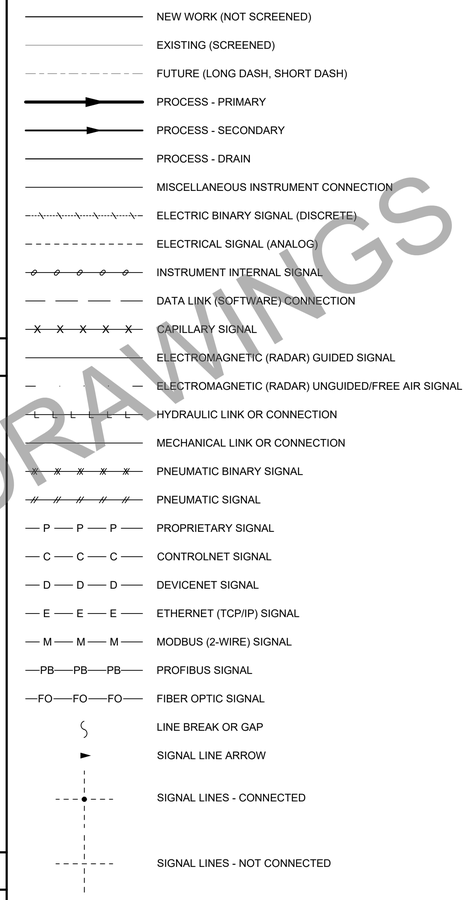
ANALYTICAL INSTRUMENTS

ALK	ALKALINITY
CL2*	CHLORINE CONCENTRATION
COMB	COMBUSTIBLE GAS
COND	CONDUCTIVITY
DO	DISSOLVED OXYGEN
H2S	HYDROGEN SULFIDE
LEL	LOWER EXPLOSIVE LIMIT
NO3	NITRATE
O2	OXYGEN CONCENTRATION
O3	OZONE
ORP	OXIDATION REDUCTION POTENTIAL
PH	HYDROGEN ION CONCENTRATION
SO2	SULFUR DIOXIDE
TH	TOTAL HARDNESS
TURB	TURBIDITY
UV	ULTRAVIOLET TRANSMITTANCE OR INTENSITY
*	NOTED AS TOTAL OR FREE

INSTRUMENT AND EQUIPMENT SERVICES

IA	INSTRUMENT AIR SUPPLY (SEE NOTE 4)
ES	ELECTRICAL SERVICE (DIFFERENT VOLTAGES ARE SPECIFICALLY NOTED)
POE	POWER OVER ETHERNET

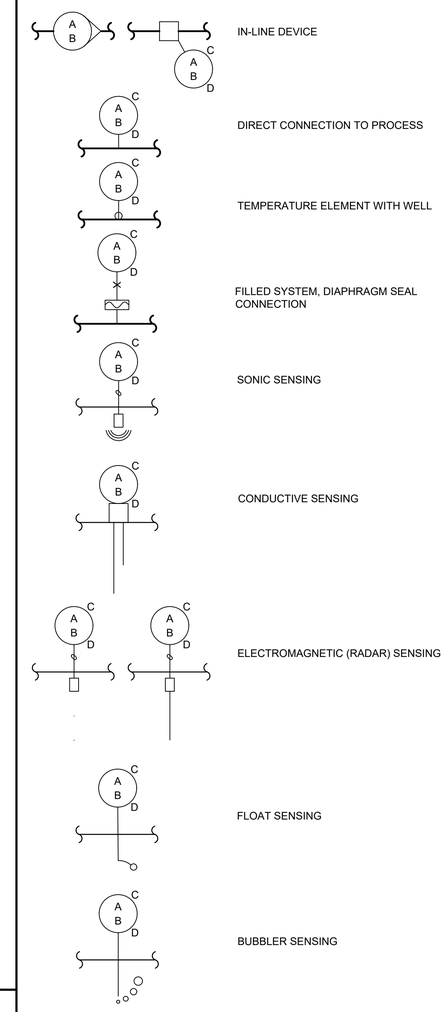
LINE SYMBOLOGY



SIGNAL PROCESSING FUNCTIONS

SUMMING	HIGH SELECTING
DIFFERENCE	LOW SELECTING
INTEGRAL	BIAS
DERIVATIVE	NONLINEAR OR UNSPECIFIED FUNCTION
MULTIPLYING	CONVERT: E - VOLTAGE; I - CURRENT; P - PNEUMATIC; A - ANALOG; B - BINARY; H - HYDRAULIC; O - ELECTROMAGNETIC/SONIC; R - RESISTANCE (ELECTRICAL); D - DIGITAL
DIVIDING	
ROOT EXTRACTION	
SQUARE ROOT	
EXPONENTIAL	

TYPICAL CONNECTIONS



NOTES

1. SEE THE GENERAL AND ELECTRICAL DISCIPLINE DRAWINGS FOR ADDITIONAL SYMBOLS AND ABBREVIATIONS.
2. SEE THE GENERAL DISCIPLINE DRAWINGS FOR EQUIPMENT DESIGNATIONS AND PROCESS IDENTIFICATION CODES.
3. THIS IS A GENERALIZED LEGEND SHEET. SEE ALSO ISA S5.1, S5.3 AND S7.3.
4. FOR INSTRUMENT AIR QUALITY STANDARDS, REFER TO ISA RP7.7.
5. WHERE LOOP NUMBERS EXCEED THE LENGTH AVAILABLE WITHIN A BUBBLE, THE LOWER HALF OF THE BUBBLE MAY APPEAR BROKEN TO ALLOW SPACE FOR THE LOOP NUMBER.
6. SEE SPECIFICATION 17010 FOR COMPLETE DETAILS OF LOOP DRAWING AND INTERCONNECTION DRAWING SUBMITTAL REQUIREMENTS.
7. POWER SUPPLIES FOR INSTRUMENT LOOPS OR SYSTEMS SHALL BE PROVIDED BY THE INSTRUMENTATION SUPPLIER TO MEET THE VOLTAGE AND CURRENT REQUIREMENTS OF THE COMPONENTS IN EACH LOOP OR SYSTEM.
8. FIELD SWITCHES FOR ELECTRICAL MOTOR OPERATION SHALL BE SUPPLIED BY THE ELECTRICAL CONTRACTOR UNLESS THEY ARE PART OF A VENDOR PACKAGE.

SUPERSEDED BY VENDOR DRAWINGS

RECORD DRAWING

This record drawing has been prepared based on unverified information compiled and provided by others to the preparer. The preparer is not responsible for any inaccuracies, errors, or omissions which may have been incorporated into the document. Users of this record drawing assume all risk of loss resulting from its use. Users of this document in editable electronic formats are cautioned against use without first determining whether changes may have been made subsequent to its preparation. The original signed and sealed copy of this document is the only true record of the contract document.

NO	REVISION	DATE	BY

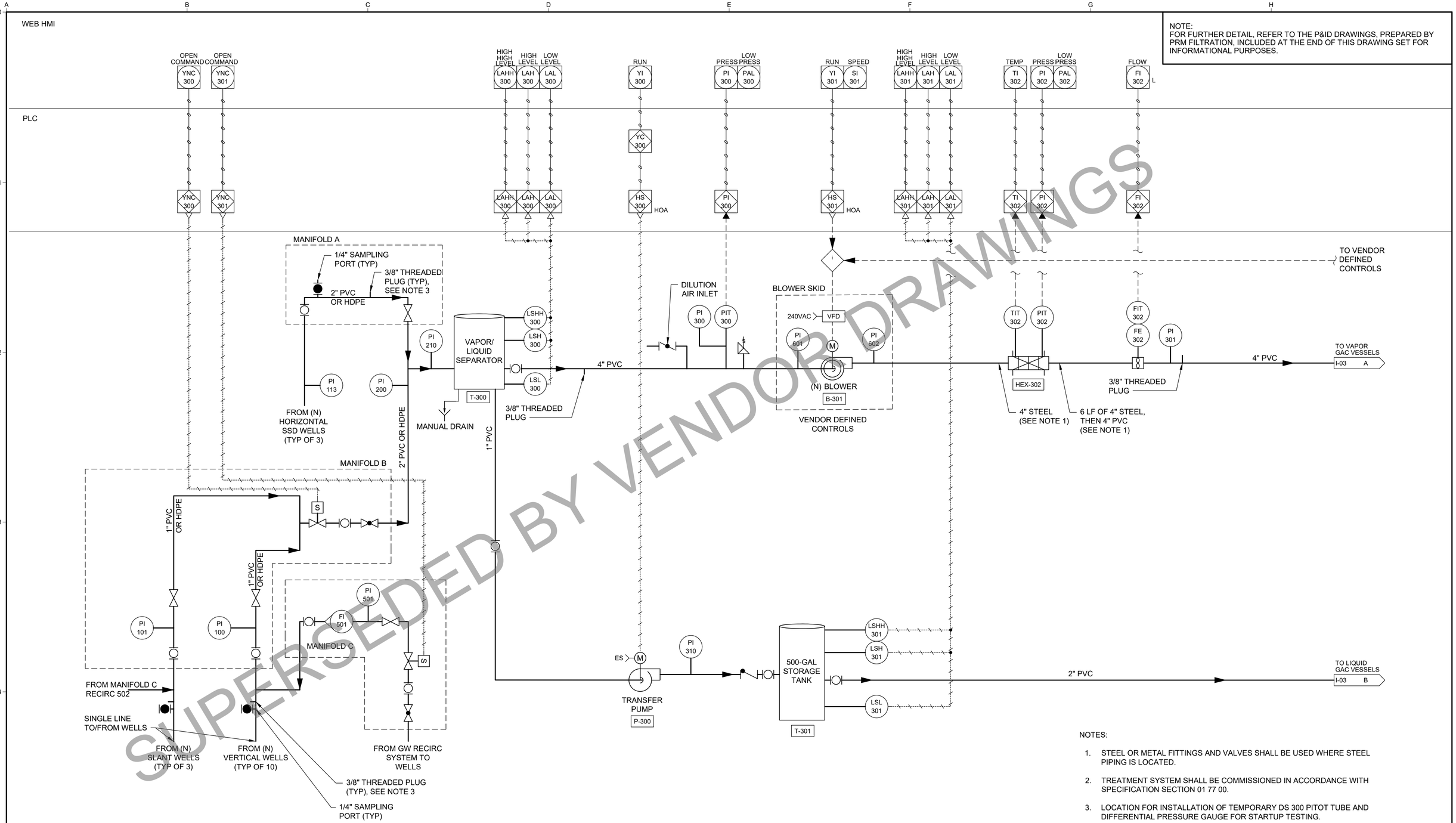
DESIGNED
DRAWN
CHECKED

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

P&ID LEGEND

SCALE: AS SHOWN
JOB NO: 2196008.00
DATE: MAY 2025
SHEET 18 OF 24
I-01



NOTE:
FOR FURTHER DETAIL, REFER TO THE P&ID DRAWINGS, PREPARED BY PRM FILTRATION, INCLUDED AT THE END OF THIS DRAWING SET FOR INFORMATIONAL PURPOSES.

NOTES:

1. STEEL OR METAL FITTINGS AND VALVES SHALL BE USED WHERE STEEL PIPING IS LOCATED.
2. TREATMENT SYSTEM SHALL BE COMMISSIONED IN ACCORDANCE WITH SPECIFICATION SECTION 01 77 00.
3. LOCATION FOR INSTALLATION OF TEMPORARY DS 300 PITOT TUBE AND DIFFERENTIAL PRESSURE GAUGE FOR STARTUP TESTING.

SUPERSEDED BY VENDOR DRAWINGS

RECORD DRAWING

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SEATTLE, WASHINGTON

Kennedy Jenks

P&ID - I

SCALE: AS SHOWN
JOB NO: 2196008.00
DATE: MAY 2025
SHEET 19 OF 24
I-02

Plot Date: 5/20/2025 9:52 AM
User: RICHARD HILLS
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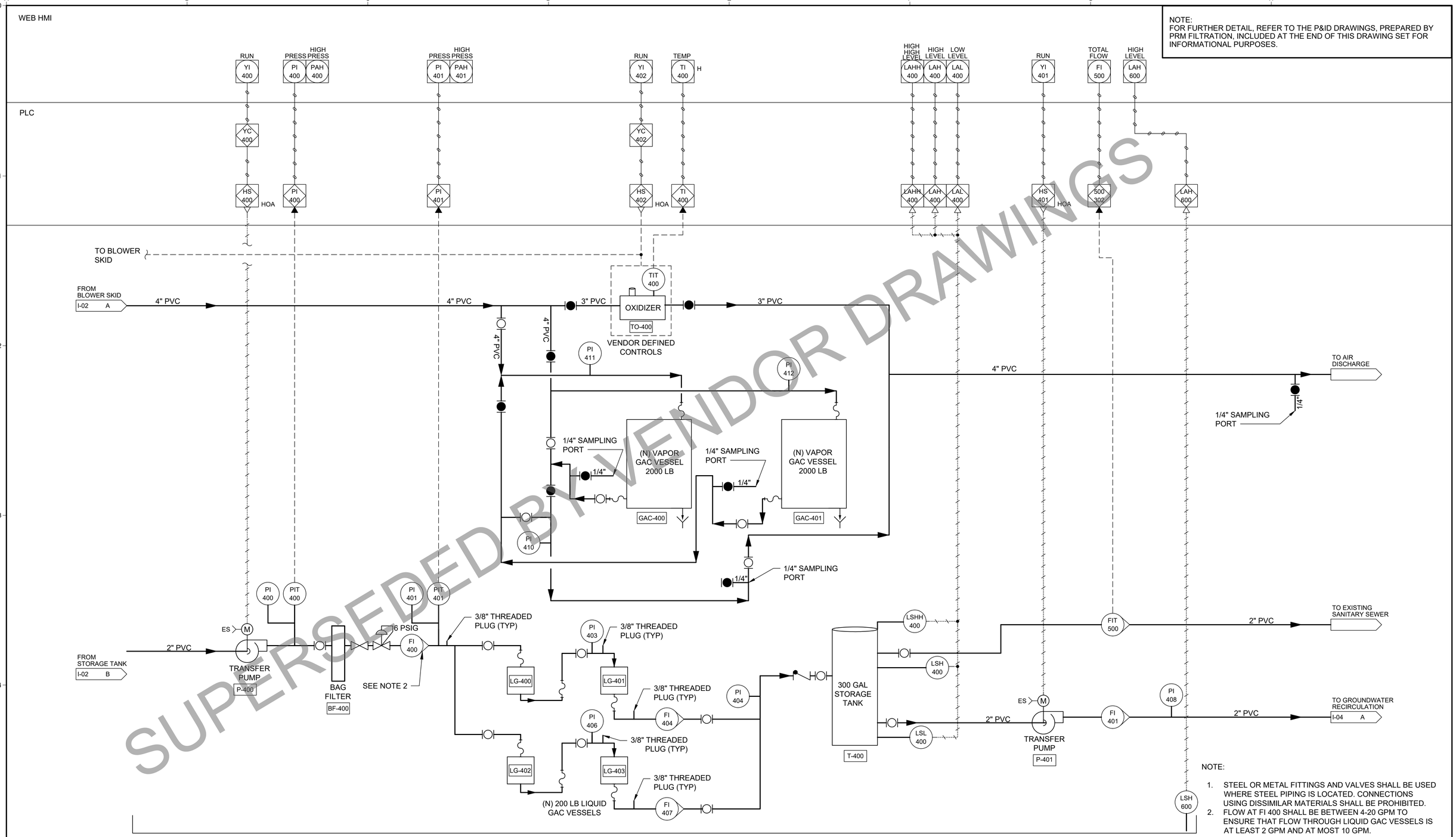

NOTE:
FOR FURTHER DETAIL, REFER TO THE P&ID DRAWINGS, PREPARED BY PRM FILTRATION, INCLUDED AT THE END OF THIS DRAWING SET FOR INFORMATIONAL PURPOSES.

NOTE:

1. STEEL OR METAL FITTINGS AND VALVES SHALL BE USED WHERE STEEL PIPING IS LOCATED. CONNECTIONS USING DISSIMILAR MATERIALS SHALL BE PROHIBITED.
2. FLOW AT FI 400 SHALL BE BETWEEN 4-20 GPM TO ENSURE THAT FLOW THROUGH LIQUID GAC VESSELS IS AT LEAST 2 GPM AND AT MOST 10 GPM.

SUPERSEDED BY VENDOR DRAWINGS

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NO	REVISION	DATE	BY

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WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

P&ID - II

SCALE: AS SHOWN
JOB NO: 2196008.00
DATE: MAY 2025
SHEET 20 OF 24
I-03

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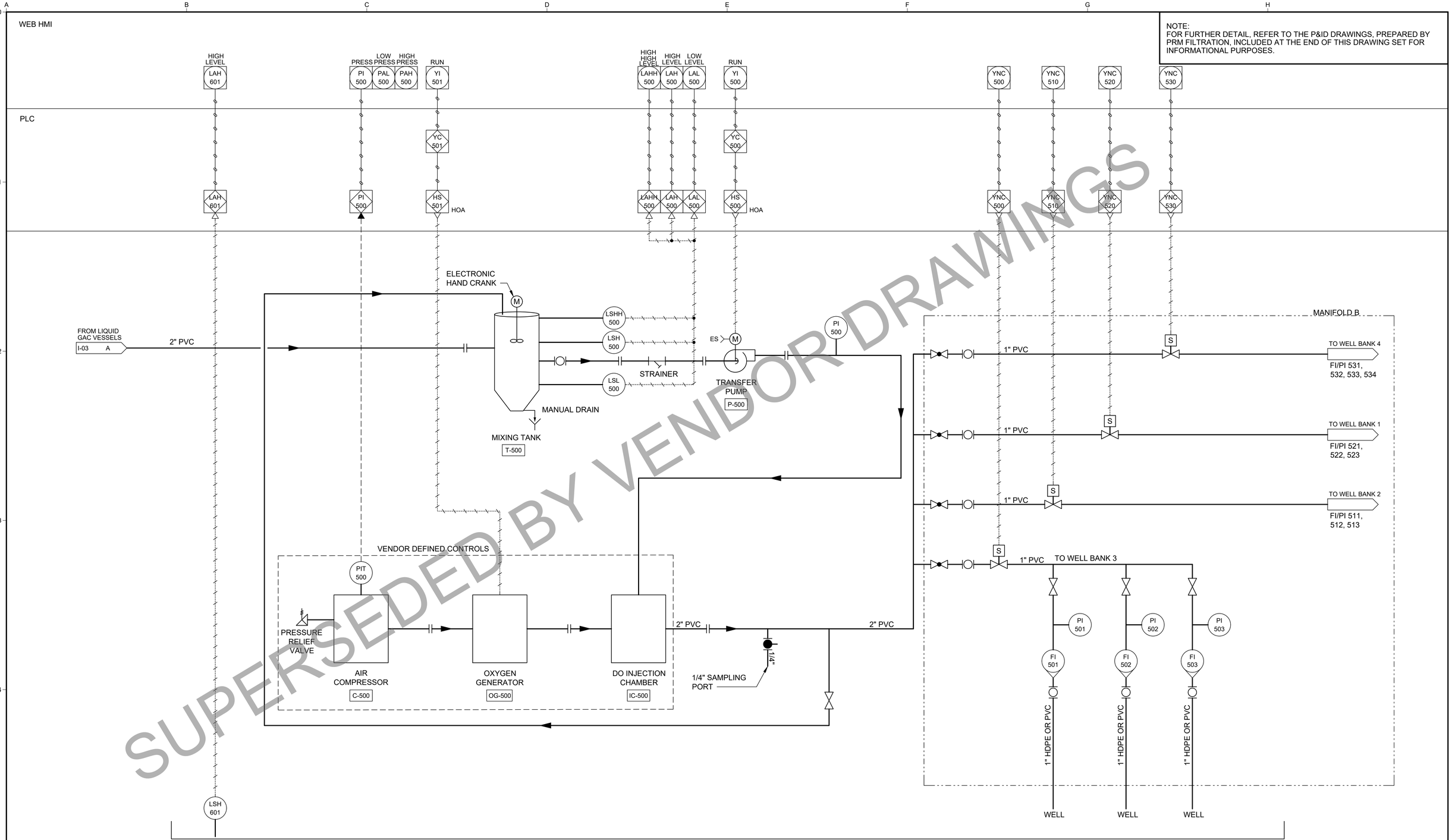

SUPERSEDED BY VENDOR DRAWINGS

RECORD DRAWING

This record drawing has been prepared based on unverified information compiled and provided by others to the preparer. The preparer is not responsible for any inaccuracies, errors, or omissions which may have been incorporated into the document. Users of this record drawing assume all risk of loss resulting from its use. Users of this document in editable electronic formats are cautioned against use without first determining whether changes may have been made subsequent to its preparation. The original signed and sealed copy of this document is the only true record of the contract document.

NO	REVISION	DATE	BY

DESIGNED CMW
DRAWN RM
CHECKED LGR

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

P&ID - III

SCALE AS SHOWN
JOB NO 2196008.00
DATE MAY 2025
SHEET 21 OF 24
I-04

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CONSTRUCTION STORMWATER CONTROL (CSC) GENERAL NOTES

1. A FIRST GROUND DISTURBANCE INSPECTION IS REQUIRED PRIOR TO START OF WORK ON ALL SITES WITH LAND DISTURBING ACTIVITY. SCHEDULE A FIRST GROUND DISTURBANCE INSPECTION FOR AN ISSUED BUILDING PERMIT AT 206-684-8900 OR ONLINE AS DESCRIBED AT http://www.seattle.gov/sdci/inspections/site-development-inspections
2. THE APPLICANT SHALL DESIGNATE AN EROSION AND SEDIMENT CONTROL (ESC) SUPERVISOR WHO SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPS). FOR LARGE CONSTRUCTION PROJECTS, THE ESC SUPERVISOR SHOULD BE A CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL). PROVIDE THE NAME AND PHONE NUMBER OF THE ESC SUPERVISOR TO THE SITE INSPECTOR AT THE FIRST GROUND DISTURBANCE INSPECTION.
3. BMPS SHALL BE INSTALLED PRIOR TO STARTING CONSTRUCTION TO ENSURE SEDIMENT–LADEN WATER DOES NOT LEAVE THE PROJECT SITE OR ENTER ROADSIDE DITCHES, STORM DRAINS, SURFACE WATERS, OR WETLANDS.
4. THE BMPS INCLUDED IN THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. THE APPLICANT IS RESPONSIBLE FOR ENSURING THAT BMPS ARE MODIFIED AS NEEDED FOR UNEXPECTED STORM EVENTS OR OTHER UNFORESEEN CIRCUMSTANCES, AND TO ACCOUNT FOR CHANGING SITE CONDITIONS.
5. ANY AREAS OF DISTURBED SOIL THAT WILL NOT BE WORKED FOR TWO CONSECUTIVE DAYS DURING THE WET SEASON (OCT 1 TO APRIL 30) OR SEVEN DAYS DURING THE DRY SEASON (MAY 1 TO SEPT 30) SHALL BE IMMEDIATELY STABILIZED WITH APPROVED BMPS METHODS (E.G. STRAW, MULCH, PLASTIC COVERING, COLD MIX, ETC.)
6. GRADING AND/OR SOIL DISTURBING ACTIVITIES MAY BE LIMITED OR PROHIBITED FOR CERTAIN SITES SUBJECT TO ECA STANDARDS (I.E. ECA STEEP SLOPES, LANDSLIDE PRONE AREAS, ETC.) BETWEEN OCTOBER 31ST AND APRIL 1ST. IF NOTED IN THE GEOTECHNICAL SPECIAL INSPECTIONS REQUIREMENTS, A GRADING SEASON EXTENSION LETTER (GSEL) ISSUED BY SDCI IS REQUIRED FOR ALL GRADING AND/OR SOIL DISTURBING ACTIVITIES DURING THIS PERIOD. THE GEOTECHNICAL SPECIAL INSPECTOR MUST SUBMIT ELECTRONIC APPLICATIONS FOR A GSEL USING THE SDCI PROJECT PORTAL. ALLOW FOUR TO SIX WEEKS FOR PROCESSING. FAILURE TO OBTAIN THE GSEL PRIOR TO OCTOBER 31 MAY RESULT IN A WORK STOPPAGE.
7. CITY STREETS AND SIDEWALKS SHALL BE KEPT CLEAN AT ALL TIMES. NO MATERIAL SHALL BE STORED ON CITY STREETS OR SIDEWALKS WITHOUT A STREET USE PERMIT FROM THE SEATTLE DEPARTMENT OF TRANSPORTATION (SDOT).
8. POLLUTION CONTROL MEASURES SHALL BE FOLLOWED TO ENSURE THAT NO LIQUID PRODUCTS OR CONTAMINATED WATER ENTERS ANY STORM DRAINAGE FACILITIES OR OTHERWISE LEAVES THE PROJECT SITE. ANY HAZARDOUS MATERIALS OR LIQUID PRODUCTS THAT HAVE THE POTENTIAL TO POLLUTE RUNOFF SHALL BE STORED AND DISPOSED OF PROPERLY.
9. ENSURE THAT WASHOUT FROM CONCRETE TRUCKS IS PERFORMED OFF–SITE OR IN DESIGNATED CONCRETE WASHOUT AREAS ONLY. DO NOT WASH OUT CONCRETE TRUCKS ONTO THE GROUND, OR TO STORM DRAINS OR OPEN DITCHES. DO NOT DUMP EXCESS CONCRETE ONSITE, EXCEPT IN DESIGNATED CONCRETE WASHOUT AREAS.
10. ALL AREAS OF DISTURBED SOIL SHALL BE FULLY STABILIZED WITH THE APPROPRIATE SOIL AMENDMENT AND COVER MEASURES AT COMPLETION OF THE PROJECT. TYPICAL COVER MEASURES INCLUDE LANDSCAPING OR HYDROSEED WITH MULCH.

CONSTRUCTION STORMWATER CONTROL (CSC) PLAN REQUIREMENTS / NARRATIVE

SHOW TEMPORARY AND PERMANENT BEST MANAGEMENT PRACTICES (BMPS) IN THE PLAN VIEW OF THIS SHEET THAT WILL ACCOMPLISH THE MINIMUM REQUIREMENTS DESCRIBED IN THE NARRATIVE BELOW. THE BMPS SHOWN IN THE PLAN VIEW OF THIS PLAN ARE THE MINIMUM REQUIRED. ADDITIONAL BMPS ARE REQUIRED WHEN MINIMUM CONTROLS ARE NOT SUFFICIENT TO PREVENT EROSION OR TRANSPORT OF SEDIMENT OR OTHER POLLUTANTS FROM THE SITE.

- MARK CLEARING LIMITS
- DELINEATE ENVIRONMENTALLY CRITICAL AREAS
- RETAIN TOP LAYER AND NATIVE VEGETATION
- ESTABLISH CONSTRUCTION ACCESS
- PROTECT DOWNSTREAM PROPERTIES AND RECEIVING WATERS
- PREVENT EROSION AND SEDIMENT TRANSPORT FROM THE SITE
- STABILIZE SOILS
- PROTECT SLOPES
- PROTECT STORM DRAINS
- STABILIZE CHANNEL AND OUTLETS
- CONTROL POLLUTANTS
- CONTROL DEWATERING
- MAINTAIN AND INSPECT BMPs
- EXECUTE CONSTRUCTION STORMWATER CONTROL PLAN
- MINIMIZE OPEN TRENCHES
- PHASE THE PROJECT
- INSTALL PERMANENT FLOW CONTROL AND WATER QUALITY FACILITIES
- PROTECT STORMWATER BMPs PRIOR TO, DURING, AND AFTER CONSTRUCTION

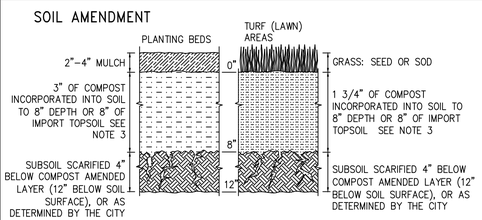
POST CONSTRUCTION SOIL MANAGEMENT PLAN

AT THE END OF PROJECT, ALL AREAS DISTURBED AND NOT COVERED WITH A HARD SURFACE MUST BE AMENDED PER THE SOIL AMENDMENT DETAIL BELOW AND PROBE TO 12–INCHES AT THE SITE FINAL INSPECTION.

LABEL ALL AREAS DISTURBED AND NOT COVERED WITH A HARD SURFACE AS ONE OF THE FOLLOWING: SA (SOIL AMENDMENT AREA) or ND (NON–DISTURBED AREA).

- NON–DISTURBED AREA (ND): VEGETATED AREAS THAT WILL NOT BE SUBJECT TO LAND DISTURBING ACTIVITY DO NOT REQUIRE SOIL AMENDMENT IF THEY ARE FENCED AND CONTINUOUSLY PROTECTED THROUGHOUT CONSTRUCTION. THE FENCING MUST BE IN PLACE AT THE FIRST GROUND DISTURBANCE INSPECTION. NO DISTURBANCE, INCLUDING VEHICLE TRAFFIC OR MATERIAL STORAGE, IS ALLOWED IN THESE AREAS UNTIL FINAL INSPECTION.
- SOIL AMENDMENT AREA (SA): VEGETATED OR COMPOST AREAS (TURF AND LANDSCAPE) MUST BE AMENDED PER THE SOIL AMENDMENT DETAIL. THIS INCLUDES AREAS IMPACTED BY CLEARING AND GRADING, STOCKPILING, SITE ACCESS, PATHWAYS AND MATERIALS OR EQUIPMENT STORAGE.

SOIL AMENDMENT

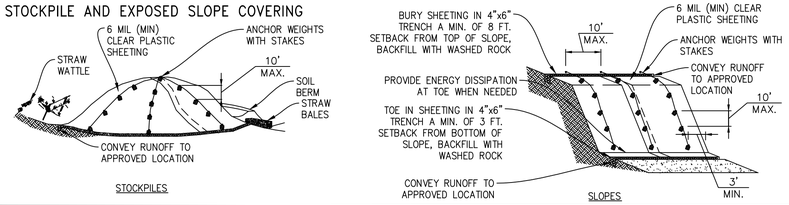


NOTES:

1. POST CONSTRUCTION SOIL AMENDMENT IS REQUIRED ON ALL AREAS NOT COVERED BY HARD SURFACE WHERE SOIL IS DISTURBED DURING CONSTRUCTION.
2. SOIL AMENDMENT MUST PASS A 12 INCH MINIMUM PROBE TEST.
3. IMPORT TOPSOIL, IF USED, MUST MEET THE REQUIREMENTS OF THE SEATTLE STORMWATER MANUAL, VOL. 1, SECTIONS 5.1.5.1 AND 5.1.5.3.

SYMBOL: (SA) AREA REQUIRING SOIL AMENDMENT (ND) NON–DISTURBED AREA (SOIL AMENDMENT NOT REQUIRED)

STOCKPILE AND EXPOSED SLOPE COVERING



SYMBOL: (SP)

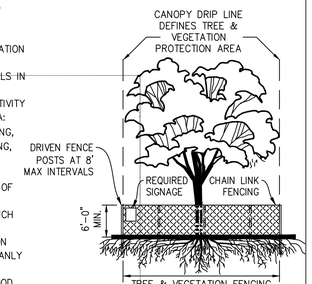
TREE & VEGETATION PROTECTION

TREE PROTECTION FENCING AND SIGN

1. CHAIN LINK FENCE REQUIRED (NO ORANGE CONSTRUCTION FENCE OR PLYWOOD)
2. MINIMUM 6' HIGH
3. FENCE SHALL BE SUPPORTED BY RIGID POSTS DRIVEN INTO THE GROUND AT 8' MAXIMUM INTERVALS
4. MUST BE INSTALLED PRIOR TO DEMOLITION OR GROUND DISTURBANCE
5. KEPT IN PLACE FOR THE DURATION OF CONSTRUCTION
6. NO DUMPING OF ANY MATERIALS IN THE PROTECTION AREA
7. NO SOIL DISTURBANCE OR ACTIVITY ALLOWED WITHIN FENCED AREA: MATERIAL STORAGE/STOCKPILING, PARKING, EXCAVATION, DUMPING, OR WASHING
8. MODIFICATIONS OF THESE REQUIREMENTS BY APPROVAL OF SDCI PLANNER ONLY
9. IF ROOTS GREATER THAN 2 INCH FOUND OUTSIDE OF FENCING, PROTECT BY HAND EXCAVATION AND, IF NECESSARY, CUT CLEANLY AND KEEP MOIST
10. USE 3 INCHES OR DEEPER WOOD CHIP MULCH OUTSIDE FENCED AREAS TO PROTECT FEEDER ROOTS

VEGETATION PROTECTION (DOES NOT APPLY TO TREES)

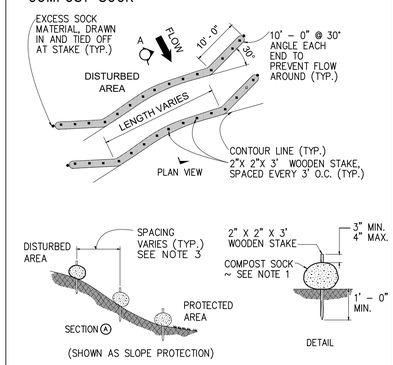
1. ORANGE MESH OR SIMILAR OPEN MATERIAL
2. PROTECT VEGETATION OUTSIDE CONSTRUCTION ZONE WITH FENCING AS SHOWN



LINK TO REQUIRED TREE PROTECTION SIGNAGE:

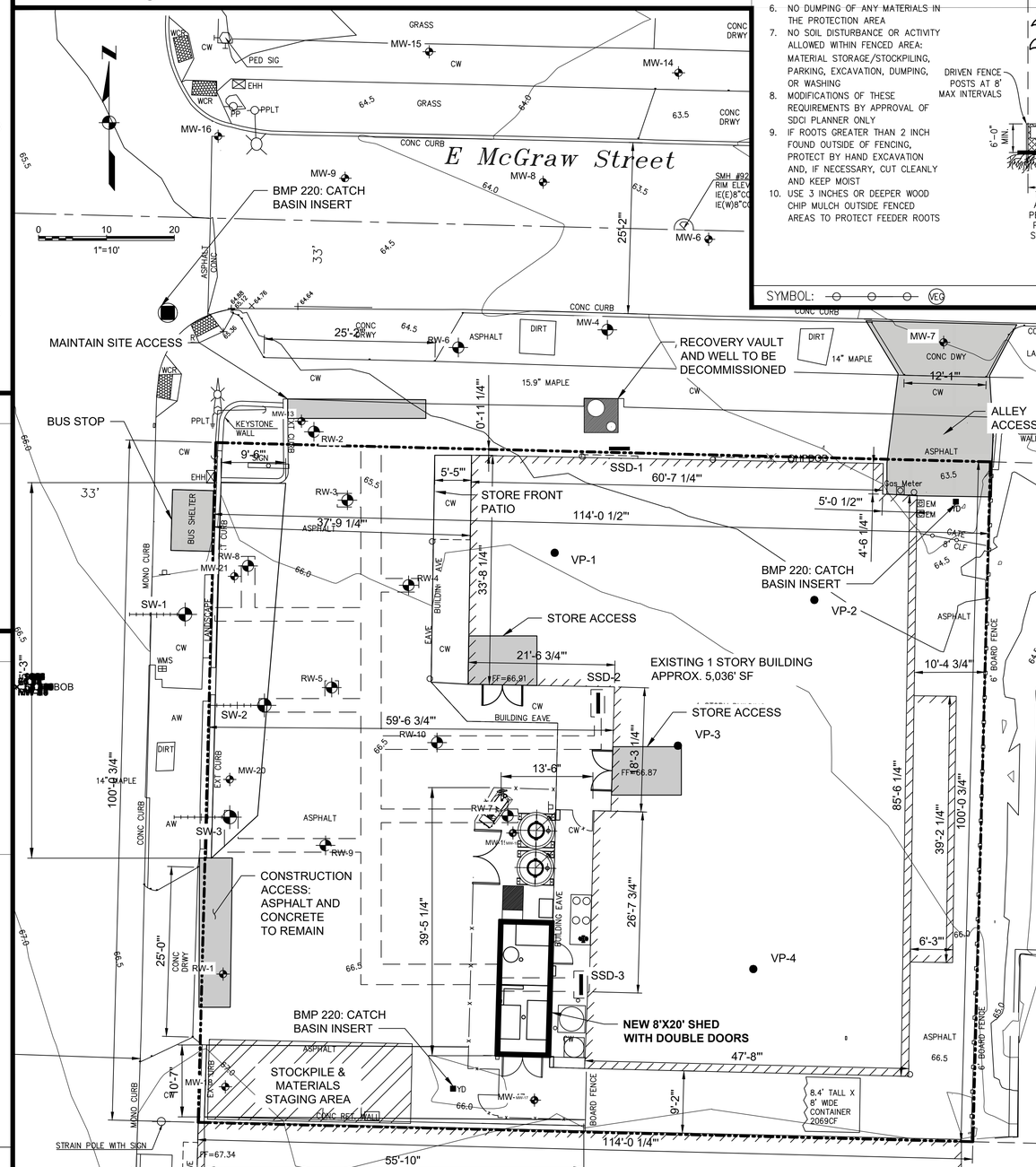
SYMBOL: (VEG)

COMPOST SOCK



1. COMPOST SOCK SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATION 9.14.4(9). COMPOST SOCK SHALL BE A MINIMUM OF 10" IN DIAMETER OR SIZED TO SUIT CONDITIONS AS SPECIFIED BY THE ENGINEER.
2. ALWAYS INSTALL COMPOST SOCK PERPENDICULAR TO SLOPE AND ALONG CONTOUR LINES.
3. REMOVE SEDIMENT FROM THE UP SLOPE SIDE OF THE COMPOST SOCK WHEN ACCUMULATION HAS REACHED 1/2 OF THE EFFECTIVE HEIGHT OF THE COMPOST SOCK.
4. MAY BE USED IN PLACE OF FILTER FENCE FOR PREMIER CONTROL.

SYMBOL: (CS)



GENERAL SHEET NOTES

1. STORMWATER FROM ROOF DRAINS DISCHARGE TO CURB WEEP HOLES THAT DRAIN TO STORMWATER MAIN. PARKING LOT CATCH BASIN DISCHARGES TO SANITARY SEWER MAIN.
2. EXISTING DRIVEWAYS SHALL REMAIN PAVED. ALL TRUCKS ENTERING AND LEAVING THE SITE WILL REMAIN ON PAVED ROADS.
3. TRENCH EXCAVATIONS SHALL BE BACKFILLED AS SOON AS POSSIBLE.
4. ANY WATER ACCUMULATED IN TRENCHES WILL BE PUMPED INTO 55-GALLON DRUMS STORED ON SITE. WATER WILL THEN BE CHARACTERIZED FOR OFFSITE DISPOSAL AFTER CONSTRUCTION IS COMPLETED.
5. TRENCH EXCAVATIONS WILL BE COVERED WITH PLASTIC SHEETING TO PREVENT CONTACT OF STORMWATER WITH SOIL UNTIL EXCAVATION HAS BEEN BACKFILLED.
6. ANY SEDIMENT OR SOIL TRACKED ONTO THE SITE WILL BE SWEPT UP WITHIN 30 MINUTES OF OCCURRENCE.
7. ANY STOCKPILES USED WILL BE UNDERLAIN, AND COVERED, WITH PLASTIC SHEETING OF A SIZE SUBSTANTIALLY LARGER THAN THE PILE AND SECURED AS REQUIRED PRIOR TO LEAVING THE SITE ON A DAILY BASIS. STOCKPILE COVERS WILL BE SECURED AGAINST MOVEMENT BY WIND.

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-02)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 1)
- SUB-SLAB DEPRESSURIZATION WELL
- APPROXIMATE EXTENT OF TRENCH
- CHAIN LINK FENCE
- VAPOR MONITORING PIN (SEE NOTE 2)
- SITE AND STORE ACCESS AREAS
- PROPERTY LINE
- STOCKPILE & MATERIALS STAGING AREA
- BMP C220: CATCH BASIN INSERT

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

TEMPLATE VERSION: 2021–06–08

CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS

STANDARD CONSTRUCTION STORMWATER CONTROL AND POST CONSTRUCTION SOIL MANAGEMENT (CSC/SOIL) PLAN

APPLICANT PLAN SET

BENJAMIN EDWARD FENTES
STATE OF WASHINGTON
88495
REGISTERED PROFESSIONAL ENGINEER

SDCI PERMIT NO.: 6996584–CN

ADDRESS: ------ SEATTLE, WA

DESIGNED BY CMW:
DRAWN BY: CMW
CHECKED BY: RPH
DATE: 01/17/2024

STANDARD CSC/SOIL PLAN

SHEET SDW - 01

Plot Date: 4/30/2024 4:15 PM

User: CAYLA WHITESIDE

File: C:\bms\kjpe-pw\d0181574\2\19600800-CSC-02.dwg

DRAINAGE & WASTEWATER CONTROL PLAN REQUIREMENTS

THIS PLAN SHALL SHOW A SITE PLAN INCLUDING ALL DRAINAGE FEATURES (HARD SURFACES, BMPS, DRAIN LINES, CATCH BASINS, INLETS, PUMPS, ETC.) AND ALL SIDE SEWER FEATURES (SERVICE DRAIN SIDE SEWERS AND SANITARY SIDE SEWERS AND THEIR APPROVED POINTS OF CONNECTION).

SEE VOLUME 1, CHAPTER 8 OF THE 2021 SEATTLE STORMWATER MANUAL FOR SITE AND DRAINAGE ELEMENTS REQUIRED ON THIS PLAN. THE STORMWATER MANUAL AND CAD TEMPLATES FOR THIS PLAN ARE AVAILABLE AT THE FOLLOWING LINK: http://www.seattle.gov/sdci/codes/codes-we-enforce-(a-z)/stormwater-code

SITE AND DRAINAGE CONTROL SUMMARY SHEET

COMPLETE THE ELECTRONIC ON-SITE STORMWATER MANAGEMENT CALCULATOR AND INSERT THE SITE AND DRAINAGE CONTROL SUMMARY SHEET BELOW. THE ELECTRONIC DOCUMENT IS AVAILABLE ON THE DPD STORMWATER CODE WEBSITE: http://www.seattle.gov/sdci/codes/codes-we-enforce-(a-z)/stormwater-code

SEE THE INSTRUCTIONS TAB IN THE EXCEL FILE FOR GUIDANCE TO SELECT AND DOCUMENT THE ON-SITE STORMWATER MANAGEMENT BMPS IF REQUIRED.

On-site Stormwater Management Calculator
Site and Drainage Control Summary

Version 01-04-2023

To use the On-Site List Calculator you must select "Enable Content" when the Security Warning appears.

Project Information

Site Address	2350 24th Ave E, Seattle, WA 98112	SDCI Project Number	6996584-CN
Primary Contact	Dale Myers	SDOT Project Number	SUUMP0000620
Project Type	Remediation	Primary Contact E-mail or Phone	DAMY461@ECY.WA.GOV

Is this project "Closely Related" to other SDCI construction permits/projects? ○ Yes ◉ No

"Closely Related" SDCI Construction Permit Numbers

Is this project associated with a Short Plat or Subdivision? ○ Yes ◉ No SDCI MUP Number

Was the project lot created or altered in size after Jan 1, 2016? No

Total Site Area	11,400 sf	Total Closely Related and/or Short Plat/Subdivision Site Area	sf
Total New plus Replaced Hard Surface Area (NPRHS)	635 sf		
Total New and/or Replaced Lawn/Landscaping	0 sf	Total Closely Related and/or Short Plat/Subdivision NPRHS	sf
Undisturbed and Protected Site Area	0 sf		
Total Existing Hard Surface Area To Remain	11,400 sf	Total Existing Hard Surface Area (Prior to Project)	11,400 sf

Site Information

Note: Reference the Preliminary Assessment Report (PAR) to complete this section.

Approved Point of Stormwater Discharge: Curb Weep Hole

Drainage Basin: Designated Receiving Water

Is the downstream drainage system considered Capacity Constrained by SPU? No

Approved Point of Wastewater Discharge: Public Sanitary Sewer Main

Approved Point of Sub-Surface Discharge: On Site Infiltration

Required Flow Control Standard: ☐ Pre-Developed Pasture ☐ Pre-Developed Forest ☐ Peak Control ☐ Wetland Protection ☐ Existing Conditions ☑ None

Project will permanently discharge groundwater? No

Required Water Quality Treatment Standard: ☐ Oil Control ☐ Enhanced ☐ Basic ☑ None

Total Pollution Generating Hard Surface Area	0 sf	w/ Closely Related/Short Plat/Subdiv. sf
Total Pollution Generating Pervious Surface Area	0 sf	w/ Closely Related/Short Plat/Subdiv. sf

Environmentally Critical Areas: No

☐ Steep Slope ☐ Potential Slide ☐ Riparian Corridor ☐ Wetland ☐ Liquefaction ☐ Flood Prone
☐ Landfill ☐ Known Landslide ☐ Fish / Wildlife ☐ Peat / Groundwater Management ☐ Shoreline Habitat

Is there soil and/or groundwater contamination on this site? Yes Source Control is required Yes

Infiltration Information

Is infiltration investigation required?

Is infiltration on the site feasible?

Site Measured Infiltration Rate ___ x Infiltration Rate Correction Factor ___ - 0 Site Design Inf Rate

On-site Stormwater Management (select List Approach or Performance Standard) OSM not required

◉ On-site List Approach (Pre-sized) Calculator -- Complete the Surface tabs and BMP Sizing tabs (Most commonly used)
○ On-site Performance Standard -- Stormwater modeling by Civil Engineer (Also for No Off-site Point of Discharge)

Number of roof areas: 0

Number of other surface areas: 0 Enter number of surface areas and hit Enter

Surface	Surfaces Description	On-site BMP	Contrib. Area (sf)	Facility Size (sf)	Facility Configuration

Total New/Replaced Roof Area	0	Total Roof Area Managed	0
Total New/Replaced Other Surface Area	0	Total Other Surface Managed	0
Total Area Managed	0 sf	Total Volume Managed On Site	0 gal
Estimated compost required for soil amendment	0 cy	*Volume of compost will be verified by the Inspector.*	

Missing or invalid reference
File: ..\d0181575\DSM.pdf

seattle.gov

ON-SITE STORMWATER MANAGEMENT PLANTINGS

PLANTING GENERAL NOTES
1. PLANTS SHALL BE SITED ACCORDING TO SUN, SOIL, WIND AND MOISTURE REQUIREMENTS.
2. AT A MINIMUM, PROVISIONS MUST BE MADE FOR SUPPLEMENTAL IRRIGATION DURING THE FIRST TWO GROWING SEASONS.

BIORETENTION CELLS, PLANTERS AND RAIN GARDEN NOTES
1. FOR A LIST OF APPROVED PLANTS FOR BIORETENTION/RAIN GARDEN FACILITIES, SEE APPENDIX E, SECTION E-9 OF THE SEATTLE STORMWATER MANUAL.
2. VEGETATION COVERAGE OF SELECTED PLANS MUST ACHIEVE 90-PERCENT COVERAGE WITHIN 2 YEARS OR ADDITIONAL PLANTINGS SHALL BE PROVIDED. UNLESS DESIGNED BY A LICENSED LANDSCAPE ARCHITECT, PROVIDE A MINIMUM OF 1 PLANT PER EVERY 2 SQUARE FEET OF BIORETENTION BOTTOM AND SLOPED SIDE AREA.
3. PROVIDE A MINIMUM OF THREE DIFFERENT SPECIES OF SHRUBS AND HERBACEOUS PLANTS IN EACH FACILITY.

VEGETATED ROOF NOTES
1. APPROPRIATE PLANTS INCLUDE SUCCULENTS, GRASSES, HERBS, AND WILDFLOWERS THAT ARE ADAPTED TO HARSH CONDITIONS. PLANTS MAY BE INSTALLED AS PRE-GROWN MATS, INDIVIDUAL PLUGS, CUTTINGS, OR SPREAD AS SEEDS.
2. VEGETATION COVERAGE OF SELECTED PLANS MUST ACHIEVE 80-PERCENT COVERAGE WITHIN 2 YEARS OR ADDITIONAL PLANTINGS SHALL BE PROVIDED.
3. A LANDSCAPE MANAGEMENT PLAN SHALL BE DEVELOPED AND IMPLEMENTED.

STORMWATER FACILITIES/CONTROL OPERATIONS & MAINTENANCE REQUIREMENTS

ALL STORMWATER FACILITIES/CONTROLS SHALL BE OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2021 SEATTLE STORMWATER MANUAL, APPENDIX G.

SIDE SEWER AND DRAINAGE PERMIT NOTES

1. SIDE SEWERS AND DRAINAGE FACILITIES SHALL BE CONSTRUCTED PER THE "REQUIREMENTS FOR DESIGN OF SIDE SEWERS (DRAINAGE & WASTEWATER)" DIRECTORS' RULE DPD 4-2011/2011-004 AND PER THE "2021 SEATTLE STORMWATER MANUAL" DIRECTORS' RULE SDCI 10-2021/SPU DWW-200.
2. A SEPARATE DRAINAGE AND SIDE SEWER PERMIT IS REQUIRED FOR ALL ONSITE DRAINAGE ELEMENTS AND SIDE SEWERS/SERVICE DRAINS. APPROVAL OF THIS PLAN IS REQUIRED PRIOR TO OBTAINING A DRAINAGE AND SIDE SEWER PERMIT.
3. RE-USE OF EXISTING SIDE SEWERS WHEN THERE WILL BE AN INCREASE IN LIVING UNITS REQUIRES THE EVALUATION AND CERTIFICATION (PE EVAL/CERT) OF THE EXISTING SIDE SEWER BY A PROFESSIONAL ENGINEER PRIOR TO FINALIZING THE SIDE SEWER AND DRAINAGE PERMIT. IN MOST CASES, THE SIDE SEWER MUST BE LINED ALL THE WAY TO THE MAIN. SEE DIRECTORS RULE 4-2011V.M AND SMC 21.16.240.
4. IN ORDER TO ADD UNITS TO AN EXISTING SIDE SEWER, A CERTIFIED LETTER STATING THE INTENT TO ADD UNITS TO THE SHARED SIDE SEWER MUST BE SENT TO ALL PROPERTY OWNERS OF PARCELS SERVED BY THE SHARED SIDE SEWER AT LEAST 30 DAYS PRIOR TO APPLYING FOR THE SIDE SEWER PERMIT. SMC 21.16.240.C. A RECEIPT OF CERTIFIED MAILING AND THE CERTIFICATION/ATTESTATION OF MAILING NOTIFICATION MUST BE SUBMITTED TO SDCI PRIOR TO PERMIT ISSUANCE.
5. DEVIATIONS FROM THE APPROVED DRAINAGE AND WASTEWATER CONTROL PLAN REQUIRE A FORMAL POST-SUBMITTAL REVISION FOR PLAN REVIEW AND APPROVAL. POST-SUBMITTAL REVISIONS MUST BE SUBMITTED ELECTRONICALLY THROUGH THE SDCI PROJECT PORTAL.

AS-BUILT MEASUREMENTS / NOTES

THIS SECTION IS TO BE COMPLETED AFTER THE DRAINAGE, WASTEWATER, AND SIDE SEWER FEATURES HAVE BEEN INSTALLED. FOR INSTRUCTIONS TO PREPARE THE AS-BUILT PLAN, SEE SDCI TIP #504.

SDCI SIDE SEWER AND DRAINAGE PERMIT #

MEASUREMENTS IN THE RIGHT-OF-WAY
1. DISTANCE FROM CENTERLINE OF DOWSTREAM MH TO CENTERLINE OF NEW SERVICE CONNECTION
2. SIDE SEWER INTERSECTION WITH PROPERTY LINE - DEPTH
3. SIDE SEWER INSTERSECTION WITH PROPERTY LINE - DISTANCE

PIPE LINERS
☐ PIPE LINER INSTALLED ON PRIVATE PROPERTY
☐ PIPE LINER INSTALLED IN THE RIGHT-OF-WAY

NOTES FOR PLAN VIEW

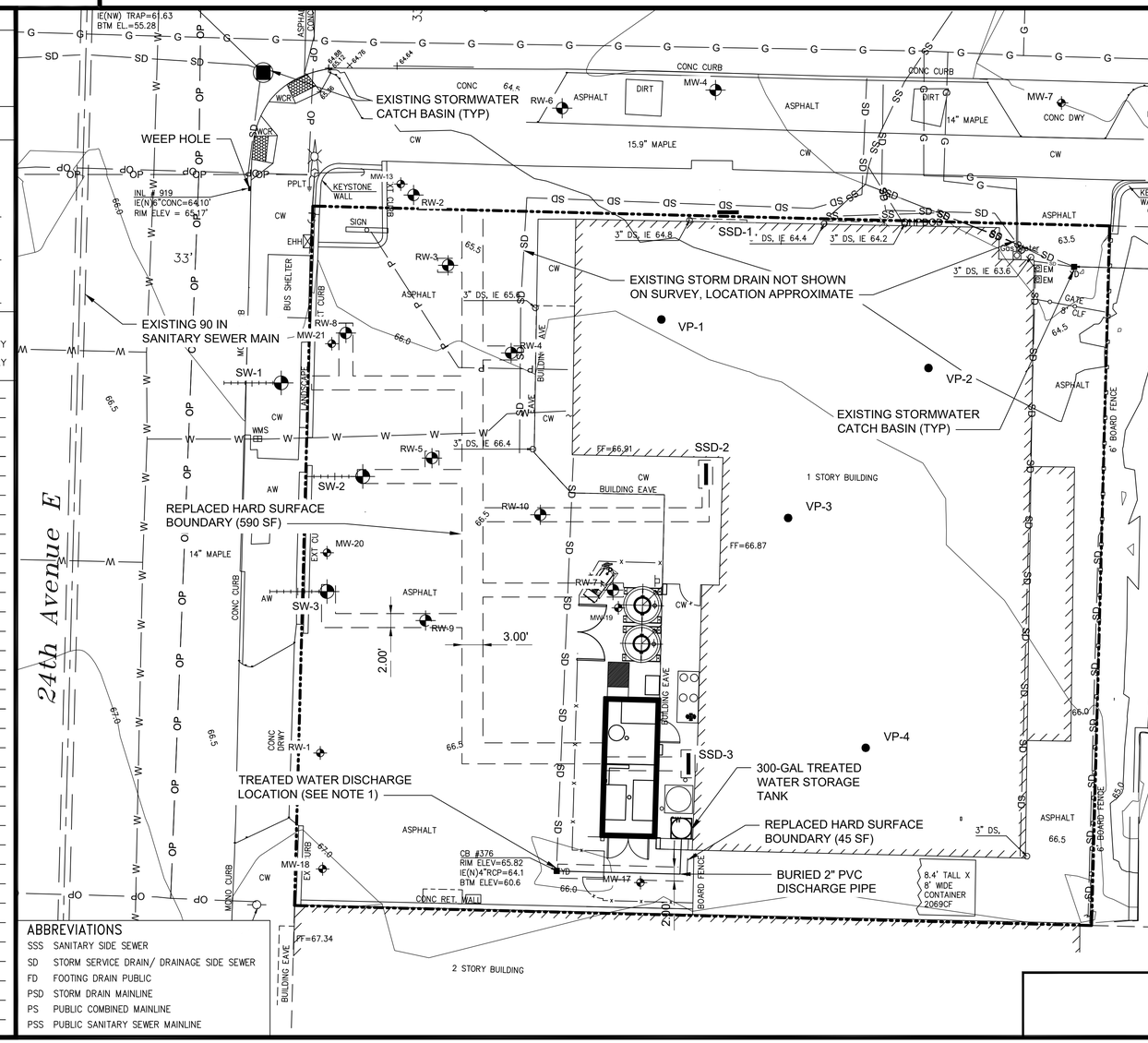
DETAILS: SELECT THE APPLICABLE DETAILS AND SHOW THEM HERE. PROVIDE AN ADDITIONAL SHEET IF NEEDED.

NOTES

1. TREATED WATER DISCHARGE TO EXISTING STORM DRAIN CONNECTED TO SANITARY SEWER IS PERMITTED UNDER KING COUNTY INDUSTRIAL WASTE (KCIW) WASTEWATER DISCHARGE AUTHORIZATION NO. 4614-01.

LEGEND

- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-02)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION
- NEW SLANT WELL (SEE NOTE 1)
- SUB-SLAB DEPRESSURIZATION WELL
- CHAIN LINK FENCE
- VAPOR MONITORING PIN
- PROPERTY LINE



ABBREVIATIONS

SSS	SANITARY SIDE SEWER
SD	STORM SERVICE DRAIN/ DRAINAGE SIDE SEWER
FD	FOOTING DRAIN PUBLIC
PSD	STORM DRAIN MAINLINE
PS	PUBLIC COMBINED MAINLINE
PSS	PUBLIC SANITARY SEWER MAINLINE

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

TEMPLATE VERSION: 2021-06-18

CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS

DRAINAGE AND WASTEWATER CONTROL (DWC) PLAN

APPLICANT PLAN SET

BENJAMIN EDWARD FUNTES
STATE OF WASHINGTON
28495
REGISTERED PROFESSIONAL ENGINEER

SDCI PERMIT NO.: 6996584-CN

ADDRESS: 2350 24TH AVE E SEATTLE, WA

DESIGNED BY: CMW
DRAWN BY: CMW
CHECKED BY: BEF

DWC PLAN

SHEET SDW - 02

General Structural Notes

THE FOLLOWING APPLY UNLESS SHOWN OTHERWISE ON THE DRAWINGS

CRITERIA

1. ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE 2018 SEATTLE BUILDING CODE.

2. DESIGN LOADING CRITERIA:
   MANUFACTURING
   FLOOR LIVE LOAD (LIGHT MANUFACTURING) . . . . . 125 PSF
   MISCELLANEOUS LOADS
   ROOF MECHANICAL . . . . . .1500 LBS
   DEFLECTION CRITERIA
   LIVE LOAD DEFLECTION L/360
   TOTAL LOAD DEFLECTION L/240
   ENVIRONMENTAL LOADS
   SNOW . . . . . .Ce=1.0, Is=1.0, Ct=1.1, Pg=20 PSF
   WIND . . . . . GCpi=0.18, 110 MPH, RISK CATEGORY II, EXPOSURE "B"
   EARTHQUAKE . . . ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE
   LATERAL SYSTEM: LIGHT FRAMED SHEAR WALLS, Vs=2.5 KIPS. SITE CLASS=D, Ss=1.39, Sds=1.0, S1=0.49, SD1=0.88, Cs=0.56, SDC D, Ie=1.0, R=3.5

3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH CIVIL DRAWINGS FOR BIDDING AND CONSTRUCTION. CIVIL DRAWINGS ARE THE PRIME CONTRACT DRAWINGS. ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, THE SPECIFICATION, THESE GENERAL NOTES AND THE SITE CONDITIONS SHALL BE REPORTED TO GLACIAL ENVIRONMENTAL SERVICES (GENERAL CONTRACTOR), WHO SHALL CORRECT SUCH DISCREPANCY IN WRITING. ANY WORK DONE BY THE GENERAL CONTRACTOR AFTER DISCOVERY OF SUCH DISCREPANCY SHALL BE DONE AT THE GENERAL CONTRACTOR'S RISK.

4. PRIMARY STRUCTURAL ELEMENTS NOT DIMENSIONED ON THE STRUCTURAL PLANS AND DETAILS SHALL BE LOCATED BY THE CIVIL PLANS AND DETAILS.

5. ALL STRUCTURAL SYSTEMS, WHICH ARE TO BE COMPOSED OF COMPONENTS TO BE FIELD ERECTED, SHALL BE SUPERVISED BY THE SUPPLIER DURING MANUFACTURING, DELIVERY, HANDLING, STORAGE AND ERECTION IN ACCORDANCE WITH INSTRUCTIONS PREPARED BY THE SUPPLIER.

STEEL

6. STRUCTURAL STEEL DESIGN, FABRICATION, AND ERECTION SHALL BE BASED ON:
   A. AISC 360 AND SECTION 2205.2 OF THE INTERNATIONAL BUILDING CODE.

7. ROLLED SHAPES INCLUDING PLATES, SHALL CONFORM TO ASTM A36, FY = 36 KSI. STEEL PIPE SHALL CONFORM TO ASTM A-53, TYPE E OR S, GRADE B, Fy = 35 KSI. STRUCTURAL TUBING SHALL CONFORM TO ASTM A500, GRADE B, FY = 42 KSI (ROUND), FY = 46 KSI (SQUARE AND RECTANGULAR). CONNECTION BOLTS SHALL CONFORM TO ASTM A307.

8. ALL STEEL EXPOSED TO THE WEATHER OR IN CONTACT WITH GROUND SHALL BE CORROSION PROTECTED BY GALVANIZATION OR PROVIDED WITH EXTERIOR PAINT SYSTEM, UNLESS OTHERWISE NOTED. EXISTING CONTAINER COMPONENTS ARE EXCLUDED.

9. ALL WELDING SHALL BE IN CONFORMANCE WITH AISC AND AWS STANDARDS AND SHALL BE PERFORMED BY WABO CERTIFIED WELDERS USING E70XX ELECTRODES.

GEOTECHNICAL

10. FOUNDATION NOTES: ALLOWABLE SOIL PRESSURE AND LATERAL EARTH PRESSURE ARE ASSUMED AND THEREFORE MUST BE VERIFIED BY A QUALIFIED SOILS ENGINEER OR APPROVED BY THE BUILDING OFFICIAL. IF SOILS ARE FOUND TO BE OTHER THAN ASSUMED, NOTIFY THE STRUCTURAL ENGINEER FOR POSSIBLE FOUNDATION REDESIGN.

    FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED EARTH AT LEAST 18" BELOW ADJACENT FINISHED GRADE.

    ALLOWABLE SOIL PRESSURE. . . . . 1500 PSF
    ALLOWABLE PASSIVE EARTH PRESSURE (FS OF 1.5 INCLUDED). . . . . 250 PCF
    COEFFICIENT OF FRICTION (FS OF 1.5 INCLUDED). 0.3

WOOD

11. FRAMING LUMBER SHALL BE KILN DRIED OR MC-19, AND GRADED AND MARKED IN CONFORMANCE WITH WCLIB STANDARD GRADING RULES FOR WEST COAST LUMBER NO. 17. FURNISH TO THE FOLLOWING MINIMUM STANDARDS: DOUGLAS-FIR-LARCH OR HEM-FIR NO. 2.

12. WOOD FASTENERS: NAIL SIZES SPECIFIED ON DRAWINGS ARE BASED ON THE FOLLOWING SPECIFICATIONS: 10d - 3" x 0.148", 16d BOX - 3-1/2" x 0.135".

13. WOOD FRAMING NOTES--THE FOLLOWING APPLY UNLESS OTHERWISE SHOWN ON THE PLANS: WALL FRAMING: REFER ARCHITECTURAL DRAWINGS FOR THE SIZE OF ALL WALLS. ALL STUDS SHALL BE SPACED AT 16" O.C. UNO. TWO STUDS MINIMUM SHALL BE PROVIDED AT THE END OF ALL WALLS. WHERE SHOWN, FASTEN 15/32"CDX PLYWOOD TO STUD WALL. NAIL PANEL EDGES WITH 8D @ 16"OC. BLOCK PANEL EDGES WITH 2x LAID FLAT AND NAIL PANELS TO INTERMEDIATE SUPPORTS WITH 8D @ 12"OC.

CONCRETE

14. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED AND PLACED IN ACCORDANCE WITH ACI 301, INCLUDING TESTING PROCEDURES. CONCRETE SHALL ATTAIN A 28-DAY STRENGTH OF f'c = 3,000 PSI AND MIX SHALL CONTAIN NOT LESS THAN 5-1/2 SACKS OF CEMENT PER CUBIC YARD AND SHALL BE PROPORTIONED TO PRODUCE A SLUMP OF 5" OR LESS. REQUIRED CONCRETE STRENGTH IS BASED ON THE DURABILITY REQUIREMENTS OF SECTION 1904 OF THE IBC. DESIGN STRENGTH IS f'c = 2,500 PSI.

15. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (INCLUDING SUPPLEMENT S1), GRADE 60, FY = 60,000 PSI. PLACE REINFORCEMENT WITHOUT SPLICES.

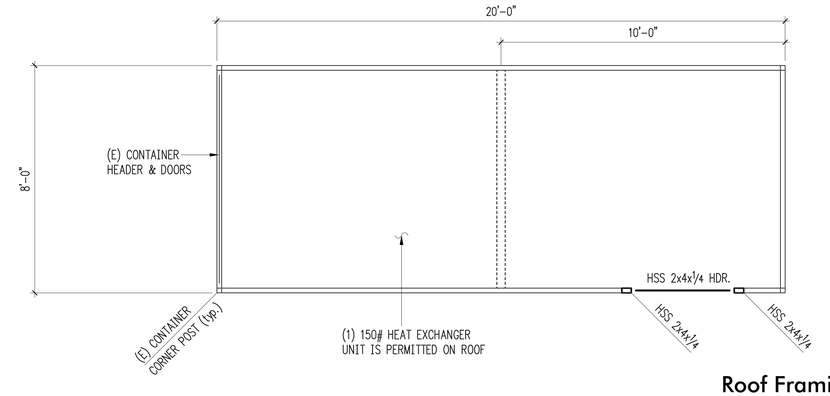
16. CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

    FOOTINGS AND OTHER UNFORMED SURFACES CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH . . . . . 3"

    FORMED SURFACES EXPOSED TO EARTH OR WEATHER (#5 BARS OR SMALLER) . . . . . 1-1/2"

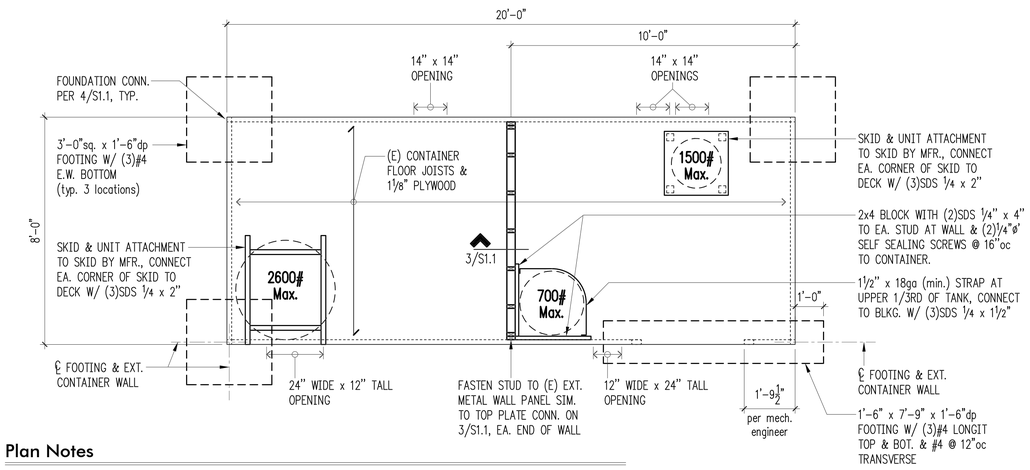
1

FOR REFERENCE ONLY



Roof Framing Plan

Scale: 3/8" = 1'-0"



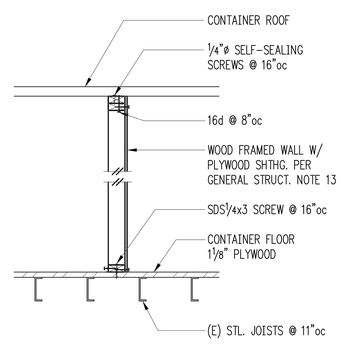
Plan Notes

1. SIDE WALLS MAY BE DRILLED FOR PIPING. MAX. 6"ø HOLE W/ (2) HOLE DIAMETERS CLEAR BETWEEN ADJACENT HOLES.
2. (E) CONTAINER FLOOR: 1 1/8" PLYWOOD OVER 5" STEEL CHANNELS @ 11"oc.
3. EXISTING CONTAINER SHALL BE 20'-0" LONG ISO CERTIFIED CARGO CONTAINER.
4. ALL FOUNDATIONS ARE CAST-IN-PLACE CONCRETE PER GENERAL STRUCTURAL NOTES 14, 15, AND 16.
5. AT PERIMETER OF CONTAINER BASE, FORKLIFT HOLES SHALL BE LEFT OPEN FOR UNDERFLOOR VENTILATION.

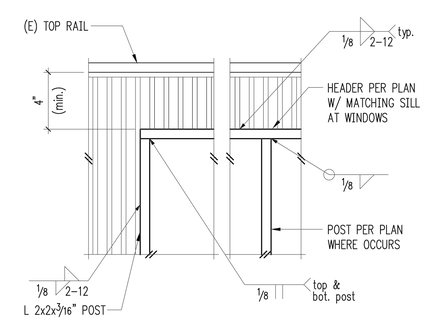
1

Container Floor Framing Plan

Scale: 3/8" = 1'-0"



Typical Partition Wall 2



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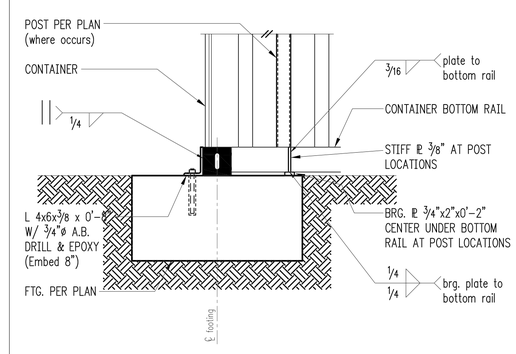

Typical Footing 4

STRUCTURAL ENGINEERING
SEATTLE
2124 Third Avenue, Suite 100
Seattle, WA 98121
TACOMA
934 Broadway, Suite 100
Tacoma, WA 98402
CENTRAL WASHINGTON
414 N Pearl Street, Suite 8
Ellensburg, WA 98926
206.443.6212
ssfengineers.com

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BRIAN P. RITTERBEA
STATE OF WASHINGTON
43241
STRUCTURAL ENGINEER
PROFESSIONAL ENGINEER

DRAWN: SJB
DESIGN: BPR
CHECKED: BPR
APPROVED: BPR

REVISIONS:

1	Permit Correction 2	Apr. 22, 2024

JURISDICTIONAL APPROVAL STAMP:

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

PROJECT TITLE:
Circle K
Equipment Enclosure
2350 24th Ave E
Seattle, WA 98112

ARCHITECT:
Glacier Environmental Services

ISSUE:
Permit

SHEET TITLE:
General Structural Notes, Framing Plans, and Details

SCALE: 3/4" = 1'-0" U.N.O.
DATE: March 28, 2024
PROJECT NO: 10846-2024-01
SHEET NO:
S1.1

8 x 20 SEABOX GENERAL ARRANGEMENT DETAIL

ENTIRE SYSTEM IS 3RD PARTY CERTIFIED

CONTROL PANEL

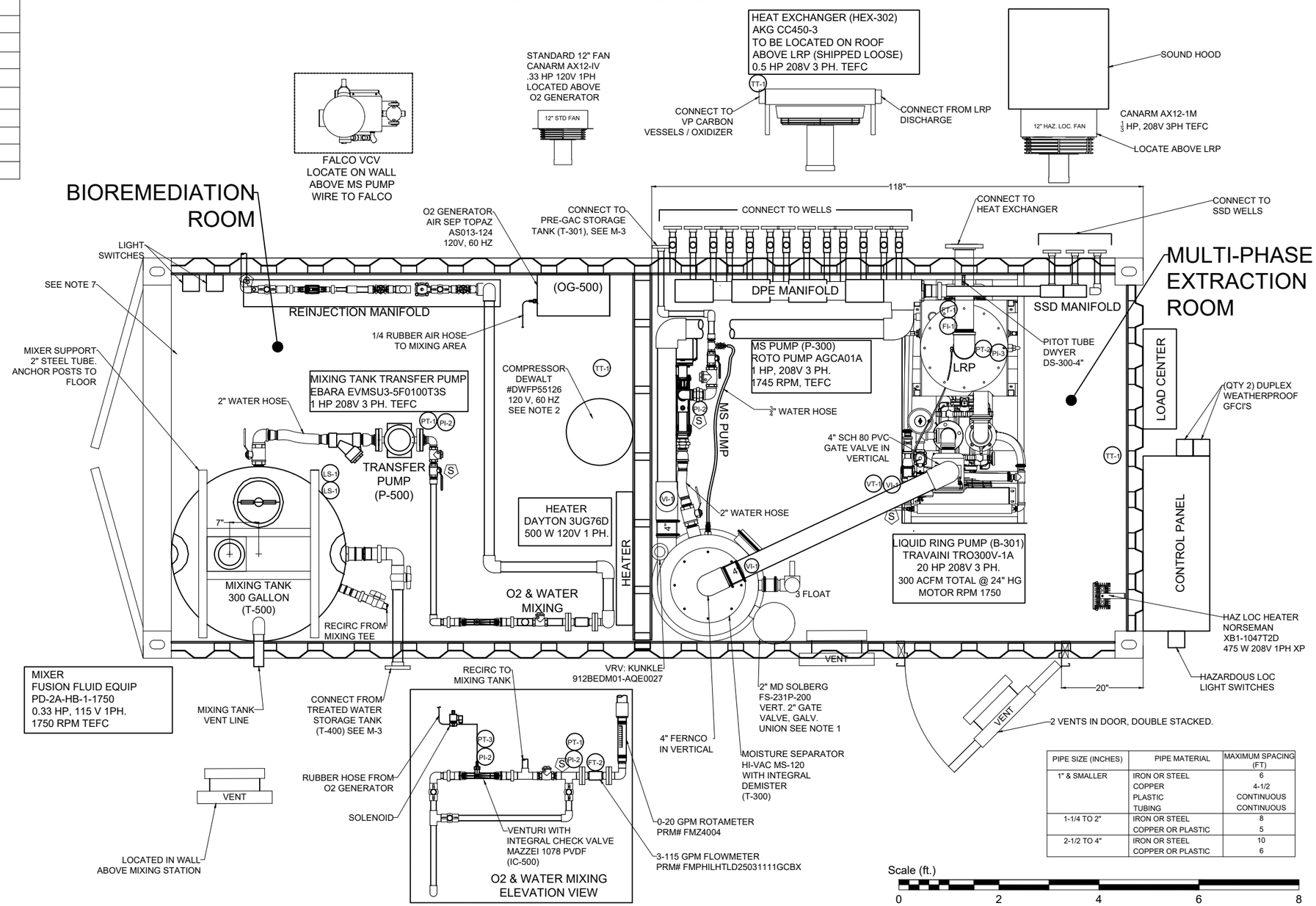
1. PANEL LISTING	508&698a
2. DEADFRONT	YES
3. VOLTAGE	120/208V THREE PHASE WYE
4. PHASE	3
5. AUTO RESTART	YES
6. BREAKERS IN PANEL	YES
7. HOUR METERS	YES
8. AMP METERS	NO
9. HOA AND RESET BUTTON	YES
10. OXIDIZER INTERLOCK	YES
11. PLC	SIEMENS
12. 7/24 TIMER	SIEMENS
13. SURGE PROTECTOR	YES
14. PHASE MONITOR	NO
15. PANEL TRANSFORMER	NO
16 FAN IN PANEL	NO
17. TELEMETRY	SIEMENS
18. TELEMETRY SERVICE	PRM
19. BATTERY BACKUP	YES

NOTES:
1. 1" MS TANK DRAIN LOCATED BELOW MANUAL DILUTION
2. PNEUMATIC ACTUATORS ON DPE MANIFOLD VALVES WILL BE CONNECTED TO COMPRESSOR LOCATED IN NON-HAZARDOUS SIDE.
3. WALLS & CEILING SHALL HAVE R-13 INSULATION AND WOOD FRAMING AND WILL ADD 4" THICKNESS ON ALL SIDES. FLOOR TO HAVE R10 INSULATION.
4. HAZ. LOC. LIGHT IN MPE ROOM. STD LIGHT IN BIOREMEDIATION ROOM.
5. SOUND HOODS TO BE LOCATED OVER ALL VENTS IN MPE ROOM ONLY, INCLUDING LRP HX VENT.
6. LIQUID RING PUMP WILL SIT ON $\frac{3}{4}$" RUBBER MAT.
7. 4-1/2" BERM WILL BE PROVIDED AROUND PERIMETER OF BOTH ROOMS. FLOOR WILL BE COATED AND SEALED TO ACT AS SECONDARY CONTAINMENT.
8. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES
9. ANY PLUMBING ON FLOOR IN WALKWAY AREAS REQUIRES A STEPOVER.
10. MINIMIZE PROTRUSION OUTSIDE ON DPE MANIFOLD PENETRATIONS

LOOSE EQUIPMENT:
1. POST LRP HEAT EXCHANGER (AFTERCOOLER) TO BE PROVIDED LOOSE AND FIELD PIPED BY OTHERS.
2. FALCO 300 CATALYTIC OXIDIZER. SUPPLIED WITH SOLBERG HDL-PSG344/2-300 COALESCER TO BE INSTALLED BEFORE FALCO INLET. VCV INSTALLED IN LRP ROOM TO BE REMOVED AND RETURNED WITH FALCO AT THE END OF RENTAL.
3. VAPOR PHASE CARBON VESSELS: (2) VP-2000. EACH FILLED WITH 2000 LBS OF REACTIVATED CARBON. EACH ALSO INCLUDES 1" SS DRAINS, (3)PRESSURE INDICATORS (PI-3) AND 4" ALUMINUM CAMLOCK CONNECTIONS.
3. PRE-LGAC WATER STORAGE TANK SKID (M-3).
4. TREATED WATER SKID (M-3).
5. LGAC SKID(M-4).
6. QTY 4 ANCHOR POSTS: PRM# TRAILSEABOXANCHORX
7. DWYER DS-300 PITOT TUBE AND DIFF. PRES GAUGE (FI-1) FOR STARTUP TESTING OF DPE WELLS
8. SPARE SS STRAINER BASKET SIZED FOR #2 TRADE SIZE BAG
9. QTY 25 OF 25 MICRON BAG FILTERS
10. QTY 25 OF 50 MICRON BAG FILTERS

PRM PARTS LIST

PRM PARTS	DESCRIPTION	PRM #	QTY
PI-1	0-50 PSI LF GAUGE	PGCNBTY630251850PSI	0
PI-2	0-100 PSI PRES GAUGE	PGCNBTY6302514100PSI	3
PI-3	0-10PSI PRESS GAUGE	PGCNBTY630251310PSI	4
PI-4	-15 HG- 100 PSI LF GAUGE	PGCNBTY6301515HG100PSI	1
VI-1	0-30" HG LF GAUGE	PGCNBTY630252230HG	3
TT-1	0-392 TEMP TRANSMITTER	CONTD148WD	3
PT-1	0-100 PSI PRES TRANSMITTER	PT100PSICABLE025MNPTX	2
PT-2	0-100"WC PRES TRANSMITTER	PGTLFMI100WCX	1
PT-3	-15 TO 30 PSIG PRES TRANS.	PT15V165PSI24VDCX	1
VT-1	0-30" VACUUM TRANSMITTER	PT100030HG025MNPTX	1
FT-1	0-5"WC DPT	PGTLFMI005WCX	1
FT-2	3-115 GPM FLOW TRANS.	FMPHILHTLD25031111GCBX	1
FI-1	0-5"WC DIFF PRES. GAUGE	DPGJH0005X	1
LS-1	FLOAT LEVEL SWITCH	FLSLSCF07X7X	2



PIPE SIZE (INCHES)	PIPE MATERIAL	MAXIMUM SPACING (FT)
1" & SMALLER	IRON OR STEEL	6
	COPPER	4-1/2
	PLASTIC	CONTINUOUS
	TUBING	CONTINUOUS
1-1/4 TO 2"	IRON OR STEEL	8
	COPPER OR PLASTIC	5
2-1/2 TO 4"	IRON OR STEEL	10
	COPPER OR PLASTIC	6

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
SEABOX GENERAL ARRANGEMENT

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

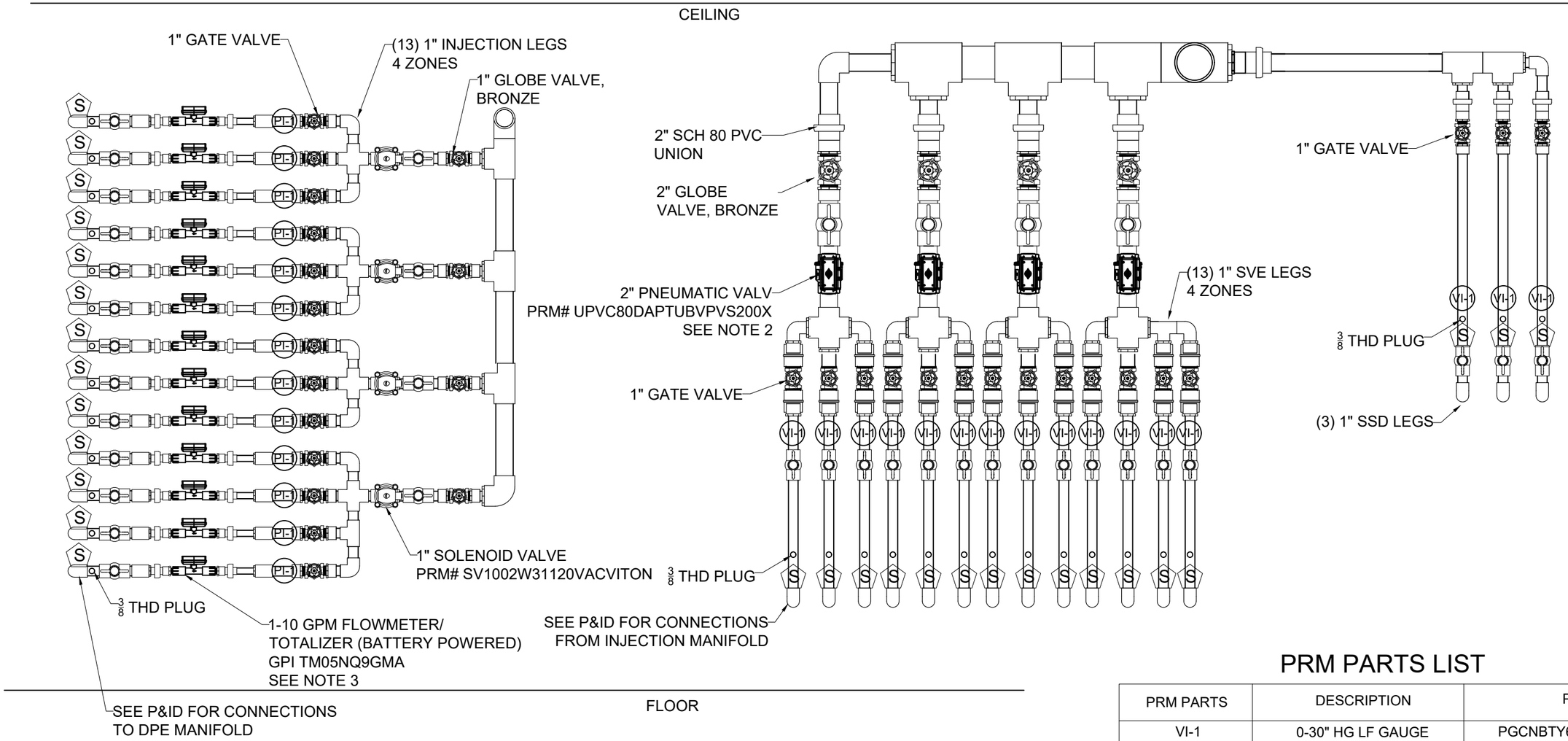
NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: M-1

REINJECTION MANIFOLD ELEVATION DETAIL

DPE MANIFOLD ELEVATION DETAIL

SSD MANIFOLD ELEVATION DETAIL



PRM PARTS LIST

PRM PARTS	DESCRIPTION	PRM #	QTY
VI-1	0-30" HG LF GAUGE	PGCNBTY630252230HG	16
PI-1	0-30 PSI GAUGE	PGCNBTY630251230PSI	13

NOTES:

1. DPE MANIFOLD: ONE OR TWO ZONES MAY BE LOCATED ON PARTITION WALL IF EXTRA SPACE IS REQUIRED
2. COMPRESSED AIR REQUIRED FOR ACTUATION OF 2" PNEUMATIC VALVES ON DPE MANIFOLD TO BE PROVIDED BY COMPRESSOR LOCATED IN INJECTION SIDE OF SEABOX.
3. ALLOW 10 PIPE DIAMETERS STRAIGHT PIPE UPSTREAM OF FLOWMETERS AND 5 PIPE DIAMETERS DOWNSTREAM.

Scale (ft.)

0 2 4

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MUKILTEO, WA 98275

PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
REINJECTION / DPE / SSD
MANIFOLD ELEVATION DETAILS

QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

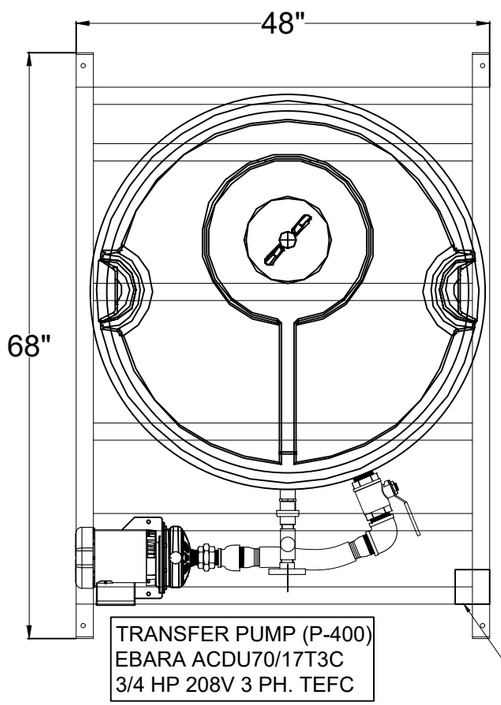
NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: M-2

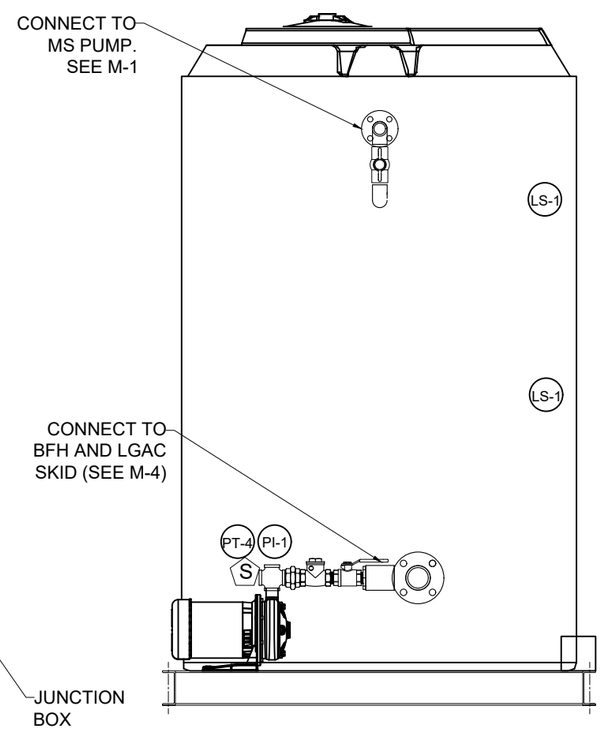
PRE-GAC WATER STORAGE TANK SKID (T-301)

500 GALLON TANK

PLAN VIEW



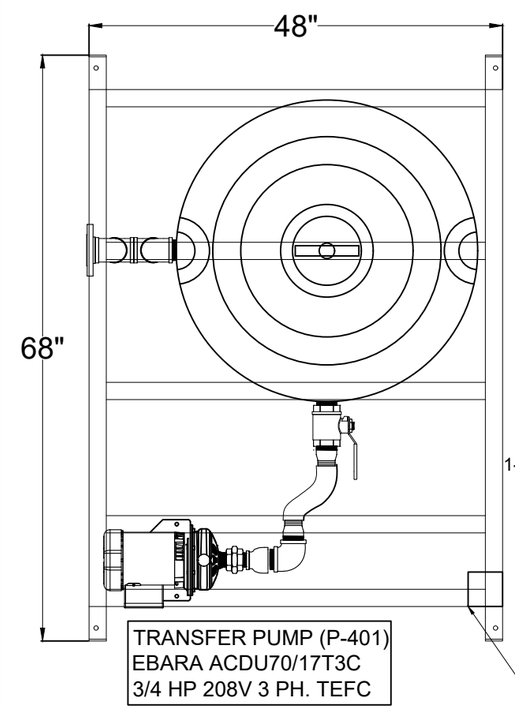
ELEVATION VIEW



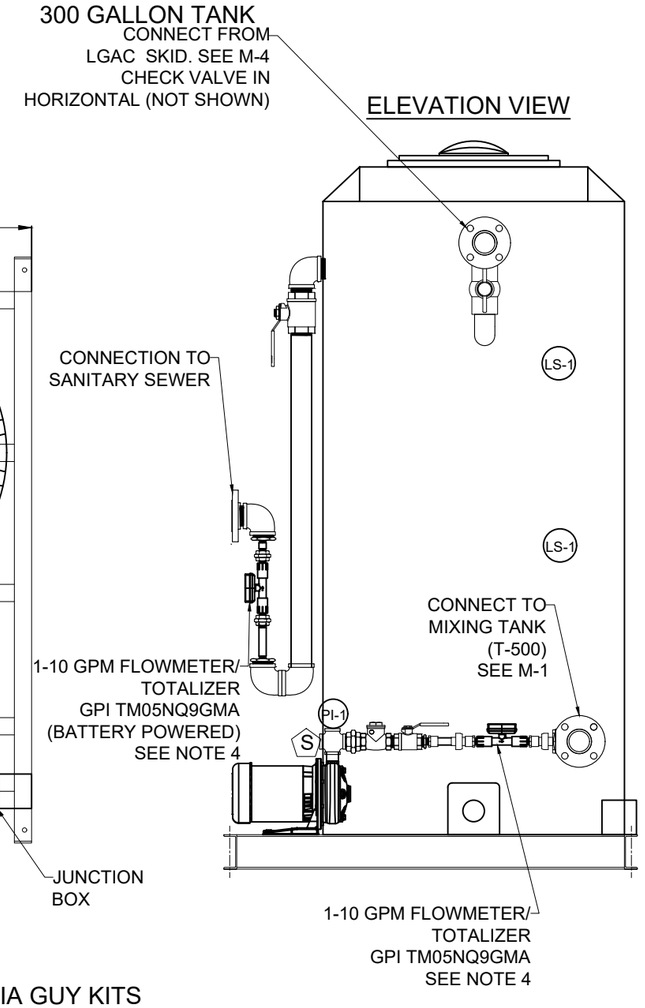
TREATED WATER STORAGE TANK SKID (T-400)

300 GALLON TANK

PLAN VIEW



ELEVATION VIEW



NOTES:
1. TANKS ATTACH TO SKIDS VIA GUY KITS
2. PIPE SUPPORTS TO BE PROVIDED AS NEEDED
3. ALL ELECTRICAL PRE-WIRED TO JUNCTION BOX
4. ALLOW 10 PIPE DIAMETERS STRAIGHT PIPE UPSTREAM OF FLOWMETERS AND 5 PIPE DIAMETERS DOWNSTREAM.

SKID CONSTRUCTION NOTES
1. SKID PAINT DETAILS:
   1.1. PRIMER: EPOXY PRIMER (HBE-400)
   1.2. PAINT: BATTLESHIP GREY ACRYLIC URETHANE FINISH (AUE-100)
2. MATERIAL: 4X2 CS CHANNEL

Scale (ft.)

0 2 4

PRM PARTS LIST

PRM PARTS	DESCRIPTION	PRM #	QTY
PI-1	0-50 PSI LF GAUGE	PGCNBTY630251850PSI	2
PT-4	0-50 PSI TRANSMITTER	PT50PPSI24VDCX	1
LS-1	FLOAT LEVEL SWITCH	FLSLSCF07X7X	4

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CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

PROJECT TITLE: MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

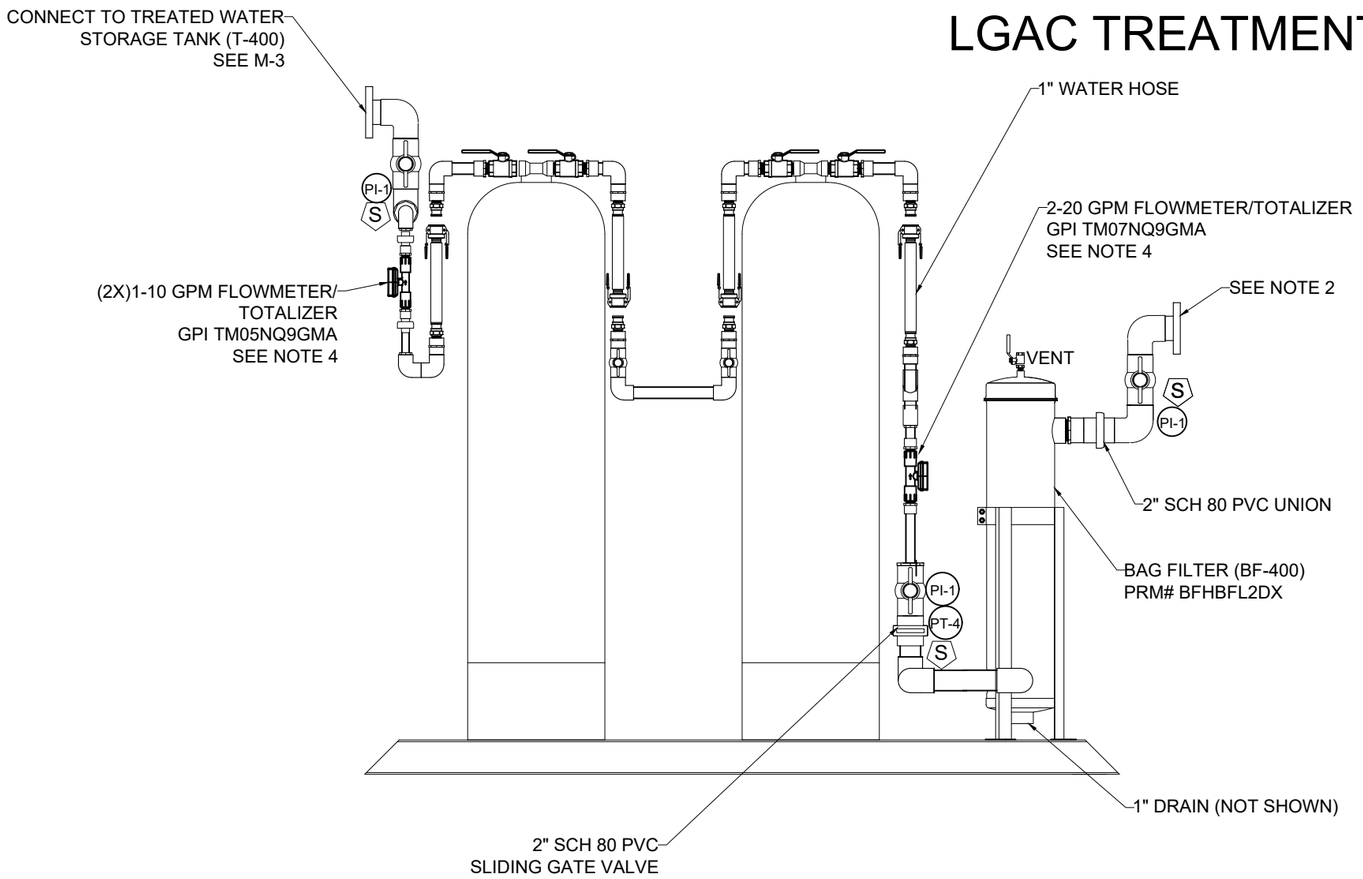
SHEET TITLE: STORAGE TANK SKIDS

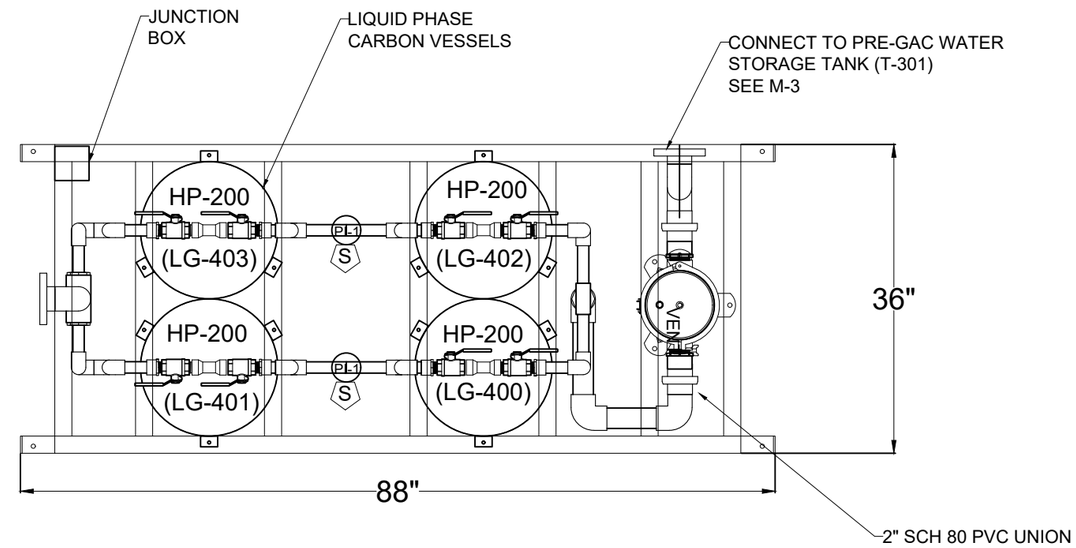
QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: M-3

LGAC TREATMENT SKID





NOTES:
1. PIPE SUPPORTS TO BE PROVIDED AS NEEDED
2. BAG FILTER INLET PLUMBING SHOWN ON RIGHT HAND SIDE FOR DRAWING CLARITY- SEE PLAN DETAIL.
3. ALL ELECTRICAL PRE-WIRED TO JUNCTION BOX.
4. ALLOW 10 PIPE DIAMETERS STRAIGHT PIPE UPSTREAM OF FLOWMETERS AND 5 PIPE DIAMETERS DOWNSTREAM.

PRM PARTS LIST

PRM PARTS	DESCRIPTION	PRM #	QTY
PI-1	0-50 PSI LF GAUGE	PGCNBTY630251850PSI	5
PT-4	0-50 PSI TRANSMITTER	PT50PPSI24VDCX	1

SKID CONSTRUCTION NOTES
1. SKID PAINT DETAILS:
   1.1. PRIMER: EPOXY PRIMER (HBE-400)
   1.2. PAINT: BATTLESHIP GREY ACRYLIC URETHANE FINISH (AUE-100)
2. MATERIAL: 4X2 CS CHANNEL

Scale (ft.)
0 2 4

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MUKILTEO, WA 98275

PROJECT TITLE: MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE: LGAC TREATMENT SKID

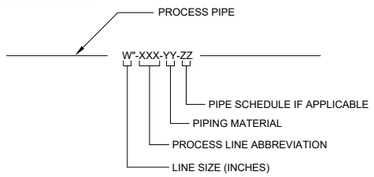
QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: M-4

LINE IDENTIFICATION CODES

LINE NUMBERING



PIPING MATERIAL IDENTIFICATION

AL	ALUMINUM
CPVC	CHLORINATED POLYVINYL CHLORIDE
CS	CARBON STEEL
COP	COPPER
CPP	CORRUGATED PLASTIC PIPE
CIP	CAST IRON PIPE
DIP	DUCTILE IRON PIPE
FH	FLEXIBLE HOSE
GAL	GALVANIZED STEEL PIPE
NYL	NYLON
PE	POLYETHYLENE PIPE
PP	POLYPROPYLENE PIPE
PVC	POLYVINYL PIPE
RUB	RUBBER HOSE
SS	STAINLESS STEEL
TEF	TEFLON TUBING

PROCESS LINE ABBREVIATIONS

AIR	AIR, ATMOSPHERIC PRESSURE
BW	BACKWASH
CA	COMPRESSED AIR
CD	CONDENSATE
CF	CHEMICAL FEED
CGW	CONTAMINATED GROUNDWATER
D	DRAIN
EFF	EFFLUENT
EXH	EXHAUST
GW	GROUNDWATER
LFG	LANDFILL GAS
NPW	NON-POTABLE WATER
P	PRODUCT
PR	PROCESS FLOW
PROP	PROPANE
PW	POTABLE WATER
S	SANITARY
SL	SLUDGE
SP	SAMPLE PORT
STS	STORM SEWER
TF	TOTAL FLUIDS
V	VENT
VAP	VAPOR

LINE CODING

PROCESS FLOW

PNEUMATIC SIGNAL

WIRELESS SIGNAL

ELECTRICAL SIGNALS

4-20mA / LOW VOLTAGE

LINE VOLTAGE

IS

VALVE AND PIPING SYMBOLS

GLOBE VALVE

GATE VALVE

BUTTERFLY VALVE

CHECK VALVE

PLUG VALVE

3-WAY VALVE

ANGLE VALVE

RELIEF VALVE/VACUUM BREAKER

BALL VALVE

GLOBE VALVE

SELF-CONTAINING PRESSURE REGULATING VALVE

NEEDLE VALVE

BP BACKFLOW PREVENTER

NO NORMALLY OPEN

NC NORMALLY CLOSED

FLEXIBLE HOSE

FLEXIBLE COUPLING

MOTOR DRIVEN

BASKET TYPE STRAINER

Y-TYPE STRAINER

DUPLEX STRAINER

SLEEVE COUPLING (SC)

FLOOR DRAIN

EQUIPMENT DRAIN

CLEANOUT (CO)

REMOVABLE PLUG

REMOVABLE CAP

EXHAUST TO ATMOSPHERE (INSIDE)

EXHAUST TO ATMOSPHERE (OUTSIDE)

REDUCER

UNION

QUICK DISCONNECT COUPLING

BF BLIND FLANGE

FLANGE

DAMPER

TEST PORT WITH STOP COCK VALVE

VALVE OPERATOR SYMBOLS

S SOLENOID

M MOTOR, ELECTRIC

P PNEUMATIC

DIAPHRAGM WITH POSITIONER

HANDWHEEL OR LEVER

CHAINWHEEL

PRIMARY ELEMENT SYMBOLS - FLOW

ORIFICE PLATE

PITOT TUBE

THERMAL MASS FLOW METER

ROTOMETER

FLUME

WEIR

TURBINE OR PROPELLOR TYPE METER

MAGNETIC FLOW METER

TOTALING FLOW METER

EQUIPMENT SYMBOLS

PUMP

PNEUMATIC DIAPHRAGM PUMP

LIQUID RING VACUUM PUMP

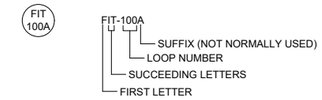
BLOWER

AIR COMPRESSOR

POSITIVE DISPLACEMENT PUMP

SCREW COMPRESSOR

INSTRUMENT IDENTIFICATION



FUNCTIONAL ABBREVIATIONS

DO	DISSOLVED OXYGEN	OC	OPEN-CLOSE
FC	FAIL CLOSED	OO	ON-OFF (MAINTAINED)
FI	FAIL INTERMINATE	ORP	OXIDATION REDUCTION POTENTIAL
FL	FAIL LOCKED	OSC	OPEN-STOP-CLOSE (MOMENTARY)
FO	FAIL OPEN	SS	START-STOP (MONENTARY)
HOA	HAND-OFF-AUTOMATIC	>	HIGH SELECT
I/I	CURRENT-TO-CURRENT	<	LOW SELECT
I/P	CURRENT-TO-PNEUMATIC		
LEL	LOWER EXPLOSIVE LIMIT		
LR	LOCAL-REMOTE		

S SAMPLE PORT

GENERAL INSTRUMENT SYMBOLS

LOCALLY MOUNTED

FRONT-OF PANEL MOUNTED

BACK-OF-PANEL MOUNTED

I INTERLOCK

P PURGE

PLC FUNCTION BLOCK

INSTRUMENT IDENTIFICATION TABLE

FIRST LETTER			SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME				
C	CONDUCTIVITY			CONTROL	CLOSE
D	DENSITY (SP, GR)	DIFFERENTIAL		DRIVE	
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			
G	GAUGING (DIMENSIONAL)		GLASS		
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY				MIDDLE
N					
O			ORIFICE		OPEN
P	PRESSURE		POINT (TEST)		
Q	QUANT. OR EVENT	INTEGRATE			
R	RADIOACTIVITY		RECORD OR PRINT		
S	SPEED OR FREQ.	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	ULTRAVIOLET		MULTIFUNCTION		
V	VACUUM	VISCOSITY		VALVE OR DAMPER	
W	WEIGHT OR FORCE		WELL		
X	THERMOCOUPLE		UNCLASSIFIED		
Y	VIBRATION			RELAY OR COMPUTE	
Z	POSITION			DRIVE, ACTUATE	

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

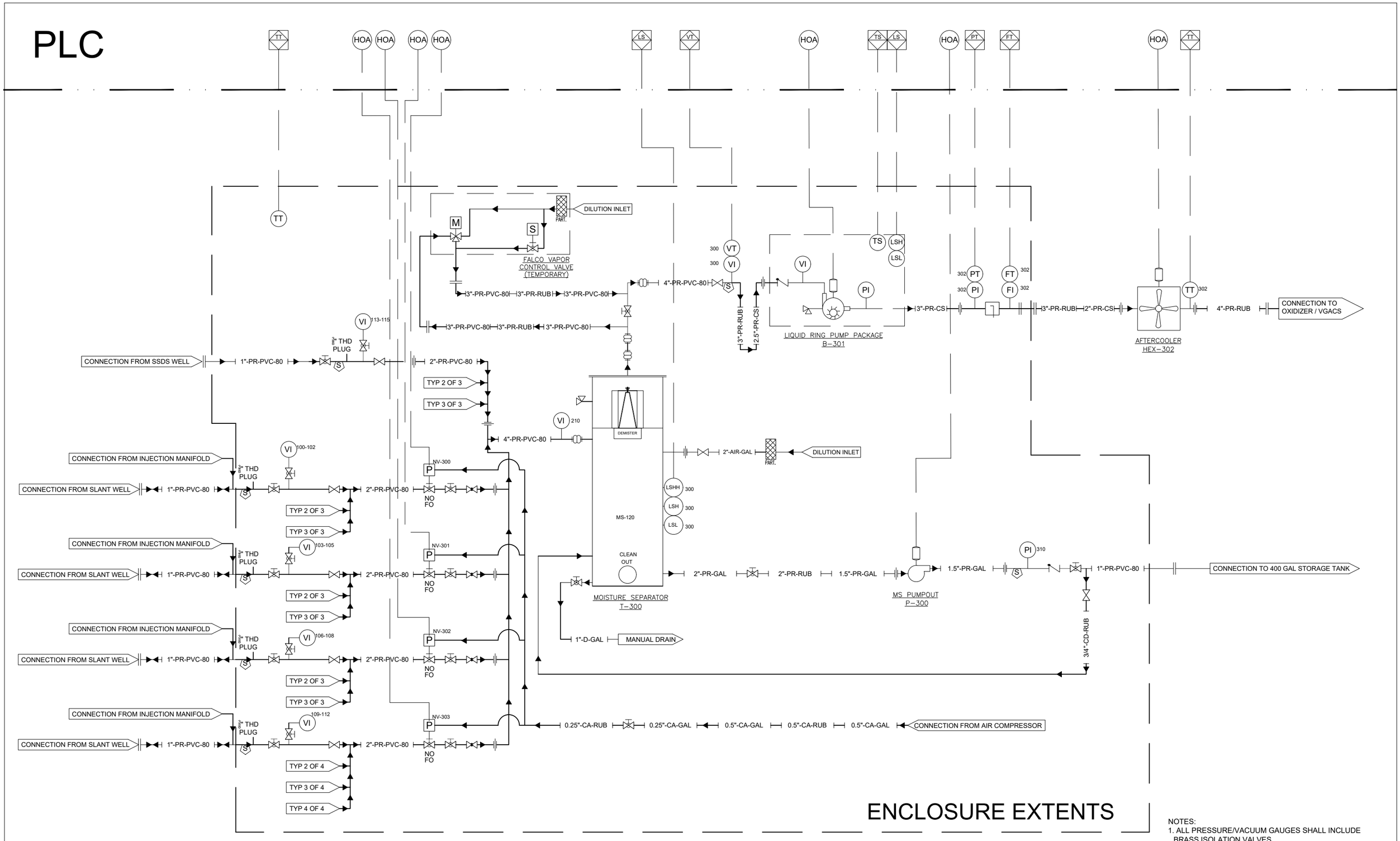
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION DIAGRAM LEGEND

QUOTE #: PRM-9844
PROJECT NUMBER: WO-8135
DATE: 12/1/23
DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-1



NOTES:
1. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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MUKILTEO, WA 98275

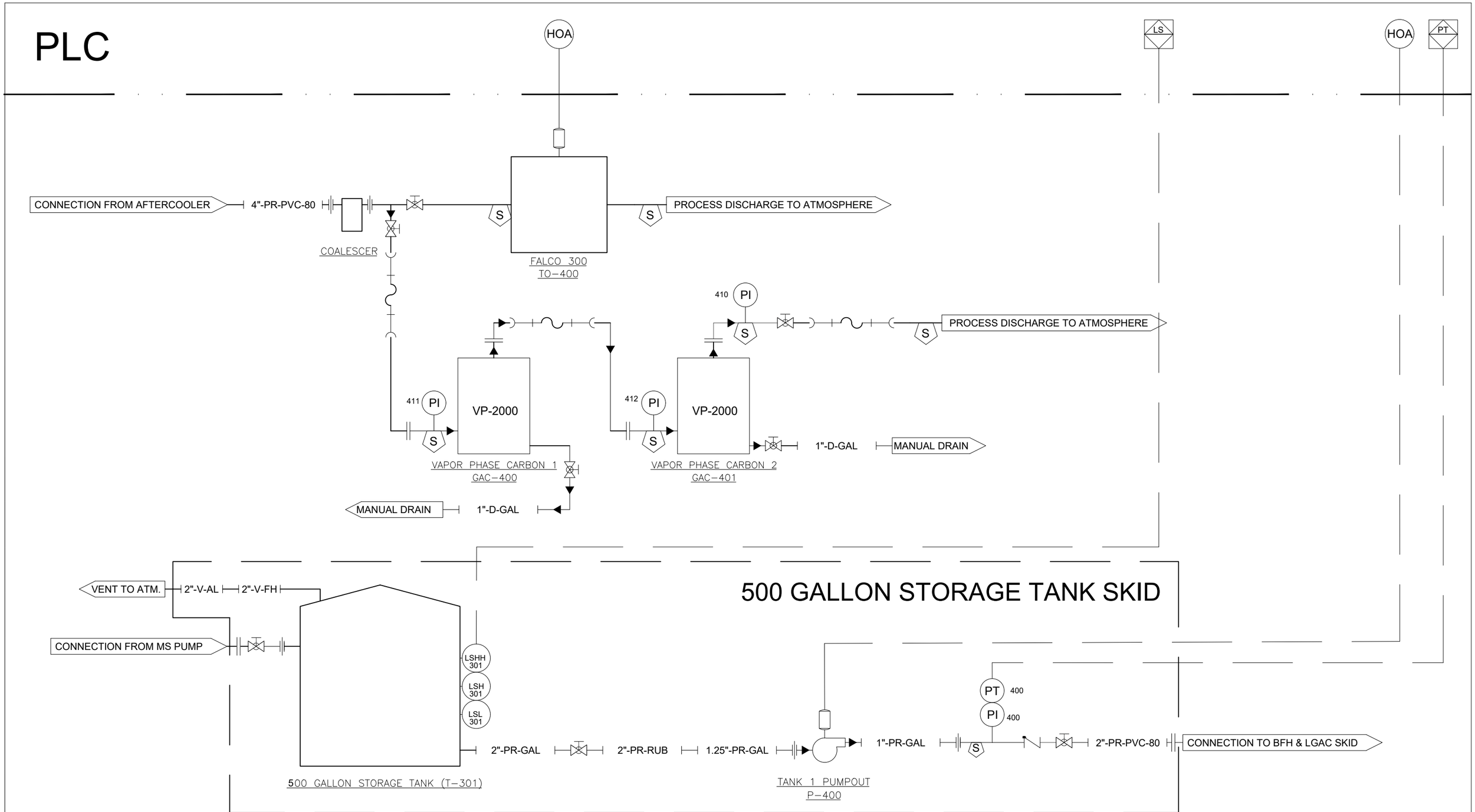
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
INLET MANIFOLDS, MS TANK, & LRP

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-2



NOTES:
1. PRM IS NOT RESPONSIBLE FOR MAKING CONNECTIONS TO/FROM/BETWEEN FALCO AND CARBON VESSELS
2. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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MUKILTEO, WA 98275

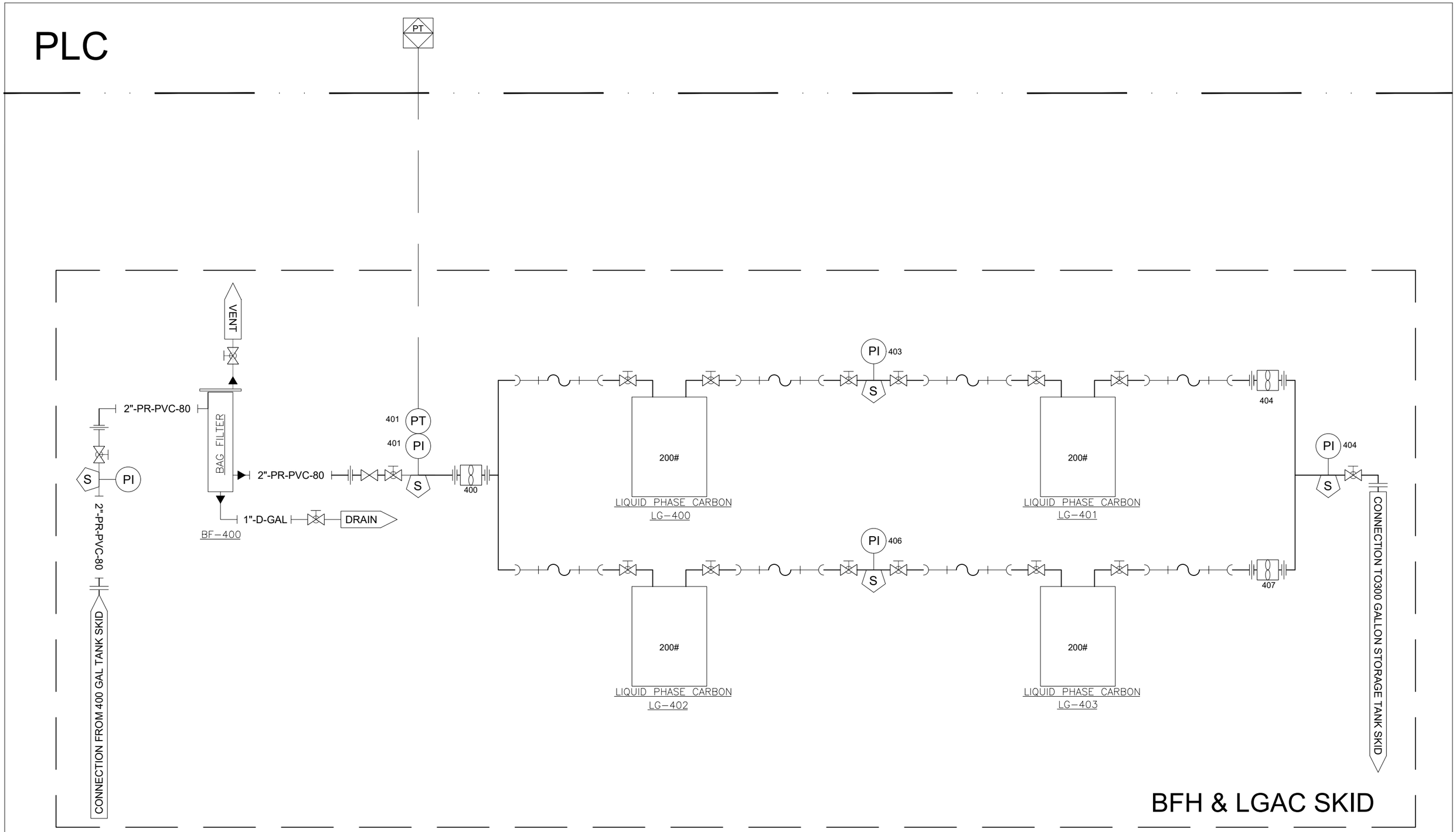
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
VGACs & 500 GALLON STORAGE TANK SKID

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-3



NOTES:
1. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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MUKILTEO, WA 98275

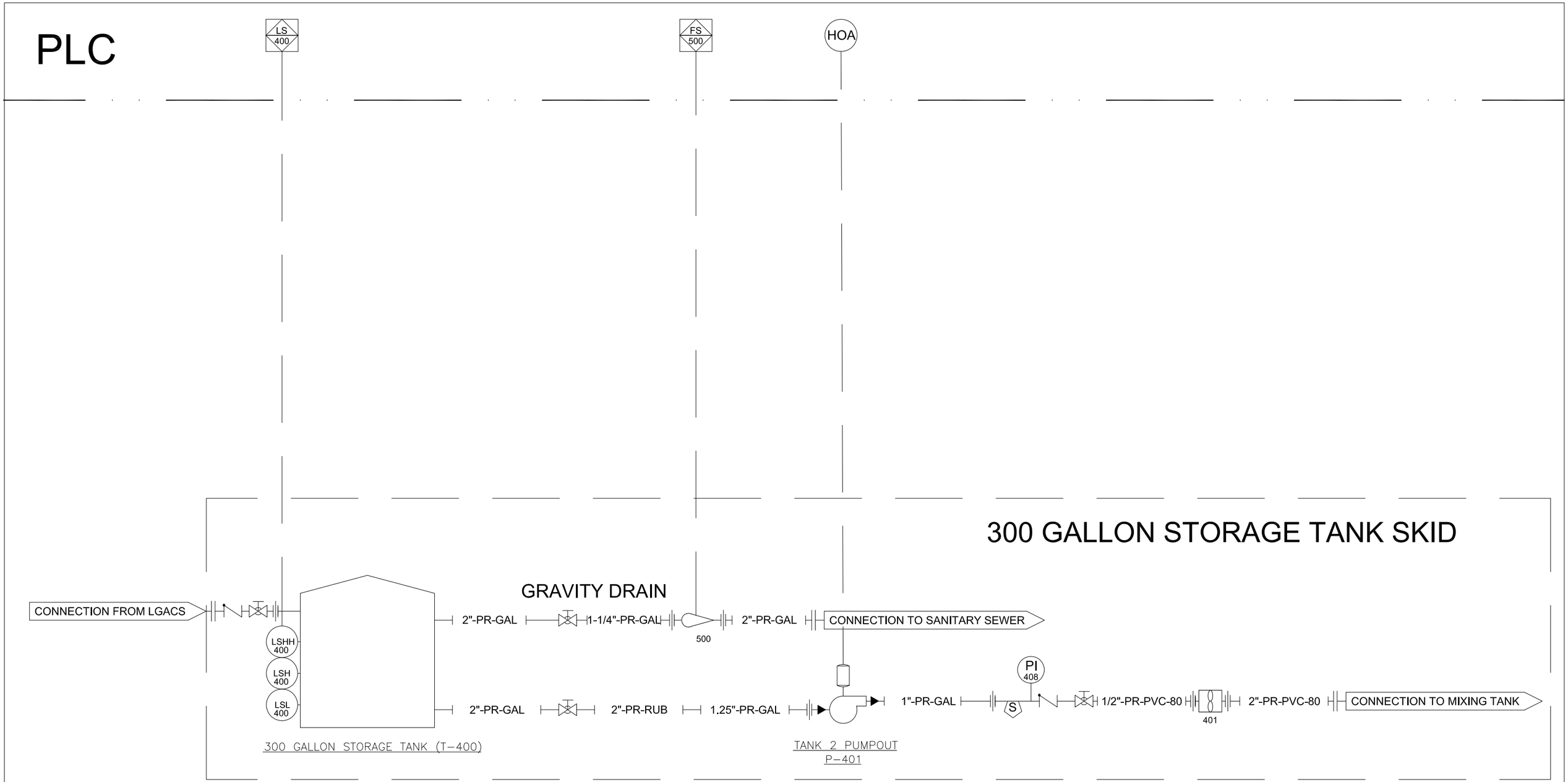
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
BFH & LGAC SKID

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-4



NOTES:
1. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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MUKILTEO, WA 98275

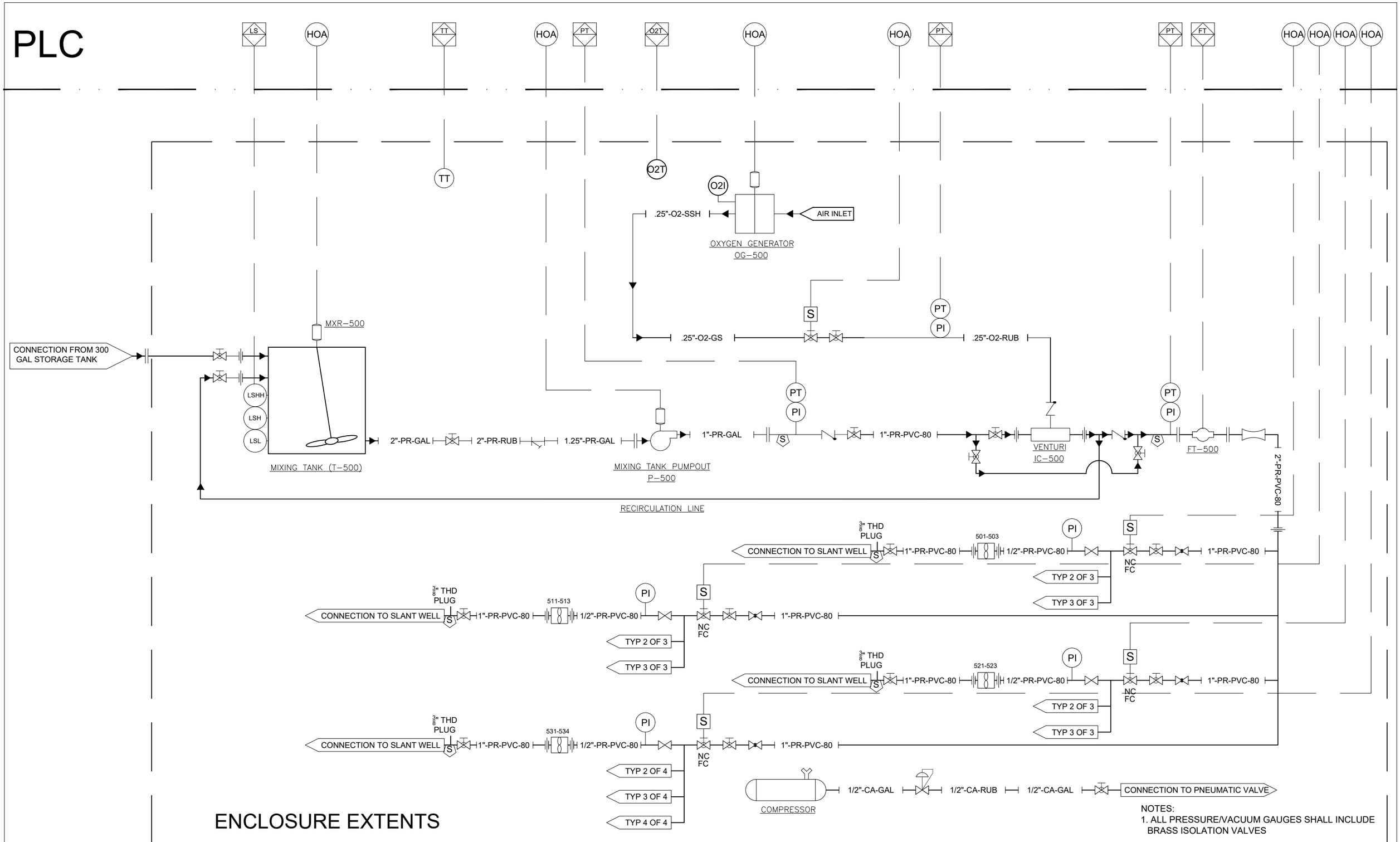
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
300 GALLON STORAGE TANK SKID

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24
3	LABEL UPDATES	07/15/24
4	AS-BUILTS	08/23/24
5	CO-#1	04/10/25

DRAWING NUMBER:
P&ID-5



NOTES:
1. ALL PRESSURE/VACUUM GAUGES SHALL INCLUDE BRASS ISOLATION VALVES

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC
PO BOX 1097
MUKILTEO, WA 98275

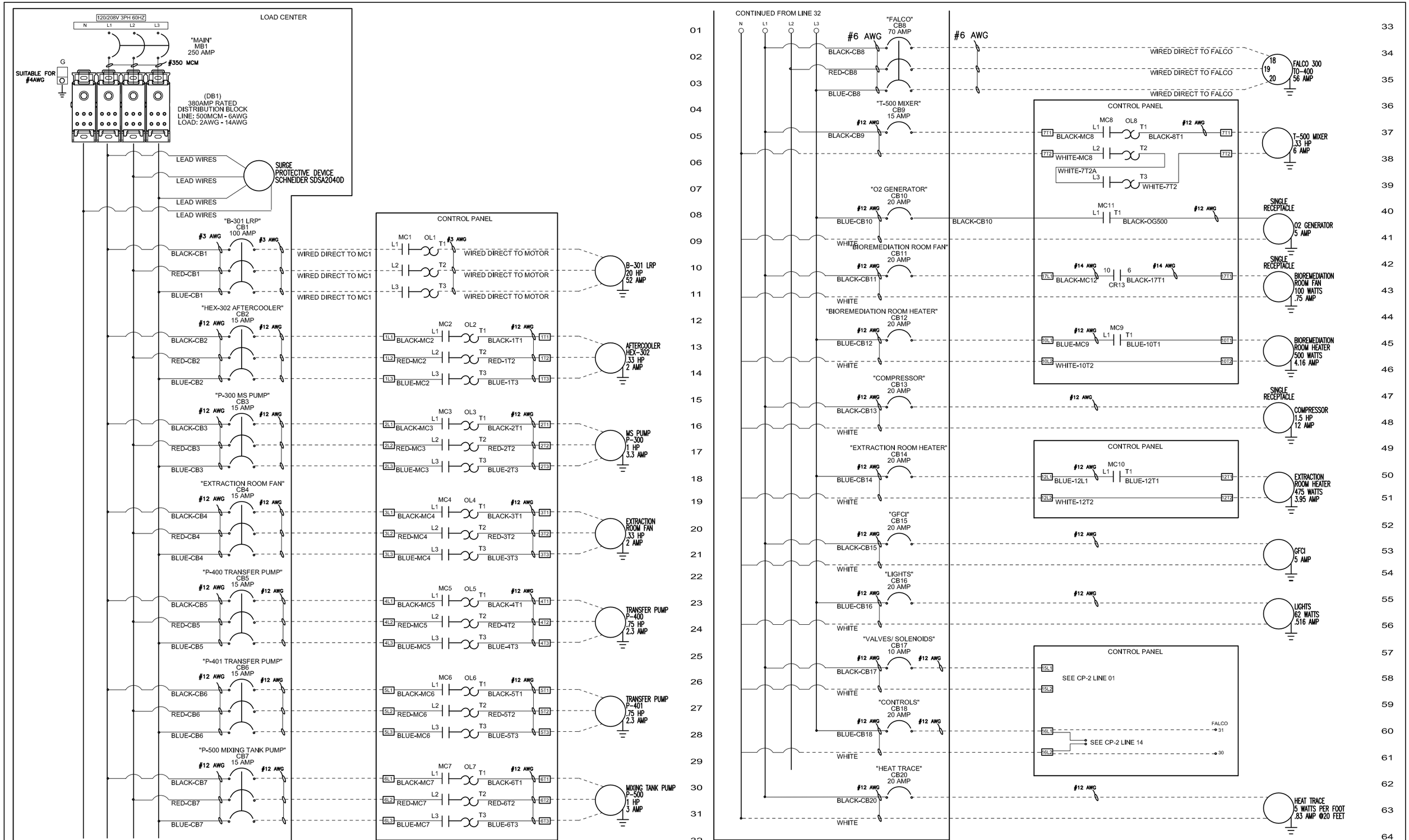
PROJECT TITLE:
MULTI PHASE VACUUM EXTRACTION SYSTEM
CIRCLE K 1461 ENVIRONMENTAL CLEANUP
2350 24TH AVE E
SEATTLE, KING COUNTY, WASHINGTON 98112

SHEET TITLE:
PROCESS & INSTRUMENTATION
BIO-REMEDIATION

QUOTE #:	PROJECT NUMBER:
PRM-9844	WO-8135
DATE: 12/1/23	DRAWN BY: MTW

NO.	REVISION	DATE
1	AS-BUILTS	04/08/24
2	CLIENT LABELS	06/11/24

DRAWING NUMBER: P&ID-6



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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

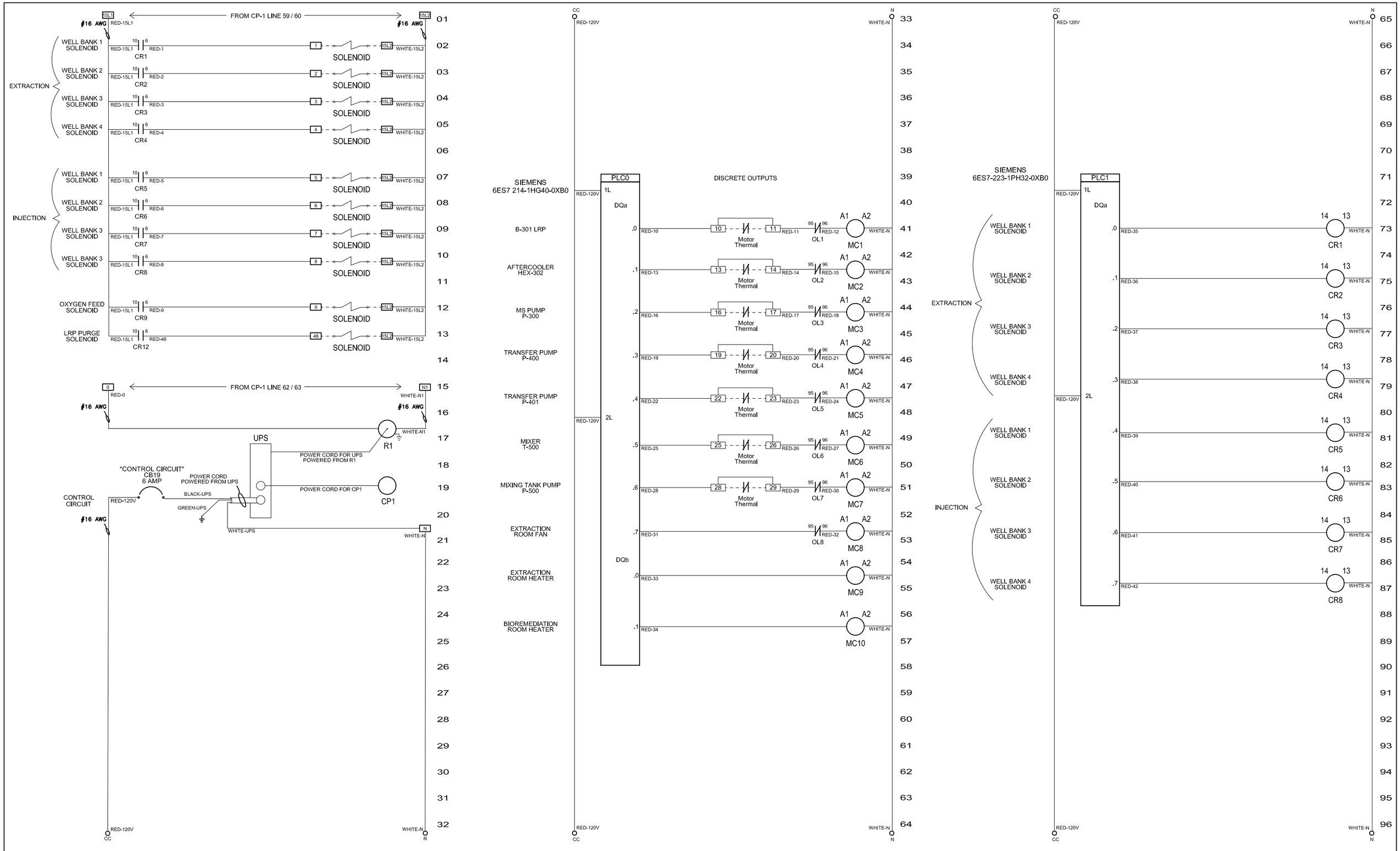
PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE:
CONTROL SCHEMATIC

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE:	DRAWN BY:	MET FILE:
11/17/23	CATLIN	SN0693

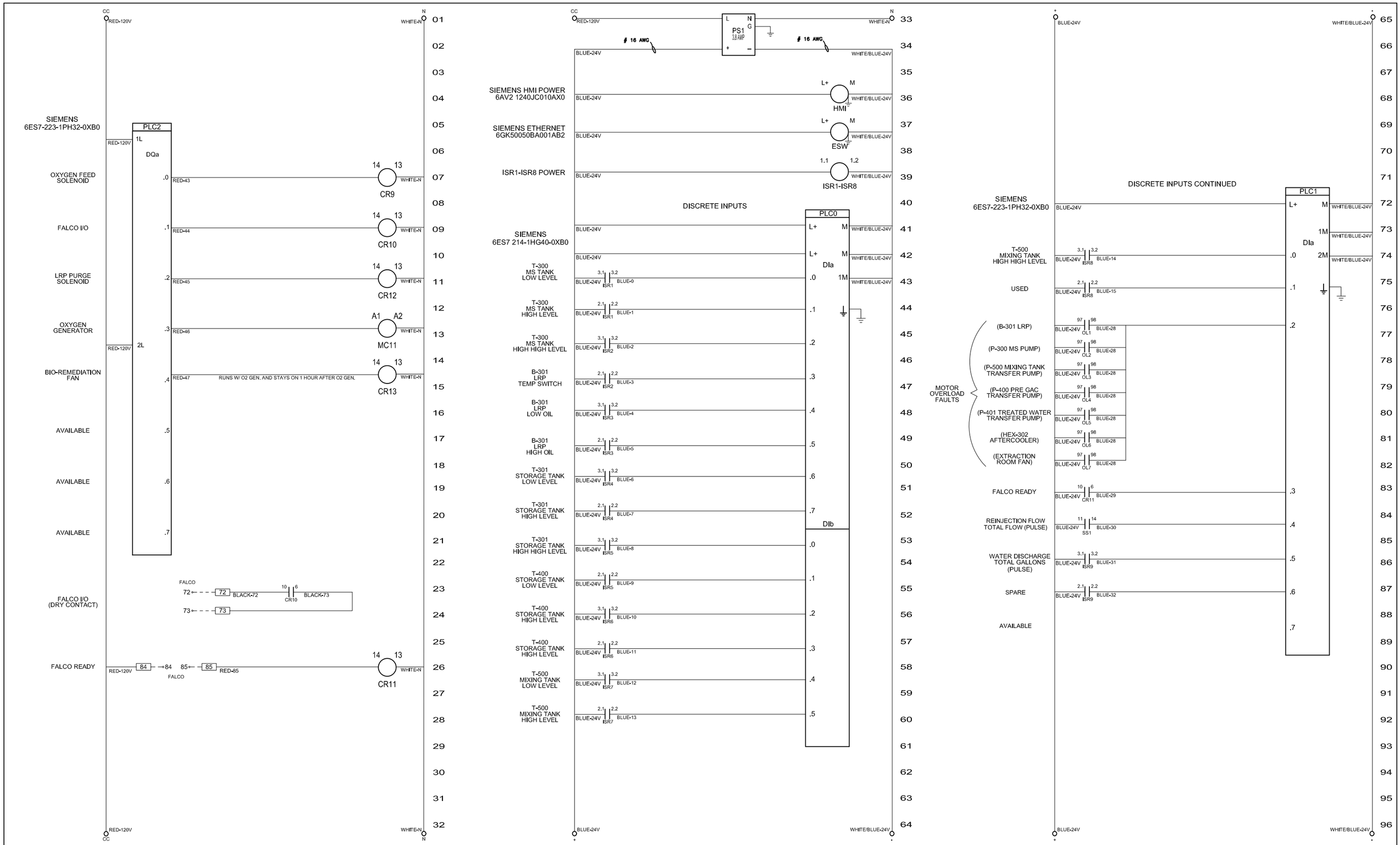
NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER:
CP-1

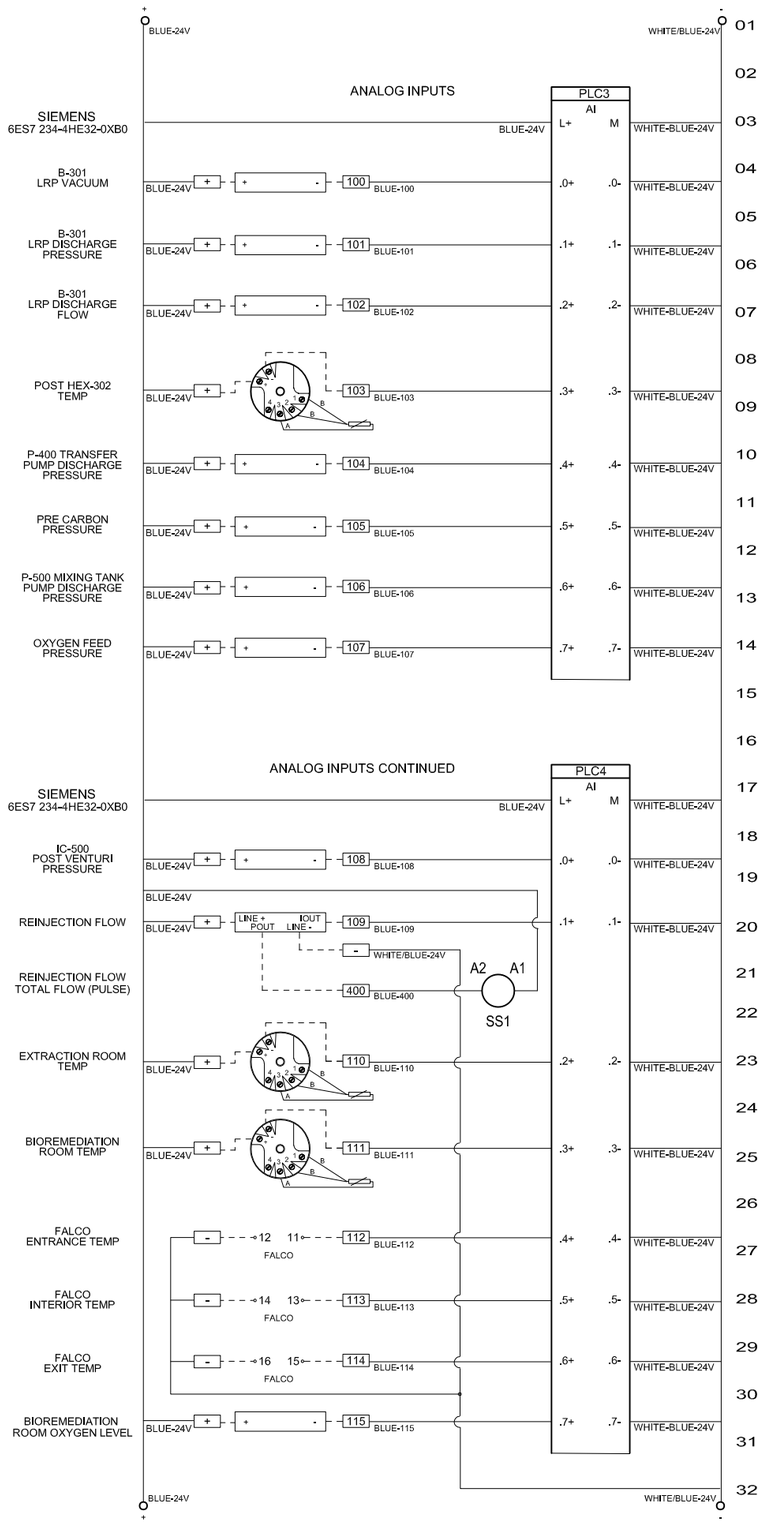


PRMFiltration	Product Recovery Management Inc. This information is proprietary and confidential. No copies or reproductions allowed without the express written consent of PRM Inc.	CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC. 7509 212TH STREET SW EDMONDS, WASHINGTON 98026	PROJECT TITLE: CIRCLE K 1461 2350 24TH AVE E. SEATTLE, KING COUNTY WASHINGTON 98112	SHEET TITLE: CONTROL SCHEMATIC	CAD FILE: GLACIER	PROJECT NUMBER: 8135	SCALE: NTS	NO.	REVISION	DATE
					DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693	1	As Built	4/1/2024

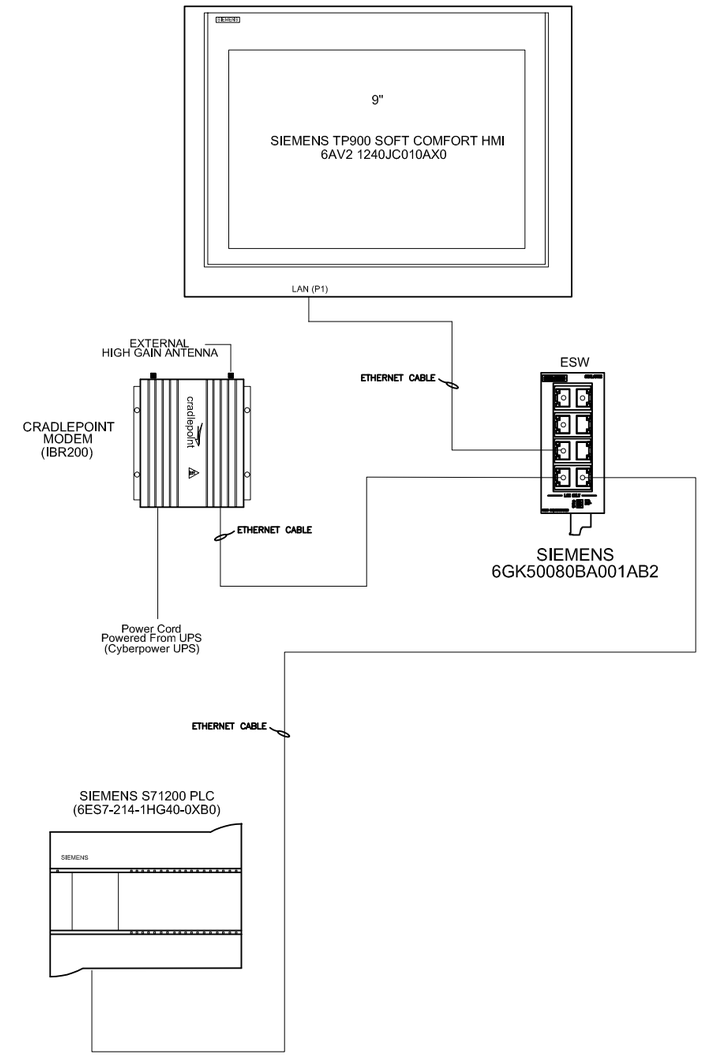
DRAWING NUMBER: CP-2



PRMFiltration	Product Recovery Management Inc. This information is proprietary and confidential. No copies or reproductions allowed without the express written consent of PRM Inc.	CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC. 7509 212TH STREET SW EDMONDS, WASHINGTON 98026	PROJECT TITLE: CIRCLE K 1461 2350 24TH AVE E. SEATTLE, KING COUNTY WASHINGTON 98112	SHEET TITLE: CONTROL SCHEMATIC	CAD FILE: GLACIER DATE: 11/17/23	PROJECT NUMBER: 8135 DRAWN BY: CATLIN	SCALE: NTS MET FILE: SN0693	NO. / REVISION / DATE 1 / As Built / 4/1/2024 2 / Water Discharge Totalizer / 12/2/24	DRAWING NUMBER: CP-3



NETWORKING



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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE:
CONTROL SCHEMATIC
& NETWORKING MAP

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE:	DRAWN BY:	MET FILE:
11/17/23	CATLIN	SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER:
CP-4

TERM1: 89 (ALL)
PARTITION: 1
END CLAMP: 2

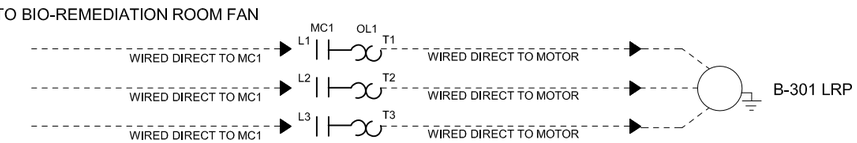
LINE VOLTAGE TERMINALS

	CC	CC	120VAC BATTERY BACKUP PROTECTED (terminals are jumped together)
	CC	CC	
	CC	CC	
	N	N	120VAC NEUTRAL (terminals are jumped together) CONTROLS USE ONLY
	N	N	
	N	N	
(LOAD CENTER) CB2	1L1	1L1	A PHASE IN FROM LOAD CENTER
	1L2	1L2	B PHASE IN FROM LOAD CENTER
	1L3	1L3	C PHASE IN FROM LOAD CENTER
HEX-302 AFTERCOOLER	1T1	1T1	A PHASE OUT TO HEX-302 AFTERCOOLER
	1T2	1T2	B PHASE OUT TO HEX-302 AFTERCOOLER
	1T3	1T3	C PHASE OUT TO HEX-302 AFTERCOOLER
(LOAD CENTER) CB3	2L1	2L1	A PHASE IN FROM LOAD CENTER
	2L2	2L2	B PHASE IN FROM LOAD CENTER
	2L3	2L3	C PHASE IN FROM LOAD CENTER
P-300 MS PUMP	2T1	2T1	A PHASE OUT TO P-300 MS PUMP
	2T2	2T2	B PHASE OUT TO P-300 MS PUMP
	2T3	2T3	C PHASE OUT TO P-300 MS PUMP
(LOAD CENTER) CB4	3L1	3L1	A PHASE IN FROM LOAD CENTER
	3L2	3L2	B PHASE IN FROM LOAD CENTER
	3L3	3L3	C PHASE IN FROM LOAD CENTER
EXTRACTION ROOM FAN	3T1	3T1	A PHASE OUT TO EXTRACTION ROOM FAN
	3T2	3T2	B PHASE OUT TO EXTRACTION ROOM FAN
	3T3	3T3	C PHASE OUT TO EXTRACTION ROOM FAN
(LOAD CENTER) CB5	4L1	4L1	A PHASE IN FROM LOAD CENTER
	4L2	4L2	B PHASE IN FROM LOAD CENTER
	4L3	4L3	C PHASE IN FROM LOAD CENTER
P-400 TRANSFER PUMP	4T1	4T1	A PHASE OUT TO P-400 TRANSFER PUMP
	4T2	4T2	B PHASE OUT TO P-400 TRANSFER PUMP
	4T3	4T3	C PHASE OUT TO P-400 TRANSFER PUMP
(LOAD CENTER) CB6	5L1	5L1	A PHASE IN FROM LOAD CENTER
	5L2	5L2	B PHASE IN FROM LOAD CENTER
	5L3	5L3	C PHASE IN FROM LOAD CENTER
P-401 TRANSFER PUMP	5T1	5T1	A PHASE OUT TO P-401 TRANSFER PUMP
	5T2	5T2	B PHASE OUT TO P-401 TRANSFER PUMP
	5T3	5T3	C PHASE OUT TO P-401 TRANSFER PUMP
(LOAD CENTER) CB7	6L1	6L1	A PHASE IN FROM LOAD CENTER
	6L2	6L2	B PHASE IN FROM LOAD CENTER
	6L3	6L3	C PHASE IN FROM LOAD CENTER
P-500 MIXING TANK PUMP	6T1	6T1	A PHASE OUT TO P-500 MIXING TANK PUMP
	6T2	6T2	B PHASE OUT TO P-500 MIXING TANK PUMP
	6T3	6T3	C PHASE OUT TO P-500 MIXING TANK PUMP
(LOAD CENTER) CB9	7L1	7L1	120V IN FROM LOAD CENTER
	7L2	7L2	NEUTRAL IN FROM LOAD CENTER
T-500 MIXER	7T2	7T2	120V OUT TO T-500 MIXER
	7T3	7T3	NEUTRAL OUT TO T-500 MIXER

(LOAD CENTER) CB12	10L1	10L1	120V IN FROM LOAD CENTER
	10L2	10L2	NEUTRAL IN FROM LOAD CENTER
BIOREMEDIATION ROOM HEATER	10T1	10T1	120V OUT TO BIOREMEDIATION ROOM HEATER
	10T2	10T2	NEUTRAL OUT TO BIOREMEDIATION ROOM HEATER
(LOAD CENTER) CB14	12L1	12L1	120V IN FROM LOAD CENTER
	12L2	12L2	NEUTRAL IN FROM LOAD CENTER
EXTRACTION ROOM HEATER	12T1	12T1	120V OUT TO EXTRACTION ROOM HEATER
	12T2	12T2	NEUTRAL OUT TO EXTRACTION ROOM HEATER
(LOAD CENTER) CB17	15L1	15L1	120V IN FROM LOAD CENTER (VALVES / SOLENOIDS)
	15L2	15L2	NEUTRAL IN FROM LOAD CENTER (VALVES / SOLENOIDS)
(LOAD CENTER) CB18	16L1	16L1	120V IN FROM LOAD CENTER (CONTROLS)
	16L2	16L2	NEUTRAL IN FROM LOAD CENTER (CONTROLS)
SOLENOIDS	1	1	WELL BANK 1 SOLENOID (120V) — EXTRACTION
	2	2	WELL BANK 2 SOLENOID (120V) — EXTRACTION
	3	3	WELL BANK 3 SOLENOID (120V) — EXTRACTION
	4	4	WELL BANK 4 SOLENOID (120V) — EXTRACTION
	5	5	WELL BANK 1 SOLENOID (120V) — INJECTION
	6	6	WELL BANK 2 SOLENOID (120V) — INJECTION
	7	7	WELL BANK 3 SOLENOID (120V) — INJECTION
	8	8	WELL BANK 4 SOLENOID (120V) — INJECTION
	9	9	OXYGEN FEED SOLENOID (120V)
	15L2	15L2	NEUTRAL BANK FOR SOLENOIDS TERMINALS JUMPED TOGETHER
	15L2	15L2	
	15L2	15L2	
	15L2	15L2	
B-301 LRP MOTOR THERMALS (jumper "10" to "11" if no thermal protection)	10	10	B-301 LRP MOTOR THERMAL (COMMON OUT)
	11	11	B-301 LRP MOTOR THERMAL (SIGNAL IN)
HEX-302 AFTERCOOLER MOTOR THERMALS (jumper "13" to "14" if no thermal protection)	13	13	HEX-302 AFTERCOOLER MOTOR THERMAL (COMMON OUT)
	14	14	HEX-302 AFTERCOOLER MOTOR THERMAL (SIGNAL IN)
P-300 MS PUMP MOTOR THERMALS (jumper "16" to "17" if no thermal protection)	16	16	P-300 MS PUMP MOTOR THERMAL (COMMON OUT)
	17	17	P-300 MS PUMP MOTOR THERMAL (SIGNAL IN)
P-400 TRANSFER PUMP MOTOR THERMALS (jumper "19" to "20" if no thermal protection)	19	19	P-400 TRANSFER PUMP MOTOR THERMAL (COMMON OUT)
	20	20	P-400 TRANSFER PUMP MOTOR THERMAL (SIGNAL IN)
P-401 TRANSFER PUMP MOTOR THERMALS (jumper "22" to "23" if no thermal protection)	22	22	P-401 TRANSFER PUMP MOTOR THERMAL (COMMON OUT)
	23	23	P-401 TRANSFER PUMP MOTOR THERMAL (SIGNAL IN)
T-500 MIXER MOTOR THERMALS (jumper "25" to "26" if no thermal protection)	25	25	T-500 MIXER MOTOR THERMAL (COMMON OUT)
	26	26	T-500 MIXER MOTOR THERMAL (SIGNAL IN)
P-500 MIXING TANK PUMP MOTOR THERMALS (jumper "28" to "29" if no thermal protection)	28	28	P-500 MIXING TANK PUMP MOTOR THERMAL (COMMON OUT)
	29	29	P-500 MIXING TANK PUMP MOTOR THERMAL (SIGNAL IN)
FALCO 72	72	72	FALCO I/O (COMMON IN)
FALCO 73	73	73	FALCO I/O (SIGNAL OUT)
FALCO 84	84	84	FALCO READY (COMMON OUT)
FALCO 85	85	85	FALCO READY (SIGNAL IN)
SOLENOID	46	46	LRP PURGE SOLENOID (120V)
(LOAD CENTER) CB11	17L1	17L1	120V IN FOR BIO-REMEDIATION ROOM FAN
BIO-REMEDIATION ROOM FAN	17T2	17T2	120V OUT TO BIO-REMEDIATION ROOM FAN

I.D.	GLACIER8135 (DWG #8135
Voltage	120/208V
Phase	3
Panel FLA	162
Frequency	60hz
SCCR	10ka
Largest Motor:	20hp, 52 fla
Nema Rating: 4	

PANEL CLASSIFICATION: UL508A / UL698A



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CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE: CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE: LINE TERMINAL DEFINITIONS

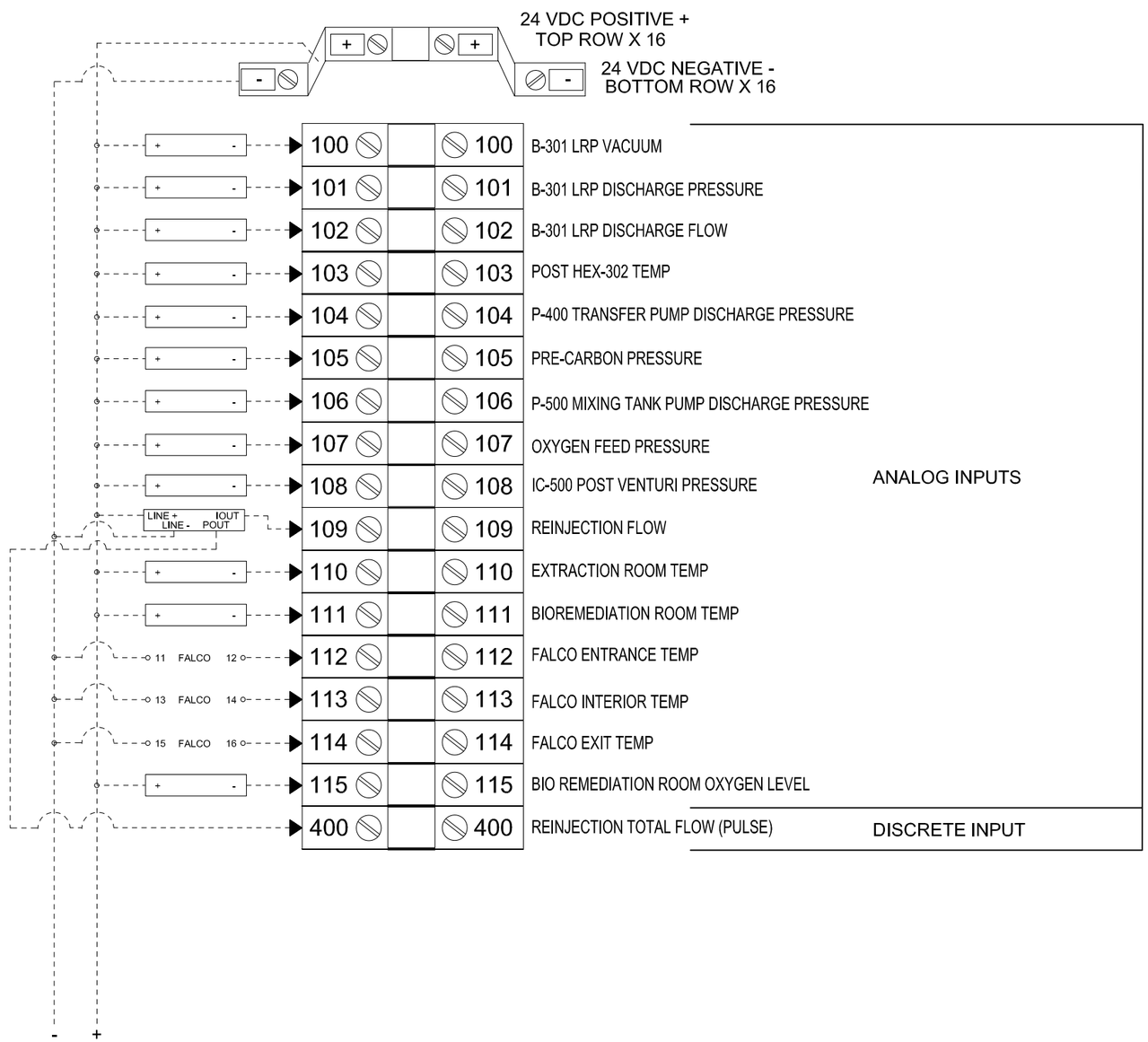
CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER: CP-5

TERM3: 16 (+ / -)
TERM2: 17 (100 - 400)
PARTITION: 2
END CLAMP: 2

LOW VOLTAGE TERMINALS



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CLIENT: GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE: CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE: LOW TERMINAL DEFINITIONS

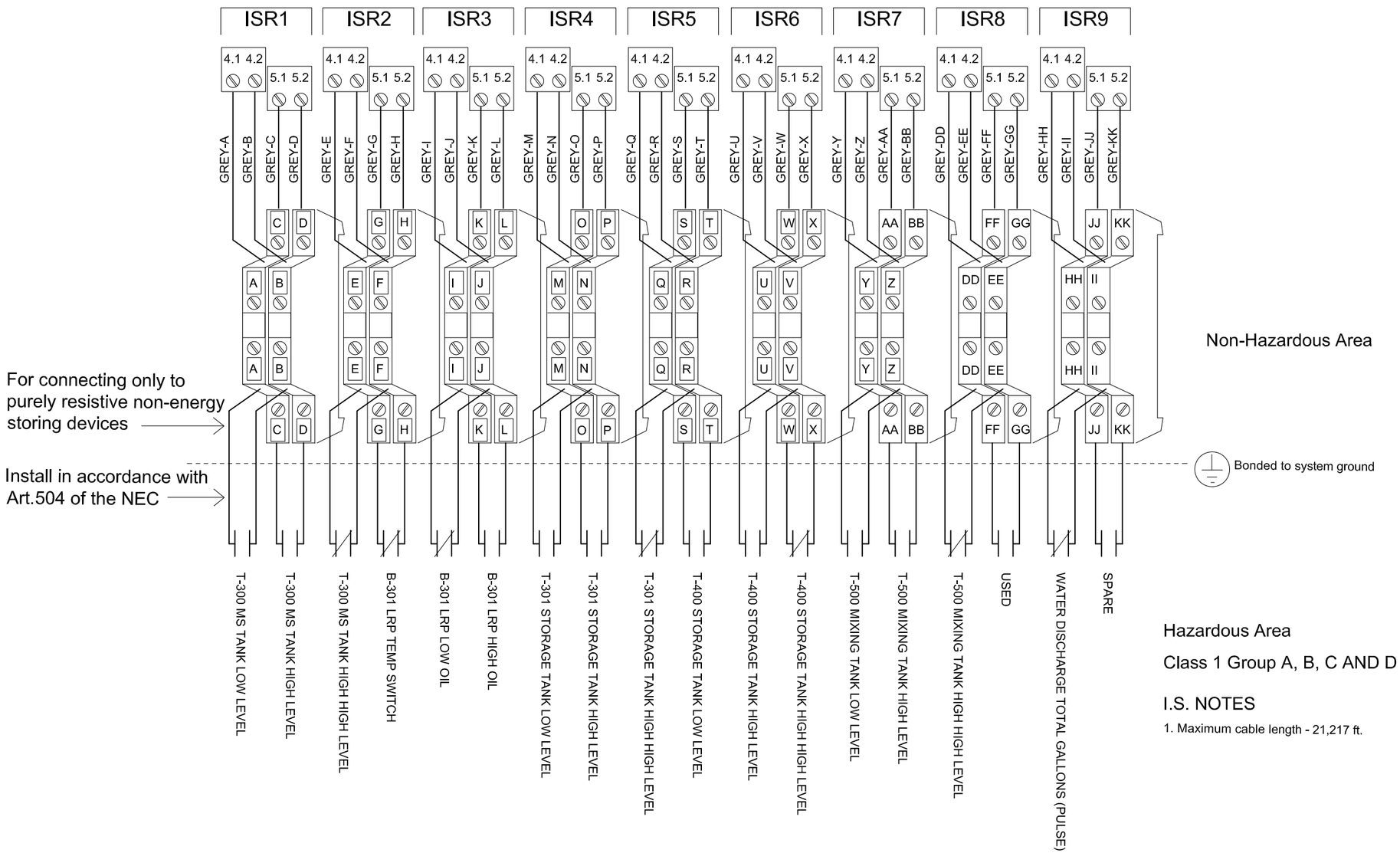
CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER: CP-6

TERM4 = 18
PARTITION: 1
END CLAMP: 2

** TERMINAL "CC" PURPOSELY OMITTED



Hazardous Area

Class 1 Group A, B, C AND D

I.S. NOTES

1. Maximum cable length - 21,217 ft.

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

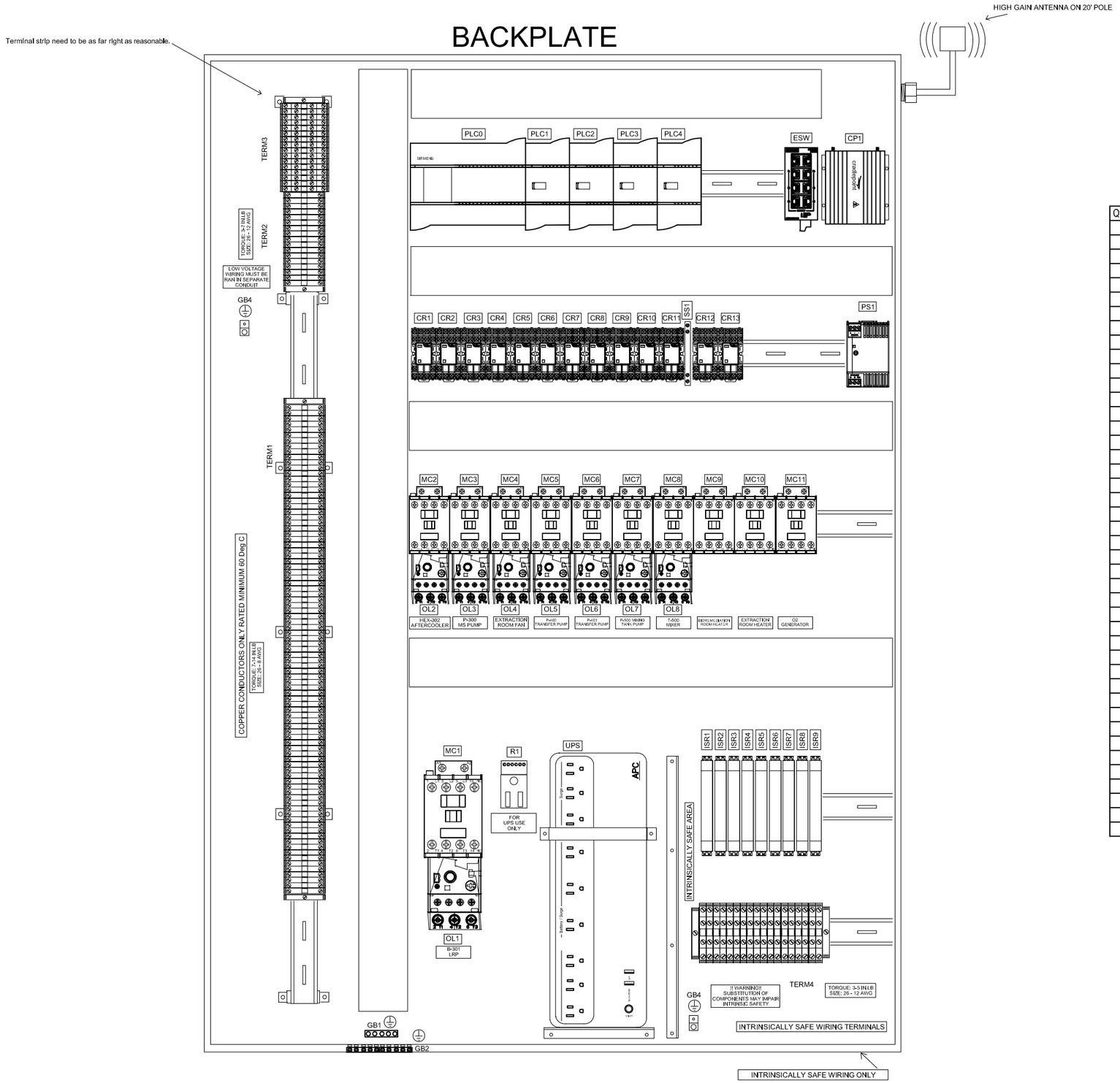
SHEET TITLE:
INTRINSICALLY SAFE TERMINAL DEFINITIONS

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024
2	Water Discharge Totalizer	12/2/24

DRAWING NUMBER: CP-7

BACKPLATE



Qty.	Drawing I.D.	Part No.	Description
		Enclosures	
1		28260	Technomatic 32x48x12 w/ Backplate
		Backplate	
1	PLC0	6ES7 214-1HG40-0XB0	Siemens S71200 PLC
1	PLC1	6ES72231PH320XB0	Siemens 8 Discrete Input 8 Relay Output Module
1	PLC2	6ES72231PH320XB0	Siemens 8 Discrete Input 8 Relay Output Module
1	PLC3	6ES72314HF320XB0	Siemens 8 Analog Input Module
1	PLC4	6ES72314HF320XB0	Siemens 8 Analog Input Module
1	ESW	6GK50050BA001AB2	Siemens 5 Port Ethernet Switch
1	CP1	IBR200	Cradlepoint Modem
13	CR1-CR13	D4L-110VAC	Rele 120vac Ice Cube Relay
13	CR1-CR13	ES-15/4	Rele Ice Cube Relay Base
1	SS1	8950820000	Weidmuller Solid State Relay
1	PS1	6EP1332-5BA20	Siemens 24VDC Power Supply
10	MC2-MC11	3RT20161AK61	Siemens Motor Controller
1	OL2	3RU21161CB0	Siemens Motor Overload 1.8 - 2.5 amp
1	OL3	3RU21161EB0	Siemens Motor Overload 2.8 - 4.0 amp
1	OL4	3RU21161CB0	Siemens Motor Overload 1.8 - 2.5 amp
1	OL5	3RU21161DB0	Siemens Motor Overload 2.2 - 3.2 amp
1	OL6	3RU21161DB0	Siemens Motor Overload 2.2 - 3.2 amp
1	OL7	3RU21161EB0	Siemens Motor Overload 2.8 - 4.0 amp
1	OL8	3RU21161HB0	Siemens Motor Overload 5.5 - 8.0 amp
1	MC1	3RT20381AK60	Siemens Motor Controller
1	OL1	3RU21364QB0	Siemens Motor Overload 47 - 57 amp
1	R1	635OL-080523	Wiedmuller 15amp GFCI
1	UPS	BE850G2	APC 850va Uniturupted Power Supply
2		PS5266-X	Pass & Seymour Male Plug End
9	ISR1-ISR9	2865476	Phoenix Contact Intrinsically Safe Barrier / Relay
90	TERM1	1020200000	Weidmuller Terminal Blocks
17	TERM2	1020000000	Weidmuller Terminal Blocks
16	TERM3	1021500000	Wiedmuller Terminal Blocks Tan 2 Tier
18	TERM4	1021580000	Wiedmuller Terminal Blocks Blue 2 Tier
1		1050000000	Wiedmuller Terminal Block Partition Plate
1		1059100000	Wiedmuller Terminal Block Partition Plate
1		1059180000	Wiedmuller Terminal Block Partition Plate
6		1061200000	Wiedmuller Terminal Block End Clamp
1	GB1	PK5GTA	Square D Equipment Grounding Bar Kit
1	GB2	PK7GTA	Siemens Equipment Grounding Bar Kit
2	GB4	OEC99001	Single Grounding Lug 4-14AWG
	AS NEEDED		80x60 Wire Duct
1	Antenna	WMMG-7-27-5SP	Rok Bro's High Gain Antenna
20'	Antenna		1 1/4" EMT

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CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

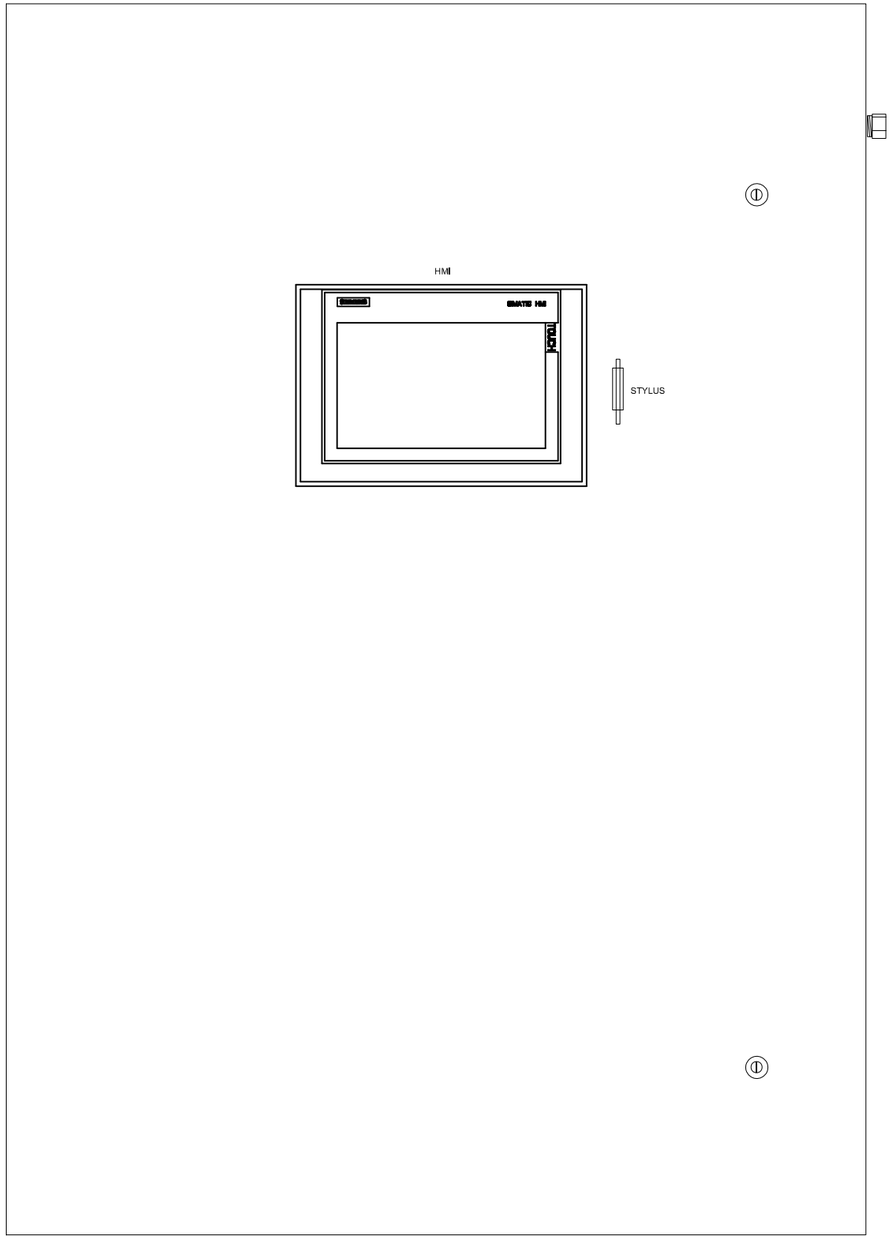
SHEET TITLE:
LAYOUT & BILL OF MATERIAL

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

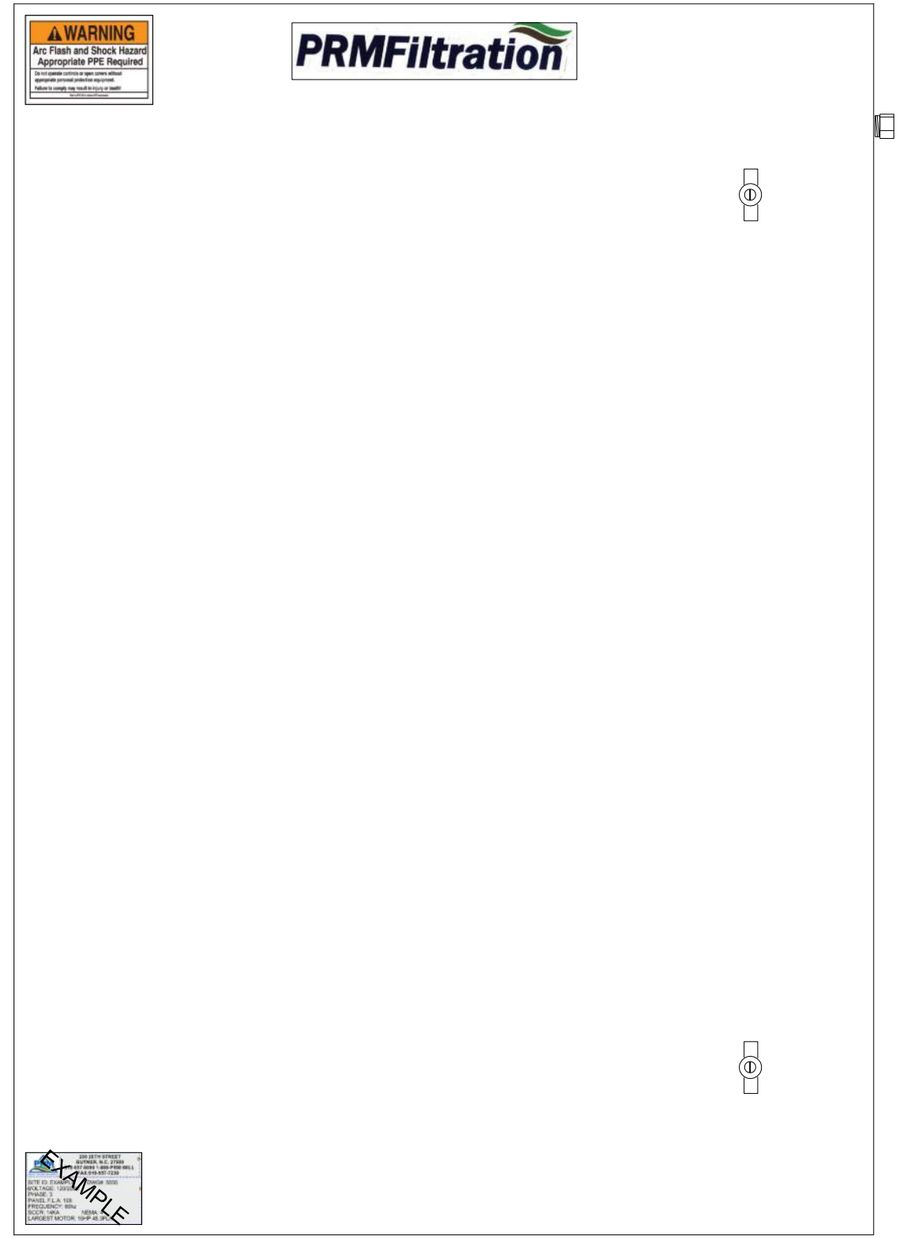
NO.	REVISION	DATE
1	As Built	4/1/2024
2	Water Discharge Totalizer	12/2/24

DRAWING NUMBER: CP-8

(HINGE ON RIGHT SIDE)
INTERIOR DOOR



EXTERIOR DOOR



Qty.	Drawing I.D.	Part No.	Description
		Door	
1	HMI	6AV2 1240JC010AX0	Siemens 9-inch Soft Comfort Touch Panel
1	HMI	N/A	Soft Tip Stylus
1	HMI	Classic-1-1003	PenPal Stylus Holder

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CLIENT:
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7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

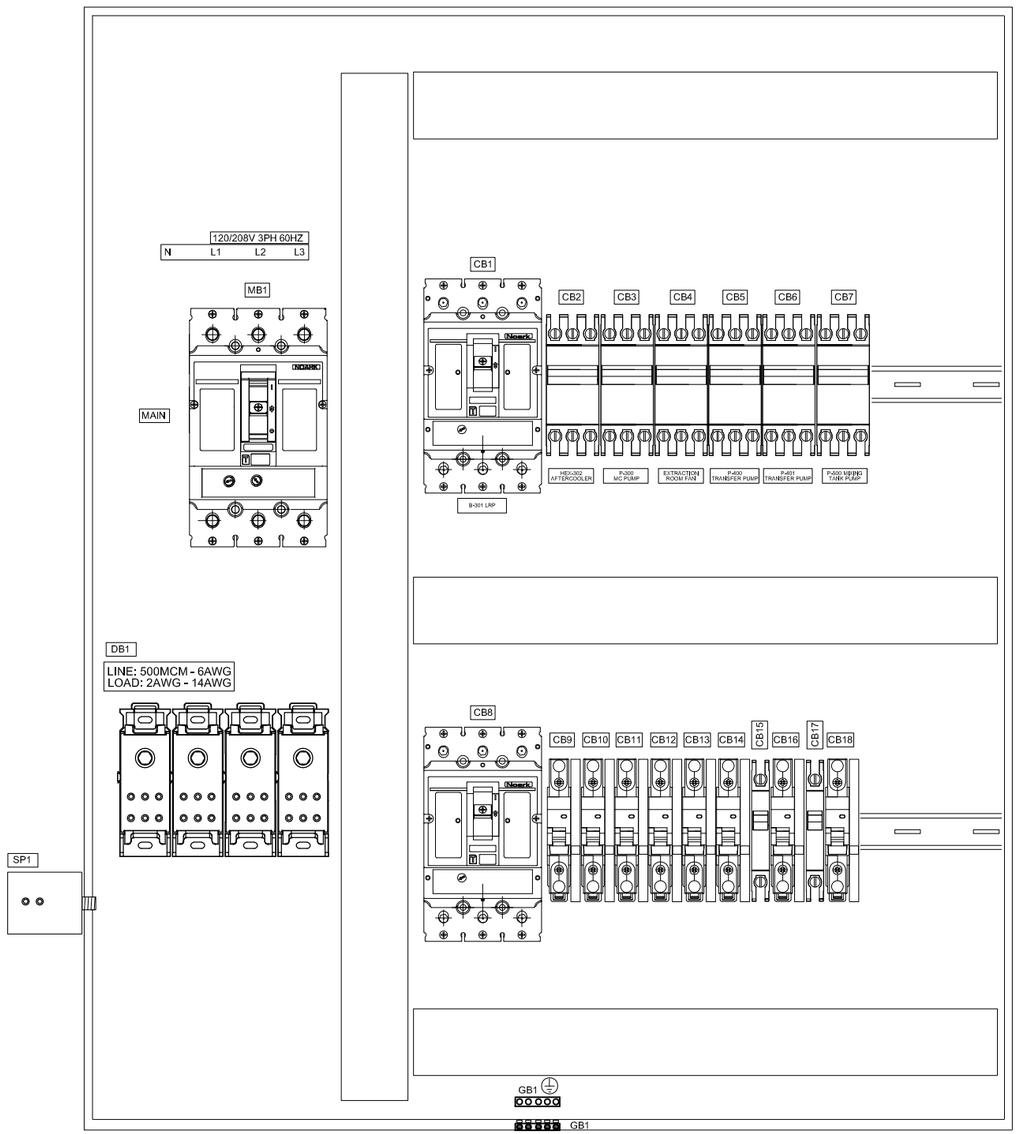
SHEET TITLE:
LAYOUT & BILL OF MATERIAL

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

NO.	REVISION	DATE
1	As Built	4/1/2024

DRAWING NUMBER:
CP-9

BACKPLATE



Qty.	Drawing I.D.	Part No.	Description
		Enclosures	
1		28220	Technomatic 32x40x12 w/ Backplate
		Backplate	
1	MB1	M2N250T3L	Noark 250amp 208v 3 Pole Circuit Breaker
1	CB1	M1N100T3L	Noark 100amp 208v 3 Pole Circuit Breaker
1	CB2	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB3	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB4	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB5	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB6	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB7	5SJ4318-7HG41	Siemens 15amp 208v 3 Pole Circuit Breaker
1	CB8	M1N70T3L	Noark 70amp 208v 3 Pole Circuit Breaker
1	CB9	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB10	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB11	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB12	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB13	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB14	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB15	B1NQ1D20	Noark 20amp 120v Single Pole Circuit Breaker
1	CB16	B1NQ1D10	Noark 10amp 120v Single Pole Circuit Breaker
1	CB17	B1NQ1D6	Noark 6amp 120v Single Pole Circuit Breaker
1	GB1	PK5GTA	Square D Equipment Grounding Bar Kit
1	GB4	OEC99001	Single Grounding Lug 4-14AWG
AS NEEDED			60X80 Wire Duct

PRMFiltration

Product Recovery Management Inc.
This information is proprietary and confidential. No copies or reproductions allowed without the express written consent of PRM Inc.

CLIENT:
GLACIER ENVIRONMENTAL SERVICES, INC.
7509 212TH STREET SW
EDMONDS, WASHINGTON 98026

PROJECT TITLE:
CIRCLE K 1461
2350 24TH AVE E.
SEATTLE, KING COUNTY
WASHINGTON 98112

SHEET TITLE:
LOAD CENTER
LAYOUT & BILL OF MATERIAL

CAD FILE:	PROJECT NUMBER:	SCALE:
GLACIER	8135	NTS
DATE: 11/17/23	DRAWN BY: CATLIN	MET FILE: SN0693

NO.	REVISION	DATE
1	As Built	1/26/24

DRAWING NUMBER:
CP-10

Appendix C

Analytical Laboratory Reports

June 14, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On June 12th, 6 samples were received by our laboratory and assigned our laboratory project number EV24060109. The project was identified as your 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

Environmental
www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 7:50:00 AM
CLIENT SAMPLE ID	NW Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**78**	3.0	1	MG/KG	06/13/2024	MNC
Benzene	EPA-8021	**0.059**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	**0.23**	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	**63**	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**100**	06/13/2024	MNC
TFT	EPA-8021	**105**	06/13/2024	MNC
C25	NWTPH-DX	**92.2**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and an unidentified oil range product.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 7:50:00 AM
CLIENT SAMPLE ID	NB Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**74**	3.0	1	MG/KG	06/13/2024	MNC
Benzene	EPA-8021	**0.041**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	**0.26**	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	**0.74**	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**80.9**	06/13/2024	MNC
TFT	EPA-8021	**91.4**	06/13/2024	MNC
C25	NWTPH-DX	**92.2**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 7:50:00 AM
CLIENT SAMPLE ID	NE Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**5.7**	3.0	1	MG/KG	06/13/2024	MNC
Benzene	EPA-8021	U	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**62.4**	06/13/2024	MNC
TFT	EPA-8021	**72.4**	06/13/2024	MNC
C25	NWTPH-DX	**96.8**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-04
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 8:15:00 AM
CLIENT SAMPLE ID	SW Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**73**	3.0	1	MG/KG	06/13/2024	MNC
Benzene	EPA-8021	**0.053**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	**0.58**	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	**0.33**	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	**30**	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**76.4**	06/13/2024	MNC
TFT	EPA-8021	**85.2**	06/13/2024	MNC
C25	NWTPH-DX	**93.8**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and an unidentified diesel range product.
Diesel range product results biased high due to gasoline range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-05
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 8:15:00 AM
CLIENT SAMPLE ID	SB Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**1200**	300	100	MG/KG	06/14/2024	MNC
Benzene	EPA-8021	**0.67**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	**12**	5.0	100	MG/KG	06/14/2024	MNC
Xylenes	EPA-8021	**5.2**	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	**37**	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 100X Dilution	NWTPH-GX	U, SUR07	06/14/2024	MNC
TFT	EPA-8021	**204 SUR12**	06/13/2024	MNC
TFT 100X Dilution	EPA-8021	U, SUR07	06/14/2024	MNC
C25	NWTPH-DX	**94.1**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
SUR12 -Surrogate recoveries were outside of the control limits due to matrix interference.
SUR07 -The surrogate recovery could not be determined due to dilution below the calibration range.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and an unidentified diesel range product.
Diesel range product results biased high due to gasoline range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/14/2024 EV24060109 EV24060109-06
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/12/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/12/2024 8:15:00 AM
CLIENT SAMPLE ID	SE Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**520**	30	10	MG/KG	06/14/2024	MNC
Benzene	EPA-8021	**0.46**	0.030	1	MG/KG	06/13/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/13/2024	MNC
Ethylbenzene	EPA-8021	**4.1**	0.050	1	MG/KG	06/13/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/13/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/13/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 10X Dilution	NWTPH-GX	**102**	06/14/2024	MNC
TFT	EPA-8021	**138**	06/13/2024	MNC
C25	NWTPH-DX	**94.6**	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	6/14/2024
		ALS SDG#:	EV24060109
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	23-008		

LABORATORY BLANK RESULTS

MBG-061224S - Batch 213560 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	06/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-061224S - Batch 213560 - Soil by EPA-8021

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	U	MG/KG	0.030	06/13/2024	MNC
Toluene	EPA-8021	U	MG/KG	0.050	06/13/2024	MNC
Ethylbenzene	EPA-8021	U	MG/KG	0.050	06/13/2024	MNC
Xylenes	EPA-8021	U	MG/KG	0.20	06/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-061324S - Batch 213522 - Soil by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	06/13/2024	DHM
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	06/13/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	6/14/2024
		ALS SDG#:	EV24060109
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 213560 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**84.5**			66.5	122.7	06/13/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**95.7**	**12**		66.5	122.7	06/13/2024	MNC

ALS Test Batch ID: 213560 - Soil by EPA-8021

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8021	**95.7**			67.7	124	06/13/2024	MNC
Benzene - BSD	EPA-8021	**95.2**	**1**		67.7	124	06/13/2024	MNC
Toluene - BS	EPA-8021	**91.5**			71	123	06/13/2024	MNC
Toluene - BSD	EPA-8021	**90.9**	**1**		71	123	06/13/2024	MNC
Ethylbenzene - BS	EPA-8021	**94.3**			69.8	120	06/13/2024	MNC
Ethylbenzene - BSD	EPA-8021	**94.2**	**0**		69.8	120	06/13/2024	MNC
Xylenes - BS	EPA-8021	**92.3**			70	120	06/13/2024	MNC
Xylenes - BSD	EPA-8021	**89.3**	**3**		70	120	06/13/2024	MNC

ALS Test Batch ID: 213522 - Soil by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range - BS	NWTPH-DX	**107**			75.5	122.1	06/13/2024	DHM
TPH-Diesel Range - BSD	NWTPH-DX	**111**	**4**		75.5	122.1	06/13/2024	DHM

APPROVED BY

Rob Greer
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

Environmental www.alsglobal.com
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ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV24060109

Date 6/12/24 Page 1 Of 1

PROJECT ID: 23-008
REPORT TO COMPANY: Glacier Environmental
PROJECT MANAGER: Lauren Golembiewski
ADDRESS: 7509 212TH ST SW
EDMONDS WA 98026
PHONE: 425-355-2826 P.O. #:
E-MAIL: LMiles@glacierenviro.com
INVOICE TO COMPANY: Glacier Environmental
ATTENTION: Lauren
ADDRESS: 7509 212TH ST SW
EDMONDS WA 98026

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8260 ☐	MTBE by EPA 8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☐ Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐ RCRA-8 ☐ Pri Pol ☐ TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ VOA ☐ Semi-Vol ☐ Pest ☐ Herbs ☐	OTHER (Specify)	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. NW Trench	6-12-24	7:50	Soil	1		X	X	X														
2. NB Trench	6-12-24	7:50	Soil	2		X	X	X														
3. NE Trench	6-12-24	7:50	Soil	3		X	X	X														
4. SW Trench	6-12-24	8:15	Soil	4		X	X	X														
5. SB Trench	6-12-24	8:15	Soil	5		X	X	X														
6. SE Trench	6-12-24	8:15	Soil	6		X	X	X														
7.																						
8.																						
9.																						
10.																						

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: [signature] 6-12-24 2:55
   Received By: [signature] Julia ALS 6/12/24 1455
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 (Standard) | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 (Standard) | 3 | 1 ✓ | SAME DAY

OTHER:
Specify: 8021 and GX = 1 day
DX = 2 day

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Environmental ALS Job#: EV24060109

Project: 23-008

Login Date: 6/12/24 Login Time: 1455 Login By: AV

Type of Shipping Container: Cooler ✓ Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered ✓ ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container? If yes, how many? ___ Where? ___ Custody seal date: ___ Seal name: ___			✓
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓		
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?			✓
Bubbles present in sample #: ___			
5035A kits received? # Low Kits: ___ # High Kits: 6	✓		
5035A kits returned? # Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 12.5°C On ice?		✓	

Explain any discrepancies:
Client wanted a 1 day rush for all tests. Dx, I mentioned to aim for 1 day but if not, it will be 2 day.

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

June 24, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On June 21st, 3 samples were received by our laboratory and assigned our laboratory project number EV24060182. The project was identified as your 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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ALS Group USA, Corp dba ALS Environmental

Environmental
www.alsglobal.com
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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/24/2024 EV24060182 EV24060182-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/21/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/21/2024 10:15:00 AM
CLIENT SAMPLE ID	WS Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**28**	3.0	1	MG/KG	06/24/2024	MNC
Benzene	EPA-8021	**0.38**	0.030	1	MG/KG	06/24/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Ethylbenzene	EPA-8021	**0.12**	0.050	1	MG/KG	06/24/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/24/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/24/2024	DHM
TPH-Oil Range	NWTPH-DX	**79**	50	1	MG/KG	06/24/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**99.1**	06/24/2024	MNC
TFT	EPA-8021	**114**	06/24/2024	MNC
C25	NWTPH-DX	**106**	06/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline and an unidentified oil range product.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/24/2024 EV24060182 EV24060182-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/21/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/21/2024 10:15:00 AM
CLIENT SAMPLE ID	WB Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	06/24/2024	MNC
Benzene	EPA-8021	U	0.030	1	MG/KG	06/24/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/24/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/24/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**86.6**	06/24/2024	MNC
TFT	EPA-8021	**101**	06/24/2024	MNC
C25	NWTPH-DX	**105**	06/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	6/24/2024 EV24060182 EV24060182-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	06/21/2024
CLIENT PROJECT:	23-008	COLLECTION DATE:	6/21/2024 10:15:00 AM
CLIENT SAMPLE ID	WN Trench	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**3.6**	3.0	1	MG/KG	06/24/2024	MNC
Benzene	EPA-8021	**0.040**	0.030	1	MG/KG	06/24/2024	MNC
Toluene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Ethylbenzene	EPA-8021	U	0.050	1	MG/KG	06/24/2024	MNC
Xylenes	EPA-8021	U	0.20	1	MG/KG	06/24/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	06/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	06/24/2024	DHM

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**92.5**	06/24/2024	MNC
TFT	EPA-8021	**106**	06/24/2024	MNC
C25	NWTPH-DX	**106**	06/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains highly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	6/24/2024
		ALS SDG#:	EV24060182
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	23-008		

LABORATORY BLANK RESULTS

MBG-062424S - Batch 214018 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	06/24/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-062424S - Batch 214018 - Soil by EPA-8021

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	U	MG/KG	0.030	06/24/2024	MNC
Toluene	EPA-8021	U	MG/KG	0.050	06/24/2024	MNC
Ethylbenzene	EPA-8021	U	MG/KG	0.050	06/24/2024	MNC
Xylenes	EPA-8021	U	MG/KG	0.20	06/24/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-062324S - Batch 214011 - Soil by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	06/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	06/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	6/24/2024
		ALS SDG#:	EV24060182
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 214018 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**112**			66.5	122.7	06/24/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**114**	**2**		66.5	122.7	06/24/2024	MNC

ALS Test Batch ID: 214018 - Soil by EPA-8021

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8021	**120**			67.7	124	06/24/2024	MNC
Benzene - BSD	EPA-8021	**121**	**1**		67.7	124	06/24/2024	MNC
Toluene - BS	EPA-8021	**114**			71	123	06/24/2024	MNC
Toluene - BSD	EPA-8021	**116**	**1**		71	123	06/24/2024	MNC
Ethylbenzene - BS	EPA-8021	**116**			69.8	120	06/24/2024	MNC
Ethylbenzene - BSD	EPA-8021	**117**	**1**		69.8	120	06/24/2024	MNC
Xylenes - BS	EPA-8021	**113**			70	120	06/24/2024	MNC
Xylenes - BSD	EPA-8021	**113**	**0**		70	120	06/24/2024	MNC

ALS Test Batch ID: 214011 - Soil by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range - BS	NWTPH-DX	**105**			75.5	122.1	06/24/2024	DHM
TPH-Diesel Range - BSD	NWTPH-DX	**102**	**3**		75.5	122.1	06/24/2024	DHM

APPROVED BY

Rob Greer
Laboratory Director

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Everett, WA 98208
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http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)

EV24060182

Date 6-21-24 Page 1 Of 1

PROJECT ID: 23-008
REPORT TO COMPANY: Glacier Environmental
PROJECT MANAGER: Lauren Golembiewski
ADDRESS: 7509 212TH S SW
Edmonds WA 98026
PHONE: 425 355 2826 P.O. #:
E-MAIL: LMiles@glacierenviro.com
INVOICE TO COMPANY:
ATTENTION: — Same —
ADDRESS:

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 ☑ / BTEX by EPA 8260 ☐	MTBE by EPA 8021 ☐ / MTBE by EPA 8260 ☐	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 ☐ / Pesticides by EPA 8081 ☐	Metals-MTCA-5 ☐ / RCRA-8 ☐ / Pri Pol ☐ / TAL ☐	Metals Other (Specify)	TCLP-Metals ☐ / VOA ☐ / Semi-Vol ☐ / Pest ☐ / Herbs ☐	OTHER (Specify)							NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. WS Trench	6/21/24	10:15	S	1		X	X	X																				
2. WB Trench	6/21/24	10:15		2		X	X	X																				
3. WN Trench	6/21/24	10:15		3		X	X	X																				
4.																												
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: 1410 6-21-24
   Received By: ALS 6/21/24 1410
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: 10 (Standard) | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 (Standard) | 3 | ~~1~~ | SAME DAY

OTHER:
Specify:

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Environmental ALS Job#: EV24060182

Project: 23-008

Login Date: 6/21/24 Login Time: 1410 Login By: AV

Type of Shipping Container: Cooler ✓ Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered ✓ ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container?			✓
If yes, how many? ___ Where? ___			
Custody seal date: ___ Seal name: ___			
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓		
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?			✓
Bubbles present in sample #: ___			
5035A kits received? ~~3~~ AV # Low Kits: ~~3~~ # High Kits: 3	✓		
5035A kits returned? # Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 11.3°C On ice?	✓		

Explain any discrepancies:

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

May 6, 2024

Mr. Todd Leach
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Mr. Leach,

On April 22nd, 2 samples were received by our laboratory and assigned our laboratory project number EV24040182. The project was identified as your Circle K . The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-01
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	TYPE 17 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	04/24/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	04/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	04/24/2024	DHM
Dichlorodifluoromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Chloromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Vinyl Chloride	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromomethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Chloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Carbon Tetrachloride	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Trichlorofluoromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Carbon Disulfide	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Acetone	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
1,1-Dichloroethene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Methylene Chloride	EPA-8260	U	20	1	UG/KG	04/23/2024	CCN
Acrylonitrile	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
Methyl T-Butyl Ether	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Trans-1,2-Dichloroethene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1-Dichloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
2-Butanone	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
Cis-1,2-Dichloroethene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
2,2-Dichloropropane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromochloromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Chloroform	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1,1-Trichloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1-Dichloropropene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dichloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Benzene	EPA-8260	U	5.0	1	UG/KG	04/23/2024	CCN
Trichloroethene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dichloropropane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Dibromomethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromodichloromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Trans-1,3-Dichloropropene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
4-Methyl-2-Pentanone	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
Toluene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Cis-1,3-Dichloropropene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1,2-Trichloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
2-Hexanone	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
1,3-Dichloropropane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-01
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	TYPE 17 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Tetrachloroethylene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Dibromochloromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dibromoethane	EPA-8260	U	5.0	1	UG/KG	04/23/2024	CCN
Chlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1,1,2-Tetrachloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	04/23/2024	CCN
Styrene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromoform	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Isopropylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1,2,2-Tetrachloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2,3-Trichloropropane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
N-Propyl Benzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
2-Chlorotoluene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,3,5-Trimethylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
4-Chlorotoluene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
T-Butyl Benzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2,4-Trimethylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
S-Butyl Benzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
P-Isopropyltoluene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,3-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,4-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
N-Butylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dibromo 3-Chloropropane	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
1,2,4-Trichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Hexachlorobutadiene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Naphthalene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2,3-Trichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Naphthalene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
2-Methylnaphthalene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
1-Methylnaphthalene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Acenaphthylene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Acenaphthene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Fluorene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Phenanthrene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Anthracene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-01
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	TYPE 17 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Pyrene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[A]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Chrysene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[B]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[K]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[A]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Pyridine	EPA-8270	U	200	1	UG/KG	04/29/2024	DBA
N-Nitrosodimethylamine	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Phenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Aniline	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Bis(2-Chloroethyl)Ether	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
2-Chlorophenol	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
1,3-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
1,4-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzyl Alcohol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
1,2-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2-Methylphenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
3&4-Methylphenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
N-Nitroso-Di-N-Propylamine	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Hexachloroethane	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Nitrobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Isophorone	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2-Nitrophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,4-Dimethylphenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzoic Acid	EPA-8270	U	1000	1	UG/KG	04/29/2024	DBA
Bis(2-Chloroethoxy)Methane	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
2,4-Dichlorophenol	EPA-8270	U	500	1	UG/KG	04/29/2024	DBA
1,2,4-Trichlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Naphthalene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Chloroaniline	EPA-8270	U	1000	1	UG/KG	04/29/2024	DBA
2,6-Dichlorophenol	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Hexachlorobutadiene	EPA-8270	U	500	1	UG/KG	04/29/2024	DBA
4-Chloro-3-Methylphenol	EPA-8270	U	500	1	UG/KG	04/29/2024	DBA
2-Methylnaphthalene	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-01
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	TYPE 17 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
1-Methylnaphthalene	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Hexachlorocyclopentadiene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,4,6-Trichlorophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,4,5-Trichlorophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2-Chloronaphthalene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2-Nitroaniline	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Acenaphthylene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Dimethylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,6-Dinitrotoluene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Acenaphthene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
3-Nitroaniline	EPA-8270	U	1000	1	UG/KG	04/29/2024	DBA
2,4-Dinitrophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Nitrophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Dibenzofuran	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,4-Dinitrotoluene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,3,4,6-Tetrachlorophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Diethylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Fluorene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Chlorophenyl-Phenylether	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Nitroaniline	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
4,6-Dinitro-2-Methylphenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
N-Nitrosodiphenylamine	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Azobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Bromophenyl-Phenylether	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Hexachlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Pentachlorophenol	EPA-8270	U	500	1	UG/KG	04/29/2024	DBA
Phenanthrene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Anthracene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Carbazole	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Di-N-Butylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Fluoranthene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Pyrene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Butylbenzylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
3,3-Dichlorobenzidine	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Benzo[A]Anthracene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Chrysene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Bis(2-Ethylhexyl)Phthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Di-N-Octylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzo[B]Fluoranthene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-01
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	TYPE 17 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzo[K]Fluoranthene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzo[A]Pyrene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Indeno[1,2,3-Cd]Pyrene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Dibenz[A,H]Anthracene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzo[G,H,I]Perylene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
PCB-1016	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1221	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1232	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1242	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1248	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1254	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1260	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1268	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
A-BHC	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
G-BHC	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
B-BHC	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Heptachlor	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
D-BHC	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Aldrin	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Heptachlor Epoxide	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Chlordane	EPA-8081	U	0.020	1	MG/KG	04/24/2024	DBA
Endosulfan I	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
4,4'-DDE	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Dieldrin	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Endrin	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
4,4'-DDD	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Endosulfan II	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
4,4'-DDT	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Endrin Aldehyde	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Endosulfan Sulfate	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Methoxychlor	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Toxaphene	EPA-8081	U	0.50	1	MG/KG	04/24/2024	DBA
Mercury	EPA-7471	U	0.020	1	MG/KG	04/29/2024	RAL
Arsenic	EPA-6020	**3.5**	0.20	1	MG/KG	04/23/2024	EBS
Barium	EPA-6020	**44**	0.10	1	MG/KG	04/23/2024	EBS
Cadmium	EPA-6020	U	0.10	1	MG/KG	04/23/2024	EBS
Chromium	EPA-6020	**19**	0.10	1	MG/KG	04/23/2024	EBS
Lead	EPA-6020	**2.1**	0.10	1	MG/KG	04/23/2024	EBS
Selenium	EPA-6020	U	1.0	1	MG/KG	04/23/2024	EBS

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CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	TYPE 17 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Silver	EPA-6020	U	0.10	1	MG/KG	04/23/2024	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**77.9**	04/24/2024	MNC
C25	NWTPH-DX	**74.7**	04/24/2024	DHM
1,2-Dichloroethane-d4	EPA-8260	**105**	04/23/2024	CCN
Toluene-d8	EPA-8260	**98.3**	04/23/2024	CCN
4-Bromofluorobenzene	EPA-8260	**96.4**	04/23/2024	CCN
Terphenyl-d14	EPA-8270 SIM	**42.5**	04/25/2024	DBA
2-Fluorophenol	EPA-8270	**132 SUR11**	04/29/2024	DBA
Phenol-d5	EPA-8270	**118**	04/29/2024	DBA
Nitrobenzene-d5	EPA-8270	**105**	04/29/2024	DBA
2-Fluorobiphenyl	EPA-8270	**116**	04/29/2024	DBA
2,4,6-Tribromophenol	EPA-8270	**113**	04/29/2024	DBA
Terphenyl-d14	EPA-8270	**127**	04/29/2024	DBA
TCMX	EPA-8082	**106**	04/26/2024	DBA
DCB	EPA-8082	**101**	04/26/2024	DBA
TCMX	EPA-8081	**104**	04/24/2024	DBA
DCB	EPA-8081	**96.4**	04/24/2024	DBA

U - Analyte analyzed for but not detected at level above reporting limit.
SUR11 - Surrogate outside of control limits due to sporadic marginal failure. No corrective action taken.

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CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-02
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	CSBC 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	04/24/2024	MNC
TPH-Diesel Range	NWTPH-DX	U	25	1	MG/KG	04/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	50	1	MG/KG	04/24/2024	DHM
Dichlorodifluoromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Chloromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Vinyl Chloride	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromomethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Chloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Carbon Tetrachloride	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Trichlorofluoromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Carbon Disulfide	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Acetone	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
1,1-Dichloroethene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Methylene Chloride	EPA-8260	U	20	1	UG/KG	04/23/2024	CCN
Acrylonitrile	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
Methyl T-Butyl Ether	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Trans-1,2-Dichloroethene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1-Dichloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
2-Butanone	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
Cis-1,2-Dichloroethene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
2,2-Dichloropropane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromochloromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Chloroform	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1,1-Trichloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1-Dichloropropene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dichloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Benzene	EPA-8260	U	5.0	1	UG/KG	04/23/2024	CCN
Trichloroethene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dichloropropane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Dibromomethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromodichloromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Trans-1,3-Dichloropropene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
4-Methyl-2-Pentanone	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
Toluene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Cis-1,3-Dichloropropene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1,2-Trichloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
2-Hexanone	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
1,3-Dichloropropane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Tetrachloroethylene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN

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SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Dibromochloromethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dibromoethane	EPA-8260	U	5.0	1	UG/KG	04/23/2024	CCN
Chlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1,1,2-Tetrachloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Ethylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
m,p-Xylene	EPA-8260	U	20	1	UG/KG	04/23/2024	CCN
Styrene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
o-Xylene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromoform	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Isopropylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,1,2,2-Tetrachloroethane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2,3-Trichloropropane	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Bromobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
N-Propyl Benzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
2-Chlorotoluene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,3,5-Trimethylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
4-Chlorotoluene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
T-Butyl Benzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2,4-Trimethylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
S-Butyl Benzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
P-Isopropyltoluene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,3-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,4-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
N-Butylbenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2-Dibromo 3-Chloropropane	EPA-8260	U	50	1	UG/KG	04/23/2024	CCN
1,2,4-Trichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Hexachlorobutadiene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Naphthalene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
1,2,3-Trichlorobenzene	EPA-8260	U	10	1	UG/KG	04/23/2024	CCN
Naphthalene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
2-Methylnaphthalene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
1-Methylnaphthalene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Acenaphthylene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Acenaphthene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Fluorene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Phenanthrene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Anthracene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-02
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	CSBC 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Pyrene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[A]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Chrysene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[B]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[K]Fluoranthene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[A]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	20	1	UG/KG	04/25/2024	DBA
Pyridine	EPA-8270	U	200	1	UG/KG	04/29/2024	DBA
N-Nitrosodimethylamine	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Phenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Aniline	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Bis(2-Chloroethyl)Ether	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
2-Chlorophenol	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
1,3-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
1,4-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzyl Alcohol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
1,2-Dichlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2-Methylphenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
3&4-Methylphenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
N-Nitroso-Di-N-Propylamine	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Hexachloroethane	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Nitrobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Isophorone	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2-Nitrophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,4-Dimethylphenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzoic Acid	EPA-8270	U	1000	1	UG/KG	04/29/2024	DBA
Bis(2-Chloroethoxy)Methane	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
2,4-Dichlorophenol	EPA-8270	U	500	1	UG/KG	04/29/2024	DBA
1,2,4-Trichlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Naphthalene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Chloroaniline	EPA-8270	U	1000	1	UG/KG	04/29/2024	DBA
2,6-Dichlorophenol	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Hexachlorobutadiene	EPA-8270	U	500	1	UG/KG	04/29/2024	DBA
4-Chloro-3-Methylphenol	EPA-8270	U	500	1	UG/KG	04/29/2024	DBA
2-Methylnaphthalene	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
1-Methylnaphthalene	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-02
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	CSBC 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Hexachlorocyclopentadiene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,4,6-Trichlorophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,4,5-Trichlorophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2-Chloronaphthalene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2-Nitroaniline	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Acenaphthylene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Dimethylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,6-Dinitrotoluene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Acenaphthene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
3-Nitroaniline	EPA-8270	U	1000	1	UG/KG	04/29/2024	DBA
2,4-Dinitrophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Nitrophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Dibenzofuran	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,4-Dinitrotoluene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
2,3,4,6-Tetrachlorophenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Diethylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Fluorene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Chlorophenyl-Phenylether	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Nitroaniline	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
4,6-Dinitro-2-Methylphenol	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
N-Nitrosodiphenylamine	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Azobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
4-Bromophenyl-Phenylether	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Hexachlorobenzene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Pentachlorophenol	EPA-8270	U	500	1	UG/KG	04/29/2024	DBA
Phenanthrene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Anthracene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Carbazole	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Di-N-Butylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Fluoranthene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Pyrene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Butylbenzylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
3,3-Dichlorobenzidine	EPA-8270	U	250	1	UG/KG	04/29/2024	DBA
Benzo[A]Anthracene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Chrysene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Bis(2-Ethylhexyl)Phthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Di-N-Octylphthalate	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzo[B]Fluoranthene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzo[K]Fluoranthene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-02
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	CSBC 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Benzo[A]Pyrene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Indeno[1,2,3-Cd]Pyrene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Dibenz[A,H]Anthracene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
Benzo[G,H,I]Perylene	EPA-8270	U	100	1	UG/KG	04/29/2024	DBA
PCB-1016	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1221	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1232	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1242	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1248	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1254	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1260	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
PCB-1268	EPA-8082	U	0.10	1	MG/KG	04/26/2024	DBA
A-BHC	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
G-BHC	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
B-BHC	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Heptachlor	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
D-BHC	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Aldrin	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Heptachlor Epoxide	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Chlordane	EPA-8081	U	0.020	1	MG/KG	04/24/2024	DBA
Endosulfan I	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
4,4'-DDE	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Dieldrin	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Endrin	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
4,4'-DDD	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Endosulfan II	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
4,4'-DDT	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Endrin Aldehyde	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Endosulfan Sulfate	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Methoxychlor	EPA-8081	U	0.010	1	MG/KG	04/24/2024	DBA
Toxaphene	EPA-8081	U	0.50	1	MG/KG	04/24/2024	DBA
Mercury	EPA-7471	U	0.020	1	MG/KG	04/29/2024	RAL
Arsenic	EPA-6020	**0.65**	0.20	1	MG/KG	04/23/2024	EBS
Barium	EPA-6020	**33**	0.10	1	MG/KG	04/23/2024	EBS
Cadmium	EPA-6020	U	0.10	1	MG/KG	04/23/2024	EBS
Chromium	EPA-6020	**4.7**	0.10	1	MG/KG	04/23/2024	EBS
Lead	EPA-6020	**0.86**	0.10	1	MG/KG	04/23/2024	EBS
Selenium	EPA-6020	U	1.0	1	MG/KG	04/23/2024	EBS
Silver	EPA-6020	U	0.10	1	MG/KG	04/23/2024	EBS

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	5/6/2024 EV24040182 EV24040182-02
CLIENT CONTACT:	Todd Leach	DATE RECEIVED:	04/22/2024
CLIENT PROJECT:	Circle K	COLLECTION DATE:	4/22/2024 1:00:00 PM
CLIENT SAMPLE ID	CSBC 422	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**75.2**	04/24/2024	MNC
C25	NWTPH-DX	**80.9**	04/24/2024	DHM
1,2-Dichloroethane-d4	EPA-8260	**107**	04/23/2024	CCN
Toluene-d8	EPA-8260	**97.8**	04/23/2024	CCN
4-Bromofluorobenzene	EPA-8260	**95.9**	04/23/2024	CCN
Terphenyl-d14	EPA-8270 SIM	**42.6**	04/25/2024	DBA
2-Fluorophenol	EPA-8270	**141 SUR09**	04/29/2024	DBA
Phenol-d5	EPA-8270	**128**	04/29/2024	DBA
Nitrobenzene-d5	EPA-8270	**109**	04/29/2024	DBA
2-Fluorobiphenyl	EPA-8270	**120**	04/29/2024	DBA
2,4,6-Tribromophenol	EPA-8270	**123**	04/29/2024	DBA
Terphenyl-d14	EPA-8270	**142 SUR09**	04/29/2024	DBA
TCMX	EPA-8082	**110**	04/26/2024	DBA
DCB	EPA-8082	**105**	04/26/2024	DBA
TCMX	EPA-8081	**102**	04/24/2024	DBA
DCB	EPA-8081	**93.5**	04/24/2024	DBA

U - Analyte analyzed for but not detected at level above reporting limit.
SUR09 - Surrogate outside of control limits with a high bias. Associated compounds non-detect. No corrective action taken.

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CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	5/6/2024 EV24040182 C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY BLANK RESULTS

MBG-042324S - Batch 210996 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	04/24/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-042324S - Batch 210993 - Soil by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	MG/KG	25	04/24/2024	DHM
TPH-Oil Range	NWTPH-DX	U	MG/KG	50	04/24/2024	DHM

U - Analyte analyzed for but not detected at level above reporting limit.

MB-042324S - Batch 211113 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Chloromethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Vinyl Chloride	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Bromomethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Chloroethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Carbon Tetrachloride	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Trichlorofluoromethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Carbon Disulfide	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Acetone	EPA-8260	U	UG/KG	50	04/23/2024	CCN
1,1-Dichloroethene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Methylene Chloride	EPA-8260	U	UG/KG	20	04/23/2024	CCN
Acrylonitrile	EPA-8260	U	UG/KG	50	04/23/2024	CCN
Methyl T-Butyl Ether	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Trans-1,2-Dichloroethene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,1-Dichloroethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
2-Butanone	EPA-8260	U	UG/KG	50	04/23/2024	CCN
Cis-1,2-Dichloroethene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
2,2-Dichloropropane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Bromochloromethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Chloroform	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,1,1-Trichloroethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,1-Dichloropropene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,2-Dichloroethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Benzene	EPA-8260	U	UG/KG	5.0	04/23/2024	CCN
Trichloroethene	EPA-8260	U	UG/KG	10	04/23/2024	CCN

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	5/6/2024 EV24040182 C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY BLANK RESULTS

MB-042324S - Batch 211113 - Soil by EPA-8260

1,2-Dichloropropane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Dibromomethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Bromodichloromethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Trans-1,3-Dichloropropene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
4-Methyl-2-Pentanone	EPA-8260	U	UG/KG	50	04/23/2024	CCN
Toluene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Cis-1,3-Dichloropropene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,1,2-Trichloroethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
2-Hexanone	EPA-8260	U	UG/KG	50	04/23/2024	CCN
1,3-Dichloropropane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Tetrachloroethylene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Dibromochloromethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,2-Dibromoethane	EPA-8260	U	UG/KG	5.0	04/23/2024	CCN
Chlorobenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,1,1,2-Tetrachloroethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Ethylbenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
m,p-Xylene	EPA-8260	U	UG/KG	20	04/23/2024	CCN
Styrene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
o-Xylene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Bromoform	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Isopropylbenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,1,2,2-Tetrachloroethane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,2,3-Trichloropropane	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Bromobenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
N-Propyl Benzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
2-Chlorotoluene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,3,5-Trimethylbenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
4-Chlorotoluene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
T-Butyl Benzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,2,4-Trimethylbenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
S-Butyl Benzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
P-Isopropyltoluene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,3-Dichlorobenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,4-Dichlorobenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
N-Butylbenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,2-Dichlorobenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,2-Dibromo 3-Chloropropane	EPA-8260	U	UG/KG	50	04/23/2024	CCN
1,2,4-Trichlorobenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Hexachlorobutadiene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
Naphthalene	EPA-8260	U	UG/KG	10	04/23/2024	CCN
1,2,3-Trichlorobenzene	EPA-8260	U	UG/KG	10	04/23/2024	CCN

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	5/6/2024 EV24040182 C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY BLANK RESULTS

MB-042324S - Batch 211113 - Soil by EPA-8260

U - Analyte analyzed for but not detected at level above reporting limit.

MB2-042524S - Batch 211181 - Soil by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
2-Methylnaphthalene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
1-Methylnaphthalene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Acenaphthylene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Acenaphthene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Fluorene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Phenanthrene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Anthracene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Fluoranthene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Pyrene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Benzo[A]Anthracene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Chrysene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Benzo[B]Fluoranthene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Benzo[K]Fluoranthene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Benzo[A]Pyrene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	UG/KG	20	04/25/2024	DBA

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MB-042524S - Batch 211180 - Soil by EPA-8270

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Pyridine	EPA-8270	U	UG/KG	200	04/29/2024	DBA
N-Nitrosodimethylamine	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Phenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Aniline	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Bis(2-Chloroethyl)Ether	EPA-8270	U	UG/KG	250	04/29/2024	DBA
2-Chlorophenol	EPA-8270	U	UG/KG	250	04/29/2024	DBA
1,3-Dichlorobenzene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
1,4-Dichlorobenzene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Benzyl Alcohol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
1,2-Dichlorobenzene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2-Methylphenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Bis(2-Chloroisopropyl)Ether	EPA-8270	U	UG/KG	250	04/29/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	5/6/2024
		ALS SDG#:	EV24040182
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY BLANK RESULTS

MB-042524S - Batch 211180 - Soil by EPA-8270

3&4-Methylphenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
N-Nitroso-Di-N-Propylamine	EPA-8270	U	UG/KG	250	04/29/2024	DBA
Hexachloroethane	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Nitrobenzene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Isophorone	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2-Nitrophenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2,4-Dimethylphenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Benzoic Acid	EPA-8270	U	UG/KG	1000	04/29/2024	DBA
Bis(2-Chloroethoxy)Methane	EPA-8270	U	UG/KG	250	04/29/2024	DBA
2,4-Dichlorophenol	EPA-8270	U	UG/KG	500	04/29/2024	DBA
1,2,4-Trichlorobenzene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Naphthalene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
4-Chloroaniline	EPA-8270	U	UG/KG	1000	04/29/2024	DBA
2,6-Dichlorophenol	EPA-8270	U	UG/KG	250	04/29/2024	DBA
Hexachlorobutadiene	EPA-8270	U	UG/KG	500	04/29/2024	DBA
4-Chloro-3-Methylphenol	EPA-8270	U	UG/KG	500	04/29/2024	DBA
2-Methylnaphthalene	EPA-8270	U	UG/KG	250	04/29/2024	DBA
1-Methylnaphthalene	EPA-8270	U	UG/KG	250	04/29/2024	DBA
Hexachlorocyclopentadiene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2,4,6-Trichlorophenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2,4,5-Trichlorophenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2-Chloronaphthalene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2-Nitroaniline	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Acenaphthylene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Dimethylphthalate	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2,6-Dinitrotoluene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Acenaphthene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
3-Nitroaniline	EPA-8270	U	UG/KG	1000	04/29/2024	DBA
2,4-Dinitrophenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
4-Nitrophenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Dibenzofuran	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2,4-Dinitrotoluene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
2,3,4,6-Tetrachlorophenol	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Diethylphthalate	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Fluorene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
4-Chlorophenyl-Phenylether	EPA-8270	U	UG/KG	100	04/29/2024	DBA
4-Nitroaniline	EPA-8270	U	UG/KG	250	04/29/2024	DBA
4,6-Dinitro-2-Methylphenol	EPA-8270	U	UG/KG	290	04/29/2024	DBA
N-Nitrosodiphenylamine	EPA-8270	U	UG/KG	500	04/29/2024	DBA
Azobenzene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
4-Bromophenyl-Phenylether	EPA-8270	U	UG/KG	100	04/29/2024	DBA

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CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY BLANK RESULTS

MB-042524S - Batch 211180 - Soil by EPA-8270

Hexachlorobenzene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Pentachlorophenol	EPA-8270	U	UG/KG	500	04/29/2024	DBA
Phenanthrene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Anthracene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Carbazole	EPA-8270	U	UG/KG	250	04/29/2024	DBA
Di-N-Butylphthalate	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Fluoranthene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Pyrene	EPA-8270	U	UG/KG	150	04/29/2024	DBA
Butylbenzylphthalate	EPA-8270	U	UG/KG	100	04/29/2024	DBA
3,3-Dichlorobenzidine	EPA-8270	U	UG/KG	250	04/29/2024	DBA
Benzo[A]Anthracene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Chrysene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Bis(2-Ethylhexyl)Phthalate	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Di-N-Octylphthalate	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Benzo[B]Fluoranthene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Benzo[K]Fluoranthene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Benzo[A]Pyrene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Indeno[1,2,3-Cd]Pyrene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Dibenz[A,H]Anthracene	EPA-8270	U	UG/KG	100	04/29/2024	DBA
Benzo[G,H,I]Perylene	EPA-8270	U	UG/KG	100	04/29/2024	DBA

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MB-042324S - Batch 211047 - Soil by EPA-8082

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
PCB-1016	EPA-8082	U	MG/KG	0.10	04/26/2024	DBA
PCB-1221	EPA-8082	U	MG/KG	0.10	04/26/2024	DBA
PCB-1232	EPA-8082	U	MG/KG	0.10	04/26/2024	DBA
PCB-1242	EPA-8082	U	MG/KG	0.10	04/26/2024	DBA
PCB-1248	EPA-8082	U	MG/KG	0.10	04/26/2024	DBA
PCB-1254	EPA-8082	U	MG/KG	0.10	04/26/2024	DBA
PCB-1260	EPA-8082	U	MG/KG	0.10	04/26/2024	DBA
PCB-1268	EPA-8082	U	MG/KG	0.10	04/26/2024	DBA

U - Analyte analyzed for but not detected at level above reporting limit.

MB-042324S - Batch 211051 - Soil by EPA-8081

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
A-BHC	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
G-BHC	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	5/6/2024
		ALS SDG#:	EV24040182
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY BLANK RESULTS

MB-042324S - Batch 211051 - Soil by EPA-8081

B-BHC	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Heptachlor	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
D-BHC	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Aldrin	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Heptachlor Epoxide	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Chlordane	EPA-8081	U	MG/KG	0.020	04/24/2024	DBA
Endosulfan I	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
4,4'-DDE	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Dieldrin	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Endrin	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
4,4'-DDD	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Endosulfan II	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
4,4'-DDT	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Endrin Aldehyde	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Endosulfan Sulfate	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Methoxychlor	EPA-8081	U	MG/KG	0.010	04/24/2024	DBA
Toxaphene	EPA-8081	U	MG/KG	0.50	04/24/2024	DBA

U - Analyte analyzed for but not detected at level above reporting limit.

MBLK-R465401 - Batch R465401 - Soil by EPA-7471

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Mercury	EPA-7471	U	MG/KG	0.020	04/29/2024	RAL

U - Analyte analyzed for but not detected at level above reporting limit.

MB-042324S - Batch 210917 - Soil by EPA-6020

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Arsenic	EPA-6020	U	MG/KG	0.20	04/23/2024	EBS
Barium	EPA-6020	U	MG/KG	0.12	04/23/2024	EBS
Cadmium	EPA-6020	U	MG/KG	0.10	04/23/2024	EBS
Chromium	EPA-6020	U	MG/KG	0.10	04/23/2024	EBS
Lead	EPA-6020	U	MG/KG	0.10	04/23/2024	EBS
Selenium	EPA-6020	U	MG/KG	1.0	04/23/2024	EBS
Silver	EPA-6020	U	MG/KG	0.10	04/23/2024	EBS

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CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 210996 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**84.5**			66.5	122.7	04/24/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**83.3**	**1**		66.5	122.7	04/24/2024	MNC

ALS Test Batch ID: 210993 - Soil by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range - BS	NWTPH-DX	**111**			75.5	122.1	04/24/2024	DHM
TPH-Diesel Range - BSD	NWTPH-DX	**111**	**1**		75.5	122.1	04/24/2024	DHM

ALS Test Batch ID: 211113 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Dichlorodifluoromethane - BS	EPA-8260	**41.3**		LCS01	50	150	04/23/2024	CCN
Dichlorodifluoromethane - BSD	EPA-8260	**39.6**	**4**	LCS01	50	150	04/23/2024	CCN
Chloromethane - BS	EPA-8260	**68.2**			50	150	04/23/2024	CCN
Chloromethane - BSD	EPA-8260	**67.1**	**2**		50	150	04/23/2024	CCN
Vinyl Chloride - BS	EPA-8260	**76.3**			50	150	04/23/2024	CCN
Vinyl Chloride - BSD	EPA-8260	**74.2**	**3**		50	150	04/23/2024	CCN
Bromomethane - BS	EPA-8260	**98.1**			50	150	04/23/2024	CCN
Bromomethane - BSD	EPA-8260	**97.2**	**1**		50	150	04/23/2024	CCN
Chloroethane - BS	EPA-8260	**86.7**			50	150	04/23/2024	CCN
Chloroethane - BSD	EPA-8260	**85.7**	**1**		50	150	04/23/2024	CCN
Carbon Tetrachloride - BS	EPA-8260	**97.0**			50	150	04/23/2024	CCN
Carbon Tetrachloride - BSD	EPA-8260	**95.6**	**1**		50	150	04/23/2024	CCN
Trichlorofluoromethane - BS	EPA-8260	**84.4**			50	150	04/23/2024	CCN
Trichlorofluoromethane - BSD	EPA-8260	**82.3**	**3**		50	150	04/23/2024	CCN
Carbon Disulfide - BS	EPA-8260	**75.6**			50	150	04/23/2024	CCN
Carbon Disulfide - BSD	EPA-8260	**74.6**	**1**		50	150	04/23/2024	CCN
Acetone - BS	EPA-8260	**88.8**			50	150	04/23/2024	CCN
Acetone - BSD	EPA-8260	**87.1**	**2**		50	150	04/23/2024	CCN
1,1-Dichloroethene - BS	EPA-8260	**91.2**			70	130	04/23/2024	CCN
1,1-Dichloroethene - BSD	EPA-8260	**89.4**	**2**		70	130	04/23/2024	CCN
Methylene Chloride - BS	EPA-8260	**129**			50	150	04/23/2024	CCN
Methylene Chloride - BSD	EPA-8260	**113**	**13**		50	150	04/23/2024	CCN
Acrylonitrile - BS	EPA-8260	**92.8**			50	150	04/23/2024	CCN
Acrylonitrile - BSD	EPA-8260	**90.5**	**3**		50	150	04/23/2024	CCN
Methyl T-Butyl Ether - BS	EPA-8260	**105**			50	150	04/23/2024	CCN
Methyl T-Butyl Ether - BSD	EPA-8260	**105**	**0**		50	150	04/23/2024	CCN
Trans-1,2-Dichloroethene - BS	EPA-8260	**97.6**			50	150	04/23/2024	CCN

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Edmonds, WA 98026

DATE: 5/6/2024
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WDOE ACCREDITATION: C601

CLIENT CONTACT: Todd Leach
CLIENT PROJECT: Circle K

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Trans-1,2-Dichloroethene - BSD	EPA-8260	**96.3**	**1**		50	150	04/23/2024	CCN
1,1-Dichloroethane - BS	EPA-8260	**104**			50	150	04/23/2024	CCN
1,1-Dichloroethane - BSD	EPA-8260	**102**	**2**		50	150	04/23/2024	CCN
2-Butanone - BS	EPA-8260	**94.1**			50	150	04/23/2024	CCN
2-Butanone - BSD	EPA-8260	**93.3**	**1**		50	150	04/23/2024	CCN
Cis-1,2-Dichloroethene - BS	EPA-8260	**103**			50	150	04/23/2024	CCN
Cis-1,2-Dichloroethene - BSD	EPA-8260	**102**	**1**		50	150	04/23/2024	CCN
2,2-Dichloropropane - BS	EPA-8260	**97.1**			50	150	04/23/2024	CCN
2,2-Dichloropropane - BSD	EPA-8260	**94.1**	**3**		50	150	04/23/2024	CCN
Bromochloromethane - BS	EPA-8260	**102**			50	150	04/23/2024	CCN
Bromochloromethane - BSD	EPA-8260	**102**	**1**		50	150	04/23/2024	CCN
Chloroform - BS	EPA-8260	**73.9**			50	150	04/23/2024	CCN
Chloroform - BSD	EPA-8260	**73.5**	**1**		50	150	04/23/2024	CCN
1,1,1-Trichloroethane - BS	EPA-8260	**96.5**			50	150	04/23/2024	CCN
1,1,1-Trichloroethane - BSD	EPA-8260	**95.0**	**2**		50	150	04/23/2024	CCN
1,1-Dichloropropene - BS	EPA-8260	**93.4**			50	150	04/23/2024	CCN
1,1-Dichloropropene - BSD	EPA-8260	**90.4**	**3**		50	150	04/23/2024	CCN
1,2-Dichloroethane - BS	EPA-8260	**102**			50	150	04/23/2024	CCN
1,2-Dichloroethane - BSD	EPA-8260	**101**	**1**		50	150	04/23/2024	CCN
Benzene - BS	EPA-8260	**97.0**			75	138	04/23/2024	CCN
Benzene - BSD	EPA-8260	**95.1**	**2**		75	138	04/23/2024	CCN
Trichloroethene - BS	EPA-8260	**93.8**			75	136	04/23/2024	CCN
Trichloroethene - BSD	EPA-8260	**92.1**	**2**		75	136	04/23/2024	CCN
1,2-Dichloropropane - BS	EPA-8260	**102**			50	150	04/23/2024	CCN
1,2-Dichloropropane - BSD	EPA-8260	**99.9**	**2**		50	150	04/23/2024	CCN
Dibromomethane - BS	EPA-8260	**105**			50	150	04/23/2024	CCN
Dibromomethane - BSD	EPA-8260	**105**	**1**		50	150	04/23/2024	CCN
Bromodichloromethane - BS	EPA-8260	**103**			50	150	04/23/2024	CCN
Bromodichloromethane - BSD	EPA-8260	**102**	**1**		50	150	04/23/2024	CCN
Trans-1,3-Dichloropropene - BS	EPA-8260	**104**			50	150	04/23/2024	CCN
Trans-1,3-Dichloropropene - BSD	EPA-8260	**103**	**1**		50	150	04/23/2024	CCN
4-Methyl-2-Pentanone - BS	EPA-8260	**104**			50	150	04/23/2024	CCN
4-Methyl-2-Pentanone - BSD	EPA-8260	**106**	**1**		50	150	04/23/2024	CCN
Toluene - BS	EPA-8260	**95.3**			71.6	122.1	04/23/2024	CCN
Toluene - BSD	EPA-8260	**93.9**	**1**		71.6	122.1	04/23/2024	CCN
Cis-1,3-Dichloropropene - BS	EPA-8260	**105**			50	150	04/23/2024	CCN
Cis-1,3-Dichloropropene - BSD	EPA-8260	**104**	**1**		50	150	04/23/2024	CCN
1,1,2-Trichloroethane - BS	EPA-8260	**99.5**			50	150	04/23/2024	CCN
1,1,2-Trichloroethane - BSD	EPA-8260	**99.0**	**1**		50	150	04/23/2024	CCN
2-Hexanone - BS	EPA-8260	**96.8**			50	150	04/23/2024	CCN

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CERTIFICATE OF ANALYSIS

CLIENT: Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

DATE: 5/6/2024
ALS SDG#: EV24040182
WDOE ACCREDITATION: C601

CLIENT CONTACT: Todd Leach
CLIENT PROJECT: Circle K

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
2-Hexanone - BSD	EPA-8260	**96.1**	**1**		50	150	04/23/2024	CCN
1,3-Dichloropropane - BS	EPA-8260	**100**			50	150	04/23/2024	CCN
1,3-Dichloropropane - BSD	EPA-8260	**100**	**0**		50	150	04/23/2024	CCN
Tetrachloroethylene - BS	EPA-8260	**88.8**			50	150	04/23/2024	CCN
Tetrachloroethylene - BSD	EPA-8260	**86.9**	**2**		50	150	04/23/2024	CCN
Dibromochloromethane - BS	EPA-8260	**92.9**			50	150	04/23/2024	CCN
Dibromochloromethane - BSD	EPA-8260	**92.1**	**1**		50	150	04/23/2024	CCN
1,2-Dibromoethane - BS	EPA-8260	**102**			50	150	04/23/2024	CCN
1,2-Dibromoethane - BSD	EPA-8260	**102**	**0**		50	150	04/23/2024	CCN
Chlorobenzene - BS	EPA-8260	**97.5**			79	128	04/23/2024	CCN
Chlorobenzene - BSD	EPA-8260	**95.6**	**2**		79	128	04/23/2024	CCN
1,1,1,2-Tetrachloroethane - BS	EPA-8260	**99.3**			50	150	04/23/2024	CCN
1,1,1,2-Tetrachloroethane - BSD	EPA-8260	**98.6**	**1**		50	150	04/23/2024	CCN
Ethylbenzene - BS	EPA-8260	**94.5**			50	150	04/23/2024	CCN
Ethylbenzene - BSD	EPA-8260	**92.3**	**2**		50	150	04/23/2024	CCN
m,p-Xylene - BS	EPA-8260	**92.6**			50	150	04/23/2024	CCN
m,p-Xylene - BSD	EPA-8260	**91.0**	**2**		50	150	04/23/2024	CCN
Styrene - BS	EPA-8260	**95.5**			50	150	04/23/2024	CCN
Styrene - BSD	EPA-8260	**92.9**	**3**		50	150	04/23/2024	CCN
o-Xylene - BS	EPA-8260	**95.2**			50	150	04/23/2024	CCN
o-Xylene - BSD	EPA-8260	**93.5**	**2**		50	150	04/23/2024	CCN
Bromoform - BS	EPA-8260	**89.5**			50	150	04/23/2024	CCN
Bromoform - BSD	EPA-8260	**89.9**	**1**		50	150	04/23/2024	CCN
Isopropylbenzene - BS	EPA-8260	**92.0**			50	150	04/23/2024	CCN
Isopropylbenzene - BSD	EPA-8260	**90.0**	**2**		50	150	04/23/2024	CCN
1,1,2,2-Tetrachloroethane - BS	EPA-8260	**95.9**			50	150	04/23/2024	CCN
1,1,2,2-Tetrachloroethane - BSD	EPA-8260	**97.3**	**1**		50	150	04/23/2024	CCN
1,2,3-Trichloropropane - BS	EPA-8260	**93.3**			50	150	04/23/2024	CCN
1,2,3-Trichloropropane - BSD	EPA-8260	**94.8**	**2**		50	150	04/23/2024	CCN
Bromobenzene - BS	EPA-8260	**89.0**			50	150	04/23/2024	CCN
Bromobenzene - BSD	EPA-8260	**89.9**	**1**		50	150	04/23/2024	CCN
N-Propyl Benzene - BS	EPA-8260	**85.4**			50	150	04/23/2024	CCN
N-Propyl Benzene - BSD	EPA-8260	**84.9**	**1**		50	150	04/23/2024	CCN
2-Chlorotoluene - BS	EPA-8260	**86.9**			50	150	04/23/2024	CCN
2-Chlorotoluene - BSD	EPA-8260	**86.5**	**1**		50	150	04/23/2024	CCN
1,3,5-Trimethylbenzene - BS	EPA-8260	**87.3**			50	150	04/23/2024	CCN
1,3,5-Trimethylbenzene - BSD	EPA-8260	**87.8**	**1**		50	150	04/23/2024	CCN
4-Chlorotoluene - BS	EPA-8260	**89.2**			50	150	04/23/2024	CCN
4-Chlorotoluene - BSD	EPA-8260	**87.8**	**2**		50	150	04/23/2024	CCN
T-Butyl Benzene - BS	EPA-8260	**85.9**			50	150	04/23/2024	CCN

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	5/6/2024 EV24040182 C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
T-Butyl Benzene - BSD	EPA-8260	**85.4**	**1**		50	150	04/23/2024	CCN
1,2,4-Trimethylbenzene - BS	EPA-8260	**88.0**			50	150	04/23/2024	CCN
1,2,4-Trimethylbenzene - BSD	EPA-8260	**87.3**	**1**		50	150	04/23/2024	CCN
S-Butyl Benzene - BS	EPA-8260	**81.7**			50	150	04/23/2024	CCN
S-Butyl Benzene - BSD	EPA-8260	**80.8**	**1**		50	150	04/23/2024	CCN
P-Isopropyltoluene - BS	EPA-8260	**84.7**			50	150	04/23/2024	CCN
P-Isopropyltoluene - BSD	EPA-8260	**84.1**	**1**		50	150	04/23/2024	CCN
1,3-Dichlorobenzene - BS	EPA-8260	**87.2**			50	150	04/23/2024	CCN
1,3-Dichlorobenzene - BSD	EPA-8260	**86.7**	**1**		50	150	04/23/2024	CCN
1,4-Dichlorobenzene - BS	EPA-8260	**86.5**			50	150	04/23/2024	CCN
1,4-Dichlorobenzene - BSD	EPA-8260	**86.1**	**0**		50	150	04/23/2024	CCN
N-Butylbenzene - BS	EPA-8260	**84.5**			50	150	04/23/2024	CCN
N-Butylbenzene - BSD	EPA-8260	**82.8**	**2**		50	150	04/23/2024	CCN
1,2-Dichlorobenzene - BS	EPA-8260	**90.4**			50	150	04/23/2024	CCN
1,2-Dichlorobenzene - BSD	EPA-8260	**90.0**	**0**		50	150	04/23/2024	CCN
1,2-Dibromo 3-Chloropropane - BS	EPA-8260	**89.4**			50	150	04/23/2024	CCN
1,2-Dibromo 3-Chloropropane - BSD	EPA-8260	**92.6**	**3**		50	150	04/23/2024	CCN
1,2,4-Trichlorobenzene - BS	EPA-8260	**84.2**			50	150	04/23/2024	CCN
1,2,4-Trichlorobenzene - BSD	EPA-8260	**85.1**	**1**		50	150	04/23/2024	CCN
Hexachlorobutadiene - BS	EPA-8260	**72.7**			50	150	04/23/2024	CCN
Hexachlorobutadiene - BSD	EPA-8260	**73.0**	**0**		50	150	04/23/2024	CCN
Naphthalene - BS	EPA-8260	**77.6**			50	150	04/23/2024	CCN
Naphthalene - BSD	EPA-8260	**81.8**	**5**		50	150	04/23/2024	CCN
1,2,3-Trichlorobenzene - BS	EPA-8260	**85.6**			50	150	04/23/2024	CCN
1,2,3-Trichlorobenzene - BSD	EPA-8260	**89.5**	**4**		50	150	04/23/2024	CCN

LCS01 - The LCS and/or LCSD recovery was below the lower control limit. The sample results may be biased low for this analyte.

ALS Test Batch ID: 211180 - Soil by EPA-8270

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Pyridine - BS	EPA-8270	**90.8**			20	150	04/29/2024	DBA
Pyridine - BSD	EPA-8270	**85.5**	**6**		20	150	04/29/2024	DBA
N-Nitrosodimethylamine - BS	EPA-8270	**93.9**			20	150	04/29/2024	DBA
N-Nitrosodimethylamine - BSD	EPA-8270	**83.7**	**11**		20	150	04/29/2024	DBA
Phenol - BS	EPA-8270	**89.9**			36.1	131	04/29/2024	DBA
Phenol - BSD	EPA-8270	**83.3**	**8**		36.1	131	04/29/2024	DBA
Aniline - BS	EPA-8270	**64.1**			20	150	04/29/2024	DBA
Aniline - BSD	EPA-8270	**59.5**	**7**		20	150	04/29/2024	DBA
Bis(2-Chloroethyl)Ether - BS	EPA-8270	**82.6**			20	150	04/29/2024	DBA
Bis(2-Chloroethyl)Ether - BSD	EPA-8270	**75.6**	**9**		20	150	04/29/2024	DBA

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CERTIFICATE OF ANALYSIS

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Edmonds, WA 98026

DATE: 5/6/2024
ALS SDG#: EV24040182
WDOE ACCREDITATION: C601

CLIENT CONTACT: Todd Leach
CLIENT PROJECT: Circle K

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
2-Chlorophenol - BS	EPA-8270	**97.3**			59.9	111	04/29/2024	DBA
2-Chlorophenol - BSD	EPA-8270	**90.8**	**7**		59.9	111	04/29/2024	DBA
1,3-Dichlorobenzene - BS	EPA-8270	**85.8**			20	150	04/29/2024	DBA
1,3-Dichlorobenzene - BSD	EPA-8270	**79.3**	**8**		20	150	04/29/2024	DBA
1,4-Dichlorobenzene - BS	EPA-8270	**84.9**			44.3	122	04/29/2024	DBA
1,4-Dichlorobenzene - BSD	EPA-8270	**78.4**	**8**		44.3	122	04/29/2024	DBA
Benzyl Alcohol - BS	EPA-8270	**106**			20	150	04/29/2024	DBA
Benzyl Alcohol - BSD	EPA-8270	**100**	**6**		20	150	04/29/2024	DBA
1,2-Dichlorobenzene - BS	EPA-8270	**85.4**			20	150	04/29/2024	DBA
1,2-Dichlorobenzene - BSD	EPA-8270	**78.5**	**8**		20	150	04/29/2024	DBA
2-Methylphenol - BS	EPA-8270	**102**			20	150	04/29/2024	DBA
2-Methylphenol - BSD	EPA-8270	**96.2**	**5**		20	150	04/29/2024	DBA
Bis(2-Chloroisopropyl)Ether - BS	EPA-8270	**88.2**			20	150	04/29/2024	DBA
Bis(2-Chloroisopropyl)Ether - BSD	EPA-8270	**81.7**	**8**		20	150	04/29/2024	DBA
3&4-Methylphenol - BS	EPA-8270	**94.9**			20	150	04/29/2024	DBA
3&4-Methylphenol - BSD	EPA-8270	**88.6**	**7**		20	150	04/29/2024	DBA
N-Nitroso-Di-N-Propylamine - BS	EPA-8270	**86.4**			31.6	134	04/29/2024	DBA
N-Nitroso-Di-N-Propylamine - BSD	EPA-8270	**81.6**	**6**		31.6	134	04/29/2024	DBA
Hexachloroethane - BS	EPA-8270	**85.3**			20	150	04/29/2024	DBA
Hexachloroethane - BSD	EPA-8270	**79.0**	**8**		20	150	04/29/2024	DBA
Nitrobenzene - BS	EPA-8270	**97.1**			20	150	04/29/2024	DBA
Nitrobenzene - BSD	EPA-8270	**89.4**	**8**		20	150	04/29/2024	DBA
Isophorone - BS	EPA-8270	**89.7**			20	150	04/29/2024	DBA
Isophorone - BSD	EPA-8270	**84.1**	**6**		20	150	04/29/2024	DBA
2-Nitrophenol - BS	EPA-8270	**90.3**			20	150	04/29/2024	DBA
2-Nitrophenol - BSD	EPA-8270	**83.1**	**8**		20	150	04/29/2024	DBA
2,4-Dimethylphenol - BS	EPA-8270	**118**			20	150	04/29/2024	DBA
2,4-Dimethylphenol - BSD	EPA-8270	**111**	**7**		20	150	04/29/2024	DBA
Bis(2-Chloroethoxy)Methane - BS	EPA-8270	**100**			20	150	04/29/2024	DBA
Bis(2-Chloroethoxy)Methane - BSD	EPA-8270	**94.7**	**6**		20	150	04/29/2024	DBA
2,4-Dichlorophenol - BS	EPA-8270	**111**			20	150	04/29/2024	DBA
2,4-Dichlorophenol - BSD	EPA-8270	**103**	**7**		20	150	04/29/2024	DBA
1,2,4-Trichlorobenzene - BS	EPA-8270	**94.9**			44.6	122	04/29/2024	DBA
1,2,4-Trichlorobenzene - BSD	EPA-8270	**85.9**	**10**		44.6	122	04/29/2024	DBA
Naphthalene - BS	EPA-8270	**95.1**			20	150	04/29/2024	DBA
Naphthalene - BSD	EPA-8270	**87.5**	**8**		20	150	04/29/2024	DBA
4-Chloroaniline - BS	EPA-8270	**56.7**			20	150	04/29/2024	DBA
4-Chloroaniline - BSD	EPA-8270	**49.6**	**13**		20	150	04/29/2024	DBA
Hexachlorobutadiene - BS	EPA-8270	**96.8**			20	150	04/29/2024	DBA
Hexachlorobutadiene - BSD	EPA-8270	**87.4**	**10**		20	150	04/29/2024	DBA

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LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
4-Chloro-3-Methylphenol - BS	EPA-8270	**109**			49.2	135	04/29/2024	DBA
4-Chloro-3-Methylphenol - BSD	EPA-8270	**104**	**5**		49.2	135	04/29/2024	DBA
2-Methylnaphthalene - BS	EPA-8270	**101**			20	150	04/29/2024	DBA
2-Methylnaphthalene - BSD	EPA-8270	**94.3**	**7**		20	150	04/29/2024	DBA
1-Methylnaphthalene - BS	EPA-8270	**98.7**			20	150	04/29/2024	DBA
1-Methylnaphthalene - BSD	EPA-8270	**92.1**	**7**		20	150	04/29/2024	DBA
Hexachlorocyclopentadiene - BS	EPA-8270	**76.5**			20	150	04/29/2024	DBA
Hexachlorocyclopentadiene - BSD	EPA-8270	**66.4**	**14**		20	150	04/29/2024	DBA
2,4,6-Trichlorophenol - BS	EPA-8270	**101**			20	150	04/29/2024	DBA
2,4,6-Trichlorophenol - BSD	EPA-8270	**92.1**	**10**		20	150	04/29/2024	DBA
2,4,5-Trichlorophenol - BS	EPA-8270	**112**			20	150	04/29/2024	DBA
2,4,5-Trichlorophenol - BSD	EPA-8270	**106**	**5**		20	150	04/29/2024	DBA
2-Chloronaphthalene - BS	EPA-8270	**102**			20	150	04/29/2024	DBA
2-Chloronaphthalene - BSD	EPA-8270	**92.7**	**10**		20	150	04/29/2024	DBA
2-Nitroaniline - BS	EPA-8270	**96.1**			20	150	04/29/2024	DBA
2-Nitroaniline - BSD	EPA-8270	**88.4**	**8**		20	150	04/29/2024	DBA
Acenaphthylene - BS	EPA-8270	**110**			20	150	04/29/2024	DBA
Acenaphthylene - BSD	EPA-8270	**98.7**	**11**		20	150	04/29/2024	DBA
Dimethylphthalate - BS	EPA-8270	**107**			20	150	04/29/2024	DBA
Dimethylphthalate - BSD	EPA-8270	**99.1**	**8**		20	150	04/29/2024	DBA
2,6-Dinitrotoluene - BS	EPA-8270	**101**			20	150	04/29/2024	DBA
2,6-Dinitrotoluene - BSD	EPA-8270	**93.4**	**8**		20	150	04/29/2024	DBA
Acenaphthene - BS	EPA-8270	**103**			49.3	117	04/29/2024	DBA
Acenaphthene - BSD	EPA-8270	**92.6**	**10**		49.3	117	04/29/2024	DBA
3-Nitroaniline - BS	EPA-8270	**95.0**			20	150	04/29/2024	DBA
3-Nitroaniline - BSD	EPA-8270	**86.7**	**9**		20	150	04/29/2024	DBA
2,4-Dinitrophenol - BS	EPA-8270	**98.0**			20	150	04/29/2024	DBA
2,4-Dinitrophenol - BSD	EPA-8270	**98.3**	**0**		20	150	04/29/2024	DBA
4-Nitrophenol - BS	EPA-8270	**94.6**			29.8	137	04/29/2024	DBA
4-Nitrophenol - BSD	EPA-8270	**89.3**	**6**		29.8	137	04/29/2024	DBA
Dibenzofuran - BS	EPA-8270	**103**			20	150	04/29/2024	DBA
Dibenzofuran - BSD	EPA-8270	**92.6**	**10**		20	150	04/29/2024	DBA
2,4-Dinitrotoluene - BS	EPA-8270	**101**			55.3	130	04/29/2024	DBA
2,4-Dinitrotoluene - BSD	EPA-8270	**93.6**	**8**		55.3	130	04/29/2024	DBA
2,3,4,6-Tetrachlorophenol - BS	EPA-8270	**104**			20	150	04/29/2024	DBA
2,3,4,6-Tetrachlorophenol - BSD	EPA-8270	**96.6**	**7**		20	150	04/29/2024	DBA
Diethylphthalate - BS	EPA-8270	**103**			20	150	04/29/2024	DBA
Diethylphthalate - BSD	EPA-8270	**97.1**	**6**		20	150	04/29/2024	DBA
Fluorene - BS	EPA-8270	**107**			20	150	04/29/2024	DBA
Fluorene - BSD	EPA-8270	**97.1**	**9**		20	150	04/29/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT: Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

DATE: 5/6/2024
ALS SDG#: EV24040182
WDOE ACCREDITATION: C601

CLIENT CONTACT: Todd Leach
CLIENT PROJECT: Circle K

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
4-Chlorophenyl-Phenylether - BS	EPA-8270	**106**			20	150	04/29/2024	DBA
4-Chlorophenyl-Phenylether - BSD	EPA-8270	**96.7**	**9**		20	150	04/29/2024	DBA
4-Nitroaniline - BS	EPA-8270	**108**			20	150	04/29/2024	DBA
4-Nitroaniline - BSD	EPA-8270	**101**	**7**		20	150	04/29/2024	DBA
4,6-Dinitro-2-Methylphenol - BS	EPA-8270	**102**			20	150	04/29/2024	DBA
4,6-Dinitro-2-Methylphenol - BSD	EPA-8270	**98.7**	**3**		20	150	04/29/2024	DBA
Azobenzene - BS	EPA-8270	**105**			20	150	04/29/2024	DBA
Azobenzene - BSD	EPA-8270	**95.8**	**9**		20	150	04/29/2024	DBA
4-Bromophenyl-Phenylether - BS	EPA-8270	**108**			20	150	04/29/2024	DBA
4-Bromophenyl-Phenylether - BSD	EPA-8270	**97.4**	**10**		20	150	04/29/2024	DBA
Hexachlorobenzene - BS	EPA-8270	**104**			20	150	04/29/2024	DBA
Hexachlorobenzene - BSD	EPA-8270	**93.6**	**10**		20	150	04/29/2024	DBA
Pentachlorophenol - BS	EPA-8270	**98.0**			41.3	113	04/29/2024	DBA
Pentachlorophenol - BSD	EPA-8270	**91.6**	**7**		41.3	113	04/29/2024	DBA
Phenanthrene - BS	EPA-8270	**104**			20	150	04/29/2024	DBA
Phenanthrene - BSD	EPA-8270	**94.7**	**9**		20	150	04/29/2024	DBA
Anthracene - BS	EPA-8270	**91.8**			20	150	04/29/2024	DBA
Anthracene - BSD	EPA-8270	**84.0**	**9**		20	150	04/29/2024	DBA
Carbazole - BS	EPA-8270	**127**			20	150	04/29/2024	DBA
Carbazole - BSD	EPA-8270	**115**	**9**		20	150	04/29/2024	DBA
Di-N-Butylphthalate - BS	EPA-8270	**115**			20	150	04/29/2024	DBA
Di-N-Butylphthalate - BSD	EPA-8270	**107**	**7**		20	150	04/29/2024	DBA
Fluoranthene - BS	EPA-8270	**113**			20	150	04/29/2024	DBA
Fluoranthene - BSD	EPA-8270	**104**	**8**		20	150	04/29/2024	DBA
Pyrene - BS	EPA-8270	**107**			57.4	145	04/29/2024	DBA
Pyrene - BSD	EPA-8270	**97.8**	**9**		57.4	145	04/29/2024	DBA
Butylbenzylphthalate - BS	EPA-8270	**97.5**			20	150	04/29/2024	DBA
Butylbenzylphthalate - BSD	EPA-8270	**89.7**	**8**		20	150	04/29/2024	DBA
Benzo[A]Anthracene - BS	EPA-8270	**106**			20	150	04/29/2024	DBA
Benzo[A]Anthracene - BSD	EPA-8270	**97.4**	**8**		20	150	04/29/2024	DBA
Chrysene - BS	EPA-8270	**107**			20	150	04/29/2024	DBA
Chrysene - BSD	EPA-8270	**97.4**	**9**		20	150	04/29/2024	DBA
Bis(2-Ethylhexyl)Phthalate - BS	EPA-8270	**120**			20	150	04/29/2024	DBA
Bis(2-Ethylhexyl)Phthalate - BSD	EPA-8270	**109**	**10**		20	150	04/29/2024	DBA
Di-N-Octylphthalate - BS	EPA-8270	**99.3**			20	150	04/29/2024	DBA
Di-N-Octylphthalate - BSD	EPA-8270	**91.7**	**8**		20	150	04/29/2024	DBA
Benzo[B]Fluoranthene - BS	EPA-8270	**116**			20	150	04/29/2024	DBA
Benzo[B]Fluoranthene - BSD	EPA-8270	**105**	**10**		20	150	04/29/2024	DBA
Benzo[K]Fluoranthene - BS	EPA-8270	**111**			20	150	04/29/2024	DBA
Benzo[K]Fluoranthene - BSD	EPA-8270	**99.9**	**10**		20	150	04/29/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	5/6/2024 EV24040182 C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzo[A]Pyrene - BS	EPA-8270	**100**			20	150	04/29/2024	DBA
Benzo[A]Pyrene - BSD	EPA-8270	**90.4**	**10**		20	150	04/29/2024	DBA
Indeno[1,2,3-Cd]Pyrene - BS	EPA-8270	**120**			20	150	04/29/2024	DBA
Indeno[1,2,3-Cd]Pyrene - BSD	EPA-8270	**108**	**10**		20	150	04/29/2024	DBA
Dibenz[A,H]Anthracene - BS	EPA-8270	**111**			20	150	04/29/2024	DBA
Dibenz[A,H]Anthracene - BSD	EPA-8270	**100**	**10**		20	150	04/29/2024	DBA
Benzo[G,H,I]Perylene - BS	EPA-8270	**108**			20	150	04/29/2024	DBA
Benzo[G,H,I]Perylene - BSD	EPA-8270	**96.6**	**11**		20	150	04/29/2024	DBA

SURROGATE	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
2-Fluorophenol - BS	EPA-8270	**119**		S	47.1	119	04/29/2024	DBA

S - Outside of control limits.

ALS Test Batch ID: 211047 - Soil by EPA-8082

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
PCB-1016 - BS	EPA-8082	**108**			50	150	04/26/2024	DBA
PCB-1016 - BSD	EPA-8082	**90.8**	**17**		50	150	04/26/2024	DBA
PCB-1260 - BS	EPA-8082	**106**			50	150	04/26/2024	DBA
PCB-1260 - BSD	EPA-8082	**90.3**	**16**		50	150	04/26/2024	DBA

ALS Test Batch ID: 211051 - Soil by EPA-8081

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
A-BHC - BS	EPA-8081	**128**			50	150	04/24/2024	DBA
A-BHC - BSD	EPA-8081	**139**	**8**		50	150	04/24/2024	DBA
G-BHC - BS	EPA-8081	**124**			33	155	04/24/2024	DBA
G-BHC - BSD	EPA-8081	**135**	**9**		33	155	04/24/2024	DBA
B-BHC - BS	EPA-8081	**114**			50	150	04/24/2024	DBA
B-BHC - BSD	EPA-8081	**126**	**10**		50	150	04/24/2024	DBA
Heptachlor - BS	EPA-8081	**150**		LCS03	49	142	04/24/2024	DBA
Heptachlor - BSD	EPA-8081	**164**	**9**	LCS03	49	142	04/24/2024	DBA
D-BHC - BS	EPA-8081	**126**			50	150	04/24/2024	DBA
D-BHC - BSD	EPA-8081	**139**	**10**		50	150	04/24/2024	DBA
Aldrin - BS	EPA-8081	**122**			37	149	04/24/2024	DBA
Aldrin - BSD	EPA-8081	**134**	**9**		37	149	04/24/2024	DBA
Heptachlor Epoxide - BS	EPA-8081	**120**			50	150	04/24/2024	DBA
Heptachlor Epoxide - BSD	EPA-8081	**133**	**10**		50	150	04/24/2024	DBA
Endosulfan I - BS	EPA-8081	**123**			50	150	04/24/2024	DBA

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	5/6/2024 EV24040182 C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Endosulfan I - BSD	EPA-8081	**137**	**11**		50	150	04/24/2024	DBA
4,4'-DDE - BS	EPA-8081	**119**			50	150	04/24/2024	DBA
4,4'-DDE - BSD	EPA-8081	**132**	**11**		50	150	04/24/2024	DBA
Dieldrin - BS	EPA-8081	**124**			65	137	04/24/2024	DBA
Dieldrin - BSD	EPA-8081	**138**	**11**	LCS03	65	137	04/24/2024	DBA
Endrin - BS	EPA-8081	**140**			65	149	04/24/2024	DBA
Endrin - BSD	EPA-8081	**155**	**10**	LCS03	65	149	04/24/2024	DBA
4,4'-DDD - BS	EPA-8081	**130**			50	150	04/24/2024	DBA
4,4'-DDD - BSD	EPA-8081	**146**	**12**		50	150	04/24/2024	DBA
Endosulfan II - BS	EPA-8081	**122**			50	150	04/24/2024	DBA
Endosulfan II - BSD	EPA-8081	**137**	**11**		50	150	04/24/2024	DBA
4,4'-DDT - BS	EPA-8081	**117**			60	152	04/24/2024	DBA
4,4'-DDT - BSD	EPA-8081	**131**	**11**		60	152	04/24/2024	DBA
Endrin Aldehyde - BS	EPA-8081	**104**			50	150	04/24/2024	DBA
Endrin Aldehyde - BSD	EPA-8081	**107**	**3**		50	150	04/24/2024	DBA
Endosulfan Sulfate - BS	EPA-8081	**123**			50	150	04/24/2024	DBA
Endosulfan Sulfate - BSD	EPA-8081	**139**	**12**		50	150	04/24/2024	DBA
Methoxychlor - BS	EPA-8081	**122**			50	150	04/24/2024	DBA
Methoxychlor - BSD	EPA-8081	**135**	**10**		50	150	04/24/2024	DBA

LCS03 - The LCS and/or LCSD recovery was above the upper control limit. All sample results in the batch were non-detect. No qualification is required for this analyte.

ALS Test Batch ID: R465401 - Soil by EPA-7471

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Mercury - BS	EPA-7471	**111**			81.8	117	04/29/2024	RAL
Mercury - BSD	EPA-7471	**109**	**1**		81.8	117	04/29/2024	RAL

ALS Test Batch ID: 210917 - Soil by EPA-6020

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Arsenic - BS	EPA-6020	**103**			80	120	04/23/2024	EBS
Arsenic - BSD	EPA-6020	**102**	**1**		80	120	04/23/2024	EBS
Barium - BS	EPA-6020	**101**			80	120	04/23/2024	EBS
Barium - BSD	EPA-6020	**99.4**	**2**		80	120	04/23/2024	EBS
Cadmium - BS	EPA-6020	**104**			80	120	04/23/2024	EBS
Cadmium - BSD	EPA-6020	**105**	**1**		80	120	04/23/2024	EBS
Chromium - BS	EPA-6020	**100**			80	120	04/23/2024	EBS
Chromium - BSD	EPA-6020	**99.4**	**1**		80	120	04/23/2024	EBS
Lead - BS	EPA-6020	**98.5**			80	120	04/23/2024	EBS

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	5/6/2024 EV24040182 C601
CLIENT CONTACT:	Todd Leach		
CLIENT PROJECT:	Circle K		

LABORATORY CONTROL SAMPLE RESULTS

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Lead - BSD	EPA-6020	**98.2**	**0**		80	120	04/23/2024	EBS
Selenium - BS	EPA-6020	**103**			80	120	04/23/2024	EBS
Selenium - BSD	EPA-6020	**103**	**0**		80	120	04/23/2024	EBS
Silver - BS	EPA-6020	**102**			80	120	04/23/2024	EBS
Silver - BSD	EPA-6020	**102**	**0**		80	120	04/23/2024	EBS

APPROVED BY

Rob Greer
Laboratory Director

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Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only): EV24040182

Date _____ Page _____ Of _____

PROJECT ID: Circle K
REPORT TO COMPANY: Glacier Enviromental Services
PROJECT MANAGER: Todd Leach
ADDRESS: 7509 212th st. sw
Edmonds, WA 98026
PHONE: 425-355-2826 P.O. #:
E-MAIL: ToddL@glacierenviro.com
INVOICE TO COMPANY: Glacier Enviromental Services
ATTENTION:
ADDRESS:

ANALYSIS REQUESTED

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 / BTEX by EPA 8260	MTBE by EPA 8021 / MTBE by EPA 8260	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260 (13)	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 / Pesticides by EPA 8081	Metals-MTCA-5 / RCRA-8 / Pri Pol / TAL	Metals Other (Specify) EPA 7471 - Mercury	TCLP-Metals / VOA / Semi-Vol / Pest / Herbs								NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. TYPE 17 422	4-22-24	1:00	soil/rock	1		X	X				X			X	X	X	X	X									4	
2. CSBC 422	4-22-24	1:00	soil/rock	2		X	X				X			X	X	X	X	X									4	
3.																												
4.																												
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												

OTHER (Specify)

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: [signature] 4/22/24 1555
   Received By: [signature] ALS 4/22/24 1555
2. Relinquished By: _____
   Received By: _____

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: [X] 10 Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: [X] 5 Standard | 3 | 1 | SAME DAY

OTHER:
Specify: _____

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Environ. Services ALS Job#: EV24040182

Project: Circle K

Login Date: 4/22/24 Login Time: 1555 Login By: AV

Type of Shipping Container: Cooler ✓ Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered ✓ ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container?			✓
If yes, how many? ___ Where? ___			
Custody seal date: ___ Seal name: ___			
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓		
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?			✓
Bubbles present in sample #: ___			
5035A kits received?	✓		
# Low Kits: 2 # High Kits: ___			
5035A kits returned?			
# Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 8.3 °C On ice?	✓		

→ 4 oz Jar, 1 MeOH, 2 Stir Bars

Explain any discrepancies:

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

SUBMITTAL TRANSMITTAL

Glacier Environmental Services Inc.

Submittal No.: 011

TO: Department of Ecology
Toxic Cleanup Program
Olympia, WA

Contract # C2300123

ATTN: Dale Myers
damy461@ecy.wa.gov

Date: February 27, 2024

Project: Circle K 1416 Environmental Cleanup

Project No.: 23-008

Owner: Dept of Ecology

Location: Seattle, WA

Previous Transmittal No. (if resubmitted)

ATTACHMENTS
Analytical from Wells-ALS Laboratories
By this submittal, the Contractor represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so, and that he has checked and coordinated each Shop Drawing with the project requirements and the Contract Documents. Deviations from the Contract Documents are noted below.
DEVIATIONS/CLARIFICATIONS:

Contractor: Glacier Environmental Services, Inc.

Signature: Lauren Golembiewski

(THIS SPACE FOR ENGINEER)

To: _____ Date: _____

Enclosed are _____ Copies of the above item. Approval status as noted above is in accordance with the following legend:

A. No Exceptions Taken
B. Make Corrections Noted
C. Rejected
D. Revise and Resubmit
E. Submit Specified Item

By: _____

February 22, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On February 9th, 8 samples were received by our laboratory and assigned our laboratory project number EV24020077. The project was identified as your Circle K Site 1461 / 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/7/2024 12:20:00 PM
CLIENT SAMPLE ID	RW8-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/10/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/13/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**83.2**	02/10/2024	MNC
Toluene-d8	EPA-8260	**97.6**	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/7/2024 12:40:00 PM
CLIENT SAMPLE ID	RW8-10	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**660**	30	10	MG/KG	02/13/2024	MNC
Benzene	EPA-8260	**600**	170	10	UG/KG	02/14/2024	DLC
Toluene	EPA-8260	**1900**	100	10	UG/KG	02/14/2024	DLC
Ethylbenzene	EPA-8260	**4900**	150	10	UG/KG	02/14/2024	DLC
m,p-Xylene	EPA-8260	**21000**	290	10	UG/KG	02/14/2024	DLC
o-Xylene	EPA-8260	**8200**	180	10	UG/KG	02/14/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 10X Dilution	NWTPH-GX	**123**	02/13/2024	MNC
Toluene-d8 10X Dilution	EPA-8260	**96.7**	02/14/2024	DLC

Chromatogram indicates that it is likely that sample contains weathered gasoline.
Gasoline range product results biased high due to semivolatile range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-05
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/8/2024 8:50:00 AM
CLIENT SAMPLE ID	RW9-4	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/13/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/13/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**69.4**	02/13/2024	MNC
Toluene-d8	EPA-8260	**102**	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-06
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/8/2024 9:04:00 AM
CLIENT SAMPLE ID	RW9-7.5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/10/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/13/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**93.5**	02/10/2024	MNC
Toluene-d8	EPA-8260	**93.3**	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-07
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/8/2024 12:50:00 PM
CLIENT SAMPLE ID	RW10-5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**54**	3.0	1	MG/KG	02/10/2024	MNC
Benzene - Reanalysis1	EPA-8260	**190**	17	1	UG/KG	02/14/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene - Reanalysis1	EPA-8260	**820**	14	1	UG/KG	02/14/2024	DLC
m,p-Xylene	EPA-8260	**52**	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**103**	02/10/2024	MNC
Toluene-d8	EPA-8260	**89.8**	02/13/2024	DLC
Toluene-d8 - Reanalysis1	EPA-8260	**104**	02/14/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains an unidentified gasoline range product.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020077 EV24020077-08
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/8/2024 1:00:00 PM
CLIENT SAMPLE ID	RW10-10	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**24**	3.0	1	MG/KG	02/10/2024	MNC
Benzene	EPA-8260	**880**	11	1	UG/KG	02/15/2024	DLC
Toluene	EPA-8260	**570**	10	1	UG/KG	02/15/2024	DLC
Ethylbenzene	EPA-8260	**600**	10	1	UG/KG	02/15/2024	DLC
m,p-Xylene	EPA-8260	**2300**	20	1	UG/KG	02/15/2024	DLC
o-Xylene	EPA-8260	**920**	12	1	UG/KG	02/15/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**99.7**	02/10/2024	MNC
Toluene-d8	EPA-8260	**95.4**	02/15/2024	DLC

Chromatogram indicates that it is likely that sample contains lightly weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020077
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY BLANK RESULTS

MBG-020924S - Batch 207440 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	02/10/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021324S - Batch 207432 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	UG/KG	5.0	02/13/2024	DLC
Toluene	EPA-8260	U	UG/KG	10	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	02/13/2024	DLC
o-Xylene	EPA-8260	U	UG/KG	10	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	2/22/2024 EV24020077 C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 207440 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**98.4**			66.5	122.7	02/10/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**100**	**2**		66.5	122.7	02/10/2024	MNC

ALS Test Batch ID: 207432 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8260	**100**			75	138	02/13/2024	DLC
Benzene - BSD	EPA-8260	**90.0**	**11**		75	138	02/13/2024	DLC
Toluene - BS	EPA-8260	**99.5**			71.6	122.1	02/13/2024	DLC
Toluene - BSD	EPA-8260	**90.1**	**10**		71.6	122.1	02/13/2024	DLC
Ethylbenzene - BS	EPA-8260	**98.1**			50	150	02/13/2024	DLC
Ethylbenzene - BSD	EPA-8260	**88.9**	**10**		50	150	02/13/2024	DLC
m,p-Xylene - BS	EPA-8260	**98.6**			50	150	02/13/2024	DLC
m,p-Xylene - BSD	EPA-8260	**89.9**	**9**		50	150	02/13/2024	DLC
o-Xylene - BS	EPA-8260	**103**			50	150	02/13/2024	DLC
o-Xylene - BSD	EPA-8260	**92.9**	**10**		50	150	02/13/2024	DLC

APPROVED BY

Rob Greer
Laboratory Director

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Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only) EV24020077

Date 2/8/24 Page 1 Of 1

PROJECT ID: Circle K Site 1461
REPORT TO COMPANY: Glacier Environmental Services, Inc
PROJECT MANAGER: Lauren Golembiewski
ADDRESS: 7509 212th St SW
Edmonds WA 98026
PHONE: 425-355-2826 P.O. #: 23-008
E-MAIL: LMiles@glacierenviro.com
INVOICE TO COMPANY: Same as above
ATTENTION:
ADDRESS:

ANALYSIS REQUESTED / OTHER (Specify)

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 / BTEX by EPA 8260	MTBE by EPA 8021 / MTBE by EPA 8260	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 / Pesticides by EPA 8081	Metals-MTCA-5 / RCRA-8 / Pri Pol / TAL	Metals Other (Specify)	TCLP-Metals / VOA / Semi-Vol / Pest / Herbs	OTHER (Specify)	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. RW8-5	2/7/24	12:20	Soil	1			X	X													5	
2. RW8-10	2/7/24	12:40 pm	Soil	2			X	X													5	
3. RW8-3	2/7/24	13:00	Soil	3			~~X~~	~~X~~												HOLD	3	
4. RW8-4	2/7/24	13:20	Soil	4			~~X~~	~~X~~												HOLD	3	
5. RW9-4	2/8/24	8:50	Soil	5			X	X													3	
6. RW9-7.5	2/8/24	9:04	Soil	6			X	X													3	
7. RW10-5	2/8/24	12:50	Soil	7			X	X													4	
8. RW10-10	2/8/24	13:00	Soil	9			X	X													4	
9.																						
10.																						

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: [signature], Amelia Leong, Krazan, ~~2/7/24, 3:30 pm~~ 2/8/24, 2:30 pm
   Received By: [signature] Thayne Wastman 2/8/24 2:30 pm
2. Relinquished By: [signature] Thayne Wastman 2/9/24 600 am
   Received By: [signature] Lauren Golembiewski 2/9/24 9:30am

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: ~~10~~ Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: ~~5~~ Standard | 3 | 1 | SAME DAY

OTHER: Specify: [signature] 2/9/24 1225
Rec'd: [signature] ACS 2/9/24 1225

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Env Serv Inc ALS Job#: Ev24020077

Project: Circle K Site 1461

Login Date: 2-9-2024 Login Time: 12:28 Login By: MH

Type of Shipping Container: Cooler ✓ Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered ✓ ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container? If yes, how many? ___ Where? ___ Custody seal date: ___ Seal name: ___			✓
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓	X	
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?			✓
Bubbles present in sample #: ___			
5035A kits received? b # Low Kits: ✓ # High Kits: ___	✓		
5035A kits returned? # Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 7.3°C On ice?	✓		

Explain any discrepancies:

Sample #1 not rec'd for 5035A, Kit made outside of hold time (48hr) for 5035A.
Sample #2 not rec'd for 5035A, Kit made within hold time for 5035A. CN 2/9/24

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

February 22, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On February 9th, 3 samples were received by our laboratory and assigned our laboratory project number EV24020082. The project was identified as your Circle K Site 1461 / 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020082 EV24020082-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/9/2024 9:10:00 AM
CLIENT SAMPLE ID	MW3 @ 4'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/13/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/13/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/13/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**91.0**	02/14/2024	MNC
Toluene-d8	EPA-8260	**97.2**	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020082 EV24020082-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/9/2024 9:15:00 AM
CLIENT SAMPLE ID	MW3 @ 8'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**1600**	60	20	MG/KG	02/15/2024	MNC
Benzene	EPA-8260	U	16	1	UG/KG	02/14/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/14/2024	DLC
Ethylbenzene	EPA-8260	U	13	1	UG/KG	02/14/2024	DLC
m,p-Xylene	EPA-8260	U	26	1	UG/KG	02/14/2024	DLC
o-Xylene	EPA-8260	U	17	1	UG/KG	02/14/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT 20X Dilution	NWTPH-GX	**102**	02/15/2024	MNC
Toluene-d8	EPA-8260	**97.4**	02/14/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains an unidentified gasoline range product.
Gasoline range product results biased high due to semivolatile range product overlap.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020082 EV24020082-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/09/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/9/2024 9:50:00 AM
CLIENT SAMPLE ID	MW3 @ 15'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	**9.1**	5.0	1	UG/KG	02/14/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/14/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/14/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/14/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/14/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**74.0**	02/14/2024	MNC
Toluene-d8	EPA-8260	**96.8**	02/14/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	2/22/2024 EV24020082 C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY BLANK RESULTS

MBG-021324S - Batch 207363 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	02/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021324S - Batch 207432 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	UG/KG	5.0	02/13/2024	DLC
Toluene	EPA-8260	U	UG/KG	10	02/13/2024	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	02/13/2024	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	02/13/2024	DLC
o-Xylene	EPA-8260	U	UG/KG	10	02/13/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS SDG#: WDOE ACCREDITATION:	2/22/2024 EV24020082 C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 207363 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**93.6**			66.5	122.7	02/14/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**93.2**	**0**		66.5	122.7	02/14/2024	MNC

ALS Test Batch ID: 207432 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8260	**100**			75	138	02/13/2024	DLC
Benzene - BSD	EPA-8260	**90.0**	**11**		75	138	02/13/2024	DLC
Toluene - BS	EPA-8260	**99.5**			71.6	122.1	02/13/2024	DLC
Toluene - BSD	EPA-8260	**90.1**	**10**		71.6	122.1	02/13/2024	DLC
Ethylbenzene - BS	EPA-8260	**98.1**			50	150	02/13/2024	DLC
Ethylbenzene - BSD	EPA-8260	**88.9**	**10**		50	150	02/13/2024	DLC
m,p-Xylene - BS	EPA-8260	**98.6**			50	150	02/13/2024	DLC
m,p-Xylene - BSD	EPA-8260	**89.9**	**9**		50	150	02/13/2024	DLC
o-Xylene - BS	EPA-8260	**103**			50	150	02/13/2024	DLC
o-Xylene - BSD	EPA-8260	**92.9**	**10**		50	150	02/13/2024	DLC

APPROVED BY

Rob Greer
Laboratory Director

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Everett, WA 98208
Phone (425) 356-2600
Fax (425) 356-2626
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only)
EV24020082

Date 2/9/24 Page 1 Of 1

PROJECT ID: CIRCLE K SITE 1461
REPORT TO COMPANY: Glacier Environmental
PROJECT MANAGER: Laura Golembiewski
ADDRESS: 7509 212th St SW
EDMONDS WA 98026
PHONE: 425 355 2826 P.O. #: 23008
E-MAIL: Lmiles@glacierenviro.com
INVOICE TO COMPANY: Glacierenvironmental
ATTENTION: SAME AS Above
ADDRESS:

ANALYSIS REQUESTED

OTHER (Specify)

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA 8021 (BTEX by EPA 8260)	MTBE by EPA 8021 (MTBE by EPA 8260)	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA 8270 SIM	PCB by EPA 8082 (Pesticides by EPA 8081)	Metals-MTCA-5 (RCRA-8, Pri Pol, TAL)	Metals Other (Specify)	TCLP-Metals (VOA, Semi-Vol, Pest, Herbs)								NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. MW3@4'	2/9/24	9:10	Soil	1			X	X																			4	
2. MW3@8'	2/9/24	9:15	Soil	2			X	X																			4	
3. MW3@15'	2/9/24	9:50	Soil	3			X	X																			4	
4.																												
5.																												
6.																												
7.																												
8.																												
9.																												
10.																												

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: Amelia Leong, Krazan, 2/9/24, 3:00PM
   Received By: Thayne Wastman 2/9/24 3:00 PM
2. Relinquished By: Thayne Wastman 2/9/24 3:50 PM
   Received By: ALS 2/9/24 1550

TURNAROUND REQUESTED in Business Days* 3.9C

Organic, Metals & Inorganic Analysis: ~~10~~ (Standard) 5 3 2 1 SAME DAY

Fuels & Hydrocarbon Analysis: ~~5~~ (Standard) 3 1 SAME DAY

OTHER:
Specify:

*Turnaround request less than standard may incur Rush Charges

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacial Env ALS Job#: Ev24020082

Project: Circle K Site 1461

Login Date: 2-9-24 Login Time: 15:50 Login By: MH

Type of Shipping Container: Cooler x Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered x ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container? If yes, how many? ___ Where? ___ Custody seal date: ___ Seal name: ___			x
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	x		
Did all bottles have labels?	x		
Did all bottle labels and tags agree with Chain of Custody?	x		
Were samples received within hold time?	x		
Did all bottles arrive in good condition (unbroken, etc.)?	x		
Was sufficient amount of sample sent for the tests indicated?	x		
Was correct preservation added to samples?	x		
Subcontract test containers added to Subcontract Bin?			x
Wetchem test containers marked with required Tests?			x
Short hold time test containers delivered to analysts?			x
Were VOA vials checked for absence of air bubbles?			x
Bubbles present in sample #: ___			
5035A kits received? # Low Kits: 3 # High Kits: ___	x		
5035A kits returned? # Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: ~~9.9~~ Ice On ice?	x		

Explain any discrepancies: 3.9

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

February 22, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On February 12th, 3 samples were received by our laboratory and assigned our laboratory project number EV24020089. The project was identified as your Circle K Site 1461 / 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020089 EV24020089-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/10/2024 12:10:00 PM
CLIENT SAMPLE ID	SMW1 @ 4'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**87.7**	02/14/2024	MNC
Toluene-d8	EPA-8260	**93.8**	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020089 EV24020089-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/10/2024 12:20:00 PM
CLIENT SAMPLE ID	SMW1 @ 10'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**89.9**	02/14/2024	MNC
Toluene-d8	EPA-8260	**93.5**	02/17/2024	DLC

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020089 EV24020089-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/10/2024 12:40:00 PM
CLIENT SAMPLE ID	SMW1 @ 20'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**13**	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	**950**	14	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	**730**	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	**460**	12	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	**1700**	23	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	**570**	14	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**69.9**	02/14/2024	MNC
Toluene-d8	EPA-8260	**94.9**	02/17/2024	DLC

Chromatogram indicates that it is likely that sample contains weathered gasoline.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020089
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY BLANK RESULTS

MBG-021324S - Batch 207363 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	02/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021724S - Batch 207719 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	UG/KG	5.0	02/17/2024	DLC
Toluene	EPA-8260	U	UG/KG	10	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	02/17/2024	DLC
o-Xylene	EPA-8260	U	UG/KG	10	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020089
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 207363 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**93.6**			66.5	122.7	02/14/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**93.2**	**0**		66.5	122.7	02/14/2024	MNC

ALS Test Batch ID: 207719 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8260	**91.5**			75	138	02/17/2024	DLC
Benzene - BSD	EPA-8260	**97.0**	**6**		75	138	02/17/2024	DLC
Toluene - BS	EPA-8260	**95.5**			71.6	122.1	02/17/2024	DLC
Toluene - BSD	EPA-8260	**100**	**5**		71.6	122.1	02/17/2024	DLC
Ethylbenzene - BS	EPA-8260	**94.0**			50	150	02/17/2024	DLC
Ethylbenzene - BSD	EPA-8260	**98.6**	**5**		50	150	02/17/2024	DLC
m,p-Xylene - BS	EPA-8260	**96.2**			50	150	02/17/2024	DLC
m,p-Xylene - BSD	EPA-8260	**101**	**5**		50	150	02/17/2024	DLC
o-Xylene - BS	EPA-8260	**98.3**			50	150	02/17/2024	DLC
o-Xylene - BSD	EPA-8260	**104**	**6**		50	150	02/17/2024	DLC

APPROVED BY

Rob Greer
Laboratory Director

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Laboratory location:
8260 Holly Drive, Suite 100
Everett, WA 98208

Chain of Custody Form

Page 1 of 1

EV24020089

		ALS Project Manager:		**Work Order #:**	

Customer Information		**Project Information**		**Parameter/Method Request for Analysis**	
Purchase Order	23-008	Project Name	Circle K site 1461	A	NWTPH-GX
Work Order		Project Number	23-008	B	BTEX by EPA 8260
Company Name	Glacier Environmental	Bill To Company	Glacier Environmental	C	
Send Report To	Lauren Golembiewski	Invoice Attn.	Lauren Golembiewski	D	
Address	7509 212th st SW	Address	7509 212th st SW	E	
				F	
City/State/Zip	Edmonds WA 98026	City/State/Zip	Edmonds WA 98026	G	
Phone	425-355-2826	Phone	425-355-2826	H	
Fax		Fax		I	
e-Mail Address	lmiles@glacierenviro.com	e-Mail Address	lmiles@glacierenviro.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SMW1 @ 4'	2/10/24	12:10	SOIL		4	X	X									
2	SMW1 @ 10'	2/10/24	12:20	SOIL		4	X	X									
3	SMW1 @ 20'	2/10/24	12:40	SOIL		4	X	X									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Amelia Leong

Shipment Method:

Required Turnaround Time: ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by: Amelia Leong	**Date:** 2/10/24	**Time:** 1:00pm	**Received by:** Thang Vasthanh	**Notes:** Elise Hejnal Delivered 12:48pm ALS, 2/12/24 1248
Relinquished by: Thang Vasthanh	**Date:** 2/12/24	**Time:** 0600 pm	**Received by (Laboratory):** 2/12/24 12:15	**Cooler Temp.**
Logged by (Laboratory):	**Date:**	**Time:**	**Checked by (Laboratory):**	

QC Package: (Check Box Below)

	Level II: Standard QC		TRRP-Checklist
	Level III: Std QC + Raw Data		TRRP Level IV
	Level IV: SW846 CLP-Like		
	Other: _____		

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Environmental ALS Job#: EV24020089

Project: Circle K site 14601

Login Date: 2/12/24 Login Time: 1248 Login By: AJ

Type of Shipping Container: Cooler ✓ Box ___ Other ___

Shipped via: FedEx Ground ___ UPS ___ Courier ___ Hand Delivered ✓ ALS Courier ___
FedEx Express ___

	Yes	No	N/A
Were custody seals on outside of shipping container?		✓	
If yes, how many? ___ Where? ___			
Custody seal date: ___ Seal name: ___			
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	✓		
Did all bottles have labels?	✓		
Did all bottle labels and tags agree with Chain of Custody?	✓		
Were samples received within hold time?	✓		
Did all bottles arrive in good condition (unbroken, etc.)?	✓		
Was sufficient amount of sample sent for the tests indicated?	✓		
Was correct preservation added to samples?	✓		
Subcontract test containers added to Subcontract Bin?			✓
Wetchem test containers marked with required Tests?			✓
Short hold time test containers delivered to analysts?			✓
Were VOA vials checked for absence of air bubbles?		✓	
Bubbles present in sample #: none (soil samples)			
5035A kits received?	✓		
# Low Kits: 3 # High Kits: ___			
5035A kits returned?			
# Low Kits: ___ # High Kits: ___			
Temperature of cooler upon receipt: 1.6°C On ice?	✓		

Explain any discrepancies:

Was client contacted? ___ Who was called? ___ By whom? ___ Date: ___

Outcome of call:

February 22, 2024

Ms. Lauren Golembiewski
Glacier Environmental Services, Inc.
7509 - 212th St SW
Edmonds, WA 98026

Dear Ms. Golembiewski,

On February 12th, 3 samples were received by our laboratory and assigned our laboratory project number EV24020093. The project was identified as your Circle K Site 1461 / 23-008. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rob Greer
Laboratory Director

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020093 EV24020093-01
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/12/2024 9:20:00 AM
CLIENT SAMPLE ID	SMW2 @ 5'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**88.8**	02/14/2024	MNC
Toluene-d8	EPA-8260	**92.2**	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020093 EV24020093-02
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/12/2024 9:30:00 AM
CLIENT SAMPLE ID	SMW2 @ 10'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	U	5.0	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	U	10	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**88.0**	02/14/2024	MNC
Toluene-d8	EPA-8260	**95.9**	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE: ALS JOB#: ALS SAMPLE#:	2/22/2024 EV24020093 EV24020093-03
CLIENT CONTACT:	Lauren Golembiewski	DATE RECEIVED:	02/12/2024
CLIENT PROJECT:	Circle K Site 1461 / 23-008	COLLECTION DATE:	2/12/2024 10:00:00 AM
CLIENT SAMPLE ID	SMW2 @ 20'	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	**6.7**	3.0	1	MG/KG	02/14/2024	MNC
Benzene	EPA-8260	**54**	12	1	UG/KG	02/17/2024	DLC
Toluene	EPA-8260	**390**	10	1	UG/KG	02/17/2024	DLC
Ethylbenzene	EPA-8260	**280**	10	1	UG/KG	02/17/2024	DLC
m,p-Xylene	EPA-8260	**1000**	20	1	UG/KG	02/17/2024	DLC
o-Xylene	EPA-8260	**370**	13	1	UG/KG	02/17/2024	DLC

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**84.5**	02/14/2024	MNC
Toluene-d8	EPA-8260	**94.9**	02/17/2024	DLC

Chromatogram indicates that it is likely that sample contains weathered gasoline.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020093
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY BLANK RESULTS

MBG-021324S - Batch 207363 - Soil by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range	NWTPH-GX	U	MG/KG	3.0	02/13/2024	MNC

U - Analyte analyzed for but not detected at level above reporting limit.

MB-021724S - Batch 207719 - Soil by EPA-8260

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8260	U	UG/KG	5.0	02/17/2024	DLC
Toluene	EPA-8260	U	UG/KG	10	02/17/2024	DLC
Ethylbenzene	EPA-8260	U	UG/KG	10	02/17/2024	DLC
m,p-Xylene	EPA-8260	U	UG/KG	20	02/17/2024	DLC
o-Xylene	EPA-8260	U	UG/KG	10	02/17/2024	DLC

U - Analyte analyzed for but not detected at level above reporting limit.

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Environmental www.alsglobal.com
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CERTIFICATE OF ANALYSIS

CLIENT:	Glacier Environmental Services, Inc. 7509 - 212th St SW Edmonds, WA 98026	DATE:	2/22/2024
		ALS SDG#:	EV24020093
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Lauren Golembiewski		
CLIENT PROJECT:	Circle K Site 1461 / 23-008		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 207363 - Soil by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range - BS	NWTPH-GX	**93.6**			66.5	122.7	02/14/2024	MNC
TPH-Volatile Range - BSD	NWTPH-GX	**93.2**	**0**		66.5	122.7	02/14/2024	MNC

ALS Test Batch ID: 207719 - Soil by EPA-8260

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8260	**91.5**			75	138	02/17/2024	DLC
Benzene - BSD	EPA-8260	**97.0**	**6**		75	138	02/17/2024	DLC
Toluene - BS	EPA-8260	**95.5**			71.6	122.1	02/17/2024	DLC
Toluene - BSD	EPA-8260	**100**	**5**		71.6	122.1	02/17/2024	DLC
Ethylbenzene - BS	EPA-8260	**94.0**			50	150	02/17/2024	DLC
Ethylbenzene - BSD	EPA-8260	**98.6**	**5**		50	150	02/17/2024	DLC
m,p-Xylene - BS	EPA-8260	**96.2**			50	150	02/17/2024	DLC
m,p-Xylene - BSD	EPA-8260	**101**	**5**		50	150	02/17/2024	DLC
o-Xylene - BS	EPA-8260	**98.3**			50	150	02/17/2024	DLC
o-Xylene - BSD	EPA-8260	**104**	**6**		50	150	02/17/2024	DLC

APPROVED BY

Rob Greer
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
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ALS Environmental

Laboratory location:
8260 Holly Drive, Suite 100
Everett, WA 98208

Chain of Custody Form

EV24020093

Page 1 of 1

ALS Project Manager:		Work Order #:	

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order	23-008	Project Name	Circle K site 1461	A	~~NA~~ NWTPH-GX
Work Order		Project Number	23-008	B	BTEX by EPA 8260
Company Name	Glacier Environmental	Bill To Company	Glacier Environmental	C	
Send Report To	Lauren Golembiewski	Invoice Attn.	Lauren Golembiewski	D	
Address	7509 212th st SW	Address	7509 212th st SW	E	
				F	
City/State/Zip	Edmonds WA 98026	City/State/Zip	Edmonds WA 98026	G	
Phone	425-355-2826	Phone	425-355-2826	H	
Fax		Fax		I	
e-Mail Address	lmiles@glacierenviro.com	e-Mail Address	lmiles@glacierenviro.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SMW2@ ~~10~~ 5'	2/12/24	9:20	Soil		4	X	X									
2	SMW2@ 10'	2/12/24	9:30	Soil		4	X	X									
3	SMW2@ 20'	2/12/24	10:00	Soil		4	X	X									
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign	Shipment Method:	Required Turnaround Time:	Results Due Date:
Amelia Leong [signature]		☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____	

Relinquished by:	Date:	Time:	Received by:	Notes:
Amelia Leong [signature]	2/12/24	10:45am	[signature] Thayne Westman	
Relinquished by: Thayne Westman [signature]	Date: 2/12/24	Time: 16:12 pm	Received by (Laboratory): [signature] 2/12/24 1612	Cooler Temp. 2.1°C (ice)
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

QC Package: (Check Box Below)

	Level II: Standard QC		TRRP-Checklist
	Level III: Std QC + Raw Data		TRRP Level IV
	Level IV: SW846 CLP-Like		
	Other: _____		

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Glacier Env. ALS Job#: EV24020093

Project: Circle K site 1461.

Login Date: 2/12/24 Login Time: 1612 Login By: CR

Type of Shipping Container: Cooler X Box ____ Other ____

Shipped via: FedEx Ground ____ UPS ____ Courier ____ Hand Delivered X ALS Courier ____
FedEx Express ____

	Yes	No	N/A
Were custody seals on outside of shipping container? If yes, how many? ____ Where? ____ Custody seal date: ____ Seal name: ____			X
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	X		
Did all bottles have labels?	X		
Did all bottle labels and tags agree with Chain of Custody?	X		
Were samples received within hold time?	X		
Did all bottles arrive in good condition (unbroken, etc.)?	X		
Was sufficient amount of sample sent for the tests indicated?	X		
Was correct preservation added to samples?	X		
Subcontract test containers added to Subcontract Bin?			X
Wetchem test containers marked with required Tests?			X
Short hold time test containers delivered to analysts?			X
Were VOA vials checked for absence of air bubbles?			X
Bubbles present in sample #: ____			
5035A kits received? # Low Kits: 3 # High Kits: ____	X		
5035A kits returned? # Low Kits: ____ # High Kits: ____			
Temperature of cooler upon receipt: 2.1°C On ice?	X		

Explain any discrepancies:

Returned ~~5~~ 4 5 MeOH voas unused and clean

Was client contacted? ____ Who was called? ____ By whom? ____ Date: ____

Outcome of call:

Appendix D

Submittal Register

Appendix D: Circle K 1461 Treatment System Installation Submittal Register

Submittal	Submittal No.	Specification Section	Description on Submittal Title Page	Date Submitted	Date of Response	1st response (if applicable)	Date Re-Submitted	Date of Final / Most Recent Response	Final / Most Recent Response	Notes
Required Prior to Start of Construction										
Instrumentation and Equipment (PRM)	1	Multiple		9/6/2023 and 10/10/2023	9/27/2023 and 10/13/2023	A&R	11/9/2023	11/17/2023 and 12/20/2023; 1/15/2024 & 1/22/2024	MCN	Partial draft responses from PRM/Glacier received 10/10/2023; KJ provided comments to draft responses 10/13/2023. PRM/Glacier resubmittal 11/9/2023 w/ KJ responses 11/17/2023. Revisions discussed via emails and conference calls, with KJ providing updated + additional comments 12/20/2023. 1/15/2024: PRM/Glacier Drawings Submittal 1.2 - revised system drawings - Note CAD files received 1/22/2024 plus photographs show the control panel and load center in different locations than 1/15/2024 shop drawings.
Traffic Control Plan	2	01 50 00	Traffic Control Plan - Approved by SDOT	11/13/2023	11/13/2023	NET		11/13/2023	NET	
Spill Plan	3	01 99 00	Spill Prevention, Control, and Countermeasures Plan	11/14/2023	11/14/2023	MCN				Glacier to make changes and submit final version.
Waste Management Plan	4	01 74 19	Soil and Waste Management Plan	11/14/2023	11/22/2023	A&R	1/30/2024	1/31/2024	MCN	Glacier to make changes and submit final version.
Quality Control Plan / Construction Quality Assurance Plan	5	01 45 00	Quality Control and Quality Assurance Plan	12/15/2023	12/27/2023	MCN				Glacier to make changes and submit final version.
Well Installation Plan	6	33 11 53.13	Well Installation Plan	1/30/2024	2/1/2024	MCN				Glacier to make changes and submit final version.
Site Specific HASP	7	01 35 29.13	Health and Safety Plan For Circle K 1461 Environmental Cleanup Seattle, Washington	1/30/2024	2/1/2024	NR			NR	
Noise Control Plan	8	01 57 19.13	Environmental Protection Plan	2/13/2024	2/26/2024	A&R			A&R	
Environmental Protection Plan	8	01 99 00	Environmental Protection Plan	2/13/2024	2/26/2024	A&R			A&R	
Green Cleanup Project Work Plan	8	01 35 43.10, 3.01	Environmental Protection Plan	2/13/2024	2/26/2024	A&R			A&R	
Evidence of required trainings and HAZWOPER Certification	9	01 33 00	HAZWOPER Certifications	2/27/2024	2/27/2024	NR			NR	
PRM Electrical and Shop Drawings	12	Multiple		2/27/2024	3/12/2024	MCN			MCN	Glacier to make changes and submit final version.
Project Schedule (CPM)	27	01 31 00		5/22/2024	5/28/2024	NET				
Seattle City Light Application	XX		Electrical Panel Schedule and Three Line Diagram	3/5/2024	3/7/2024	NET				
Stormwater Pollution Prevention Plan	XX	01 57 13								Figures from SDCI building permit. Glacier to submit as formal submittal.
Required Prior to Shipping Equipment to Site										
Results of Inspection of PRM Equipment Container	XX		PRM Testing Checklist	5/13/2024	5/21/2024					Includes noise level results. Provided checklist for virtual inspection.
PRM O&M Manual	XX		PRM O&M Manual	4/15/2024	4/17/2024	A&R/MCN				
Required Prior to Use										
Pipe Bedding	13	31 00 00	Pipe Bedding	4/15/2024	4/17/2024	R&R	4/18/2024	4/19/2024	NET	
SSD Bedding	14	DWG C-04 Detail 1	SSD Bedding	4/15/2024	4/17/2024	NET				
Type 17 Backfill	15	31 00 00	Type 17 Backfill	4/15/2024	4/17/2024	NET				
Pipe & Appurtenances	16	01 60 00 1.03	Pipe & Fittings	4/19/2024	4/23/2024	MCN/NET				Glacier to make changes and submit final version.
Erosion Control Supplies	17	01 57 13	Erosion Control Supplies	5/18/2024	5/20/2024	NET				
Labels and Identification	19	26 05 00	Common Work Results for Electrical	5/18/2024	5/20/2024	NET				
Wire	20	26 05 19	600 volt wire or less	5/18/2024	5/20/2024	R&R	5/21/2024	5/21/2024	NET	
Grounding and Bonding	21	26 05 26	Grounding and Bonding for Electrical Systems	5/18/2024	5/20/2024	NET				
Raceways and Boxes	22	26 05 33	Raceways and Boxes	5/18/2024	5/20/2024	R&R	5/21/2024	5/21/2024	NET	
Panelboard	23	26 24 16	Panelboards	5/18/2024	5/20/2024	NET				
Wiring Devices	24	26 27 26	Wiring Devices	5/18/2024	5/20/2024	NET				
Flex Hose Piping	25	33 14 16.13	Flex Hose	5/18/2024	5/20/2024	NET				
Sub-Slab Depressurization Wells	26	33 11 53.13	Slotted Pipe, 4oz nonwove fabric, 10 mil poly	5/21/2024	5/21/2024	RR				Slot size to be revised. Contractor revised but did not send resubmittal.
Fence	28	32 31 13		6/6/2024	6/7/2024	RR	6/10/2024	6/13/2024	NET	
Well Vaults	29	RFI 04	12" Well Vaults	6/6/2024	6/7/2024	NET				
Pipe Supports	30	33 14 16.13	Unistrut	7/18/2024	7/19/2024	NET				
PVC Ball Valves	32	33 14 16.13	True Union 2000 Standard Ball Valves	7/22/2024	7/23/2024	NET				
Steel Piping	33	33 14 16.13	Steel Pipe	7/22/2024	7/23/2024	NET				
Malleable Iron Fitting and Post HEX Hose	34	33 14 16.13	Malleable Iron Threaded Fittings, Stainless Steel Flexible Hose	7/23/2024	7/25/2024	NET				
Vapor GAC Flex Hose	35	33 14 16.13	Forsaflex 4" Hose	8/14/2024	8/15/2024	NET				

Appendix D: Circle K 1461 Treatment System Installation Submittal Register

Submittal	Submittal No.	Specification Section	Description on Submittal Title Page	Date Submitted	Date of Response	1st response (if applicable)	Date Re-Submitted	Date of Final / Most Recent Response	Final / Most Recent Response	Notes
Testing Results										
Boring Logs (Krazan)	10	0 60 00, 1.03		2/27/2024	3/9/2024	A&R			A&R	
Analytical Results from Well Drilling	11			2/27/2024	3/9/2024	NET			NET	
Well Logs (Cascade)	XX									Draft reviewed prior to submittal to Ecology. Please provide copy of final.
Backfill Test Results	18	01 60 00, 1.03; 31 00 00, 1.06	Import Material Lab Analysis	5/18/2024	5/20/2024	NET				
Compaction Testing Results	31	31 00 00	Krazan Compaction Testing Results	7/18/2024	7/19/2024	NET				
Operations and Maintenance										
O&M Manual for Treatment System	XX		PRM O&M Manual	NA	4/17/2024	MCN/A&R	6/24/2024	MCN/A&R		

Note and Abbreviations:

1. Submittal register updated May 2, 2025.
2. Submittal Response Abbreviations:
   MCN = Make Corrections Noted
   A&R = Amend and Resubmit
   NET = No Exceptions Taken
   NA = Not Applicable
   RR = Rejected, Resubmit
   NR = Not Received
3. Other Abbreviations:
   Cascade = Cascade Environmental of Woodinville
   CPM = Critical Path Method
   Ecology = Washington State Department of Ecology
   GAC = Granular Activated Carbon
   Glacier = Glacier Environmental Services, Inc.
   HASP = Health and Safety Plan
   KJ = Kennedy/Jenks Consultants, Inc.
   Krazan = Krazan & Associates, Inc.
   NA = Not Applicable
   O&M = Operations and Maintenance
   PRM = Product Recovery Management, Inc.
   PVC = Polyvinyl chloride
   RFI = Request for Information
   SDCI = Seattle Department of Construction & Inspection
   SDOT = Seattle Department of Transportation
   SSD = Sub-slab depressurization
   XX = Submittal number not assigned

Appendix E

Construction Photographs

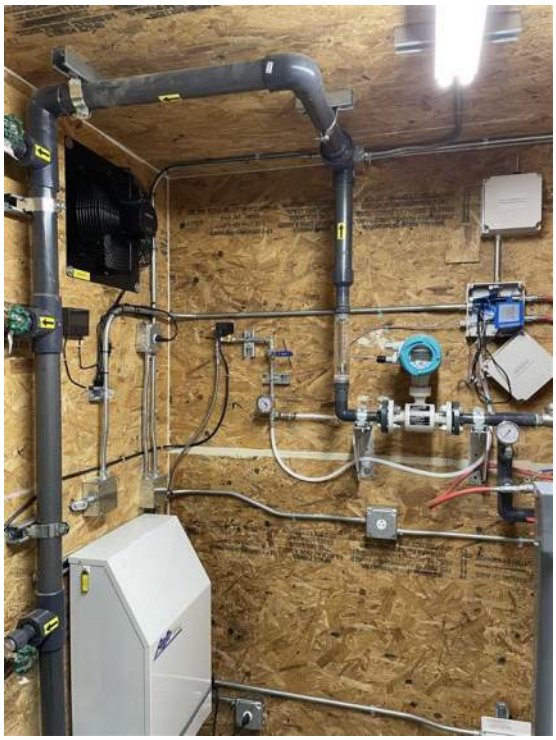
Photos taken by PRM Filtration prior to delivery of equipment to Site.
DATE: 02/07/2024

Photos

Caption 1: Mixing tank and reinjection manifold.

Caption 2: Vapor liquid separator.

Caption 3: Liquid ring pump



Caption 4: Oxygen generator system.

Photos

Caption 1: Cascade closing off section of parking lot around RW-9. Facing southwest.

Caption 2: Seattle Concrete Coring begins coring SW-2. Facing west.

Caption 3: Cascade removing asphalt from the surface of RW-10. Facing south.

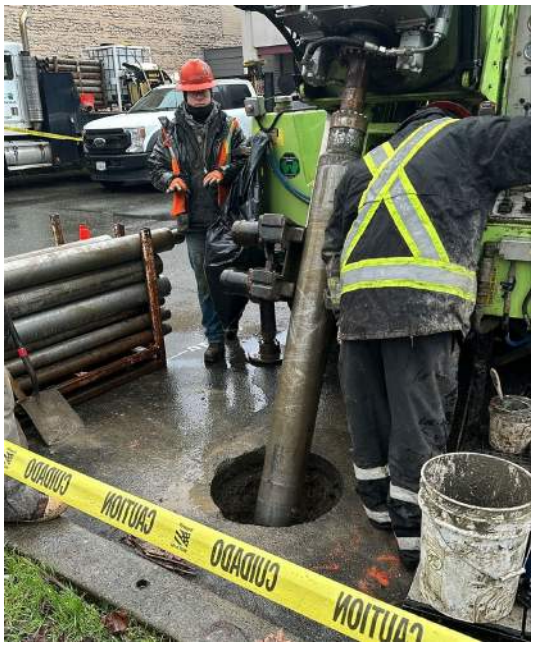
Caption 4: Cascade finished grouting RW-10 and set the monument. Facing south.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (02/26/2024)

Photos

	
Caption 1: Cascade begins drilling SW-3. Facing southeast	Caption 2: Cascade installing well at SW-3. Facing southeast.
Caption 3: Cascade begins to grout for SW-3.	Caption 4: Krazan sampling the 0-5ft core. Facing North.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Photos

Caption 1: 2-Inch PVC pipe connecting to 4-inch perforated pipe with geotextile fabric.	Caption 2: Glacier placing the cold patch in the ROW, prior to compaction.
Caption 3: Glacier welding the 1-inch PVC pipes.	Caption 4: Condition of trenches at end of day.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/5/2024)

Michael McIntosh, G.I.T. (6/5/2024)

Photos

Caption 1: RW-6 cut down by 18.5-inches and equipped with pitless adaptor.	Caption 2: Sled plate compactor used to compact cold patch asphalt in sidewalk.
Caption 3: RW-6 well tag labeled and kept separately until final stages of well reinstallation.	Caption 4: Steel plate placed over open trench for overnight storage and cold patched.

Cayla Whiteside, P.E. (6/6/2024)

Michael McIntosh, G.I.T. (6/6/2024)

Photos

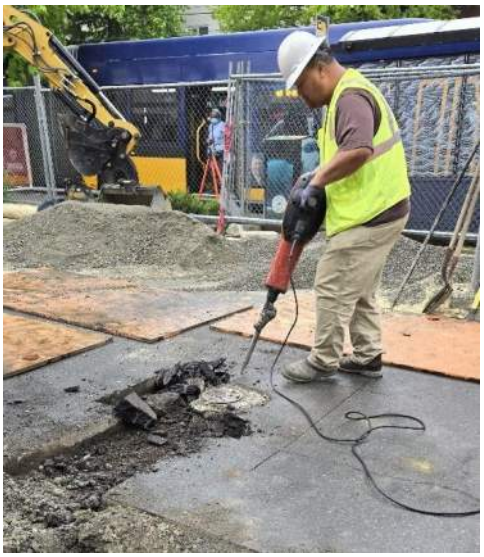
Caption 1: Compacting trench backfill with jumping jack plate compactor.	Caption 2: View of unknown utility running parallel to RW-2 trench.
Caption 3: 1-1/4-inch minus being used as base course.	Caption 4: Sled plate compactor being used on the base course.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P. E. (6/8/2024)

Michael McIntosh, G.I.T. (6/8/2024)

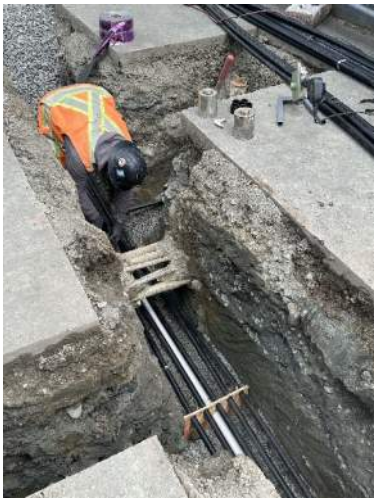
Photos

	
Caption 1: Breaking up asphalt with jackhammer around RW-3 monument.	Caption 2: View of trench following asphalt layer removal.
Caption 3: View of active trenching north of RW-4 following removal of asphalt layer.	Caption 4: View of unknown utility piping running perpendicular to trench, just south of RW-4 (visible in bottom left corner).

Cayla Whiteside, P.E. (6/11/2024)

Ella Clair, E.I.T. (6/11/2024)

Photos

Caption 1: CNI mark utilities with silver paint across site.	Caption 2: Glacier placing 1-¼-inch minus near RW-4.
	
Caption 3: Samples collected by Glacier that were sent to ALS for analysis.	Caption 4: Glacier places pvc 1-inch PVC pipes through spacer at base of trench.

Cayla Whiteside, P.E. (5/7/2025)

Michael McIntosh, G.I.T. (5/7/2025)

Photos

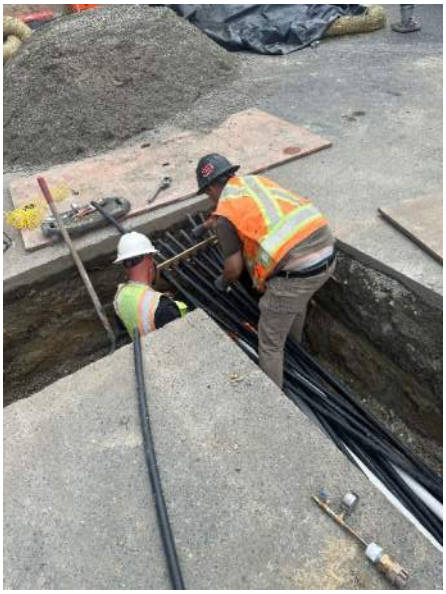
Caption 1: Salinas Sawcutting preparing to sawcut pavement along marked lines.	Caption 2: Glacier collecting sample W-S from native material in sidewall of SW-2 trench.
Caption 3: Glacier using vibratory compactor to compact stone in backfilled trenches.	Caption 4: Fences moved into place to protect equipment and open trenches on southern half of site.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono, E.I.T. (6/24/2024)

Photos

Caption 1: Southeast concrete footing after wooden forms have been removed.	Caption 2: Glacier performing unofficial pressure testing.
	
Caption 3: Section of SSD-3 trench cut out for removal.	Caption 4: Glacier placing pipes through spacer at southern end of central trench.

Cayla Whiteside, P.E. (7/2/2024)

Michael McIntosh, G.I.T. (7/2/2024)

Photos

Caption 1: Glacier using forklift to move tanks from trailer onto southwest portion of site.

Caption 2: Glacier attaching straps to system container in preparation for lifting off of truck trailer. Crane operated by Ford Crane operator.

Caption 3: Crane operator lowering system container onto concrete footings at southwest corner of site. Glacier using ropes on opposite corners to orient the container to align with footings.

Caption 4: Photo of liquid GAC tanks (middle of photo) and vapor GAC tanks (left side of photo) placed north of the system container. Exclusion zone between vapor GAC tank and control panel is approximately 3.5ft.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/22/2024)

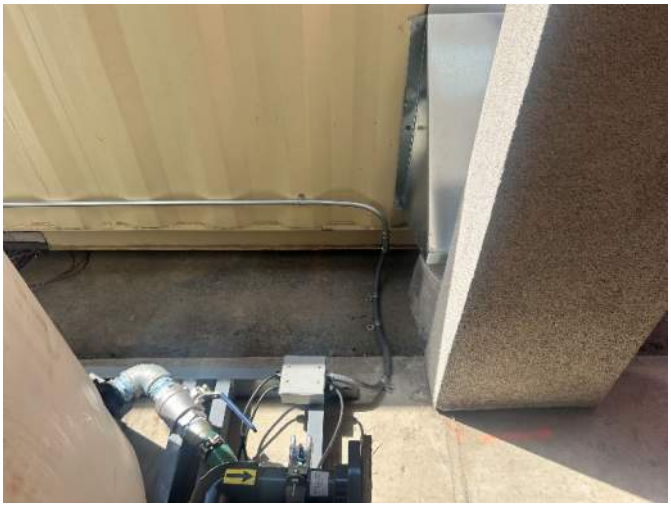
Ella Clair, E.I.T. (7/22/2024)

Photos

Caption 1: Electric meter and switch panels installed at southwest corner of container.

Caption 2: Exterior injection piping at south end of container.

Caption 3: Exterior extraction and injection piping at north end of container.



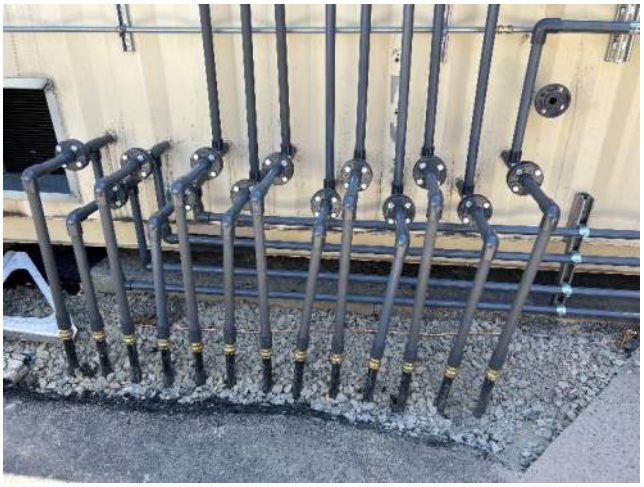
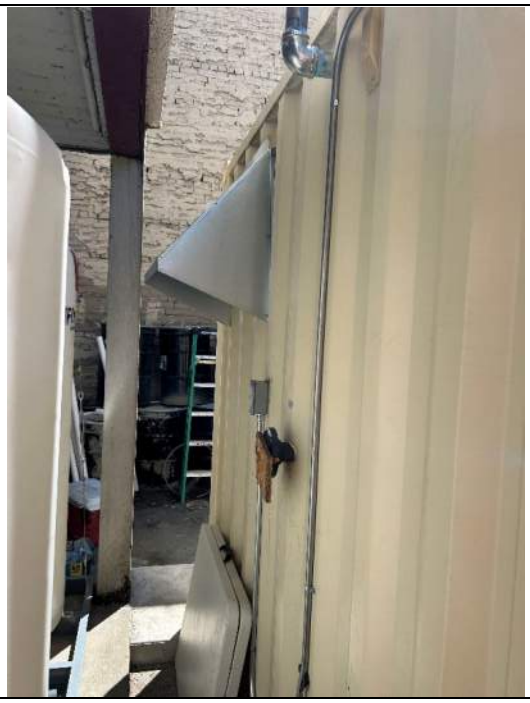
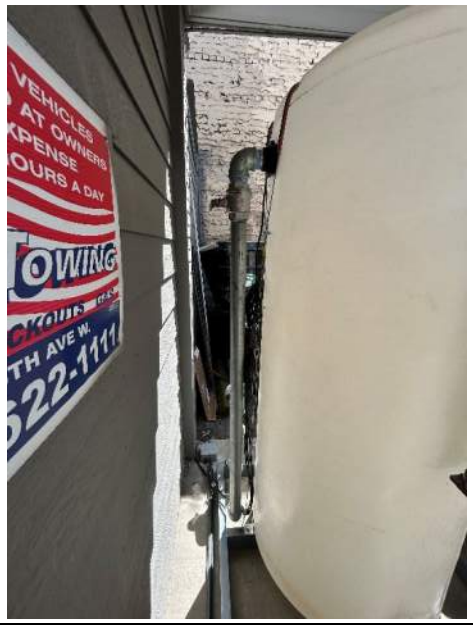
Caption 4: Electrical conduit installed on east side of container at 400 gallon pre-gac water storage tank.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (5/7/2025)

Philip Hooper, E.I.T. (5/7/2025)

Photos

	
Caption 1: Exterior pipe connections, Sch 80 PVC transition to downwell HDPE pipe.	Caption 2: Vent sound hood installed on east side of container.
	
Caption 3: Pipe connections completed on 300 gallon treated water storage tank.	Caption 4: Pipe connections completed and flow meter installed on 300 gallon treated water storage tank.

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Photos

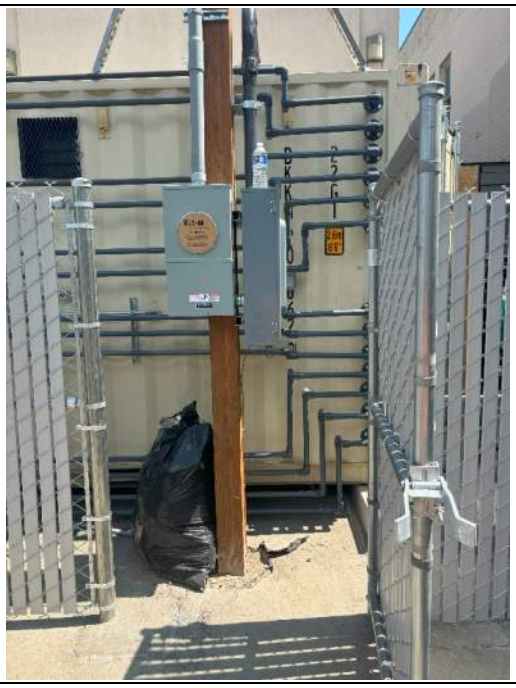
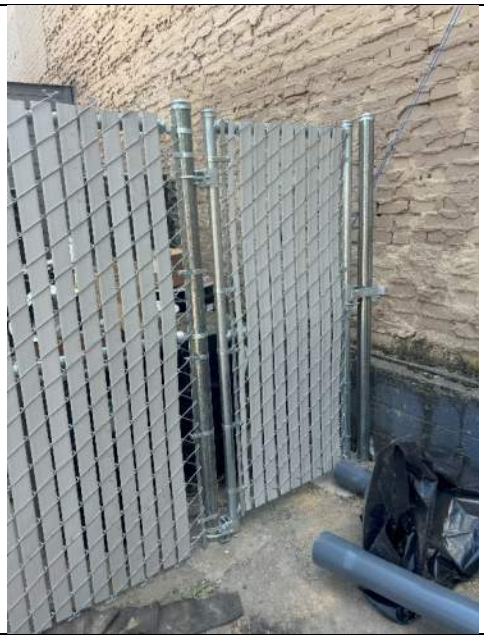
Caption 1: 2" PVC piping from T-301 to bag filter inlet.	Caption 2: 2" PVC piping from liquid GAC outlet to treated water storage tank T-400.
Caption 3: Fence posts with 4' gate for electric meter access.	Caption 4: Fence posts for gate near laundromat entrance.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (5/9/2025)

Ryan Hultgren, P.E. (5/9/2025)

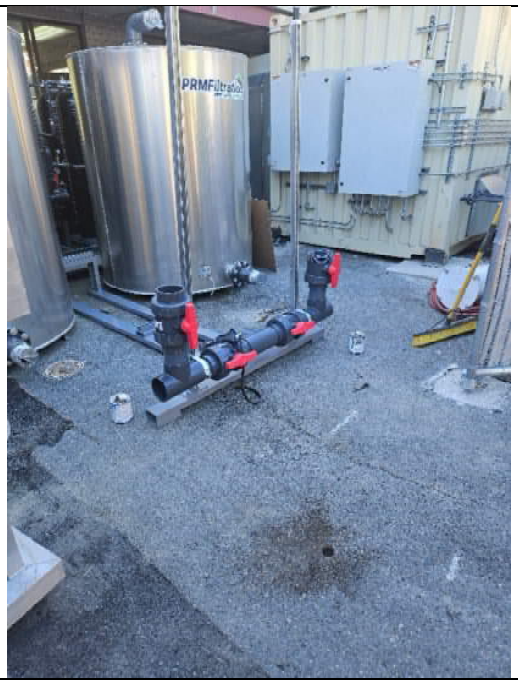
Photos

	
Caption 1: Pressure testing extraction well lines.	Caption 2: Completed fence gate to electrical meter.
	
Caption 3: No secondary containment below tanks outside treatment system [Note: secondary containment installed on 08/08/2024].	Caption 4: South gate.

Cayla Whiteside, P.E. (5/9/2025)

Ryan Hultgren, P.E. (5/9/2025)

Photos

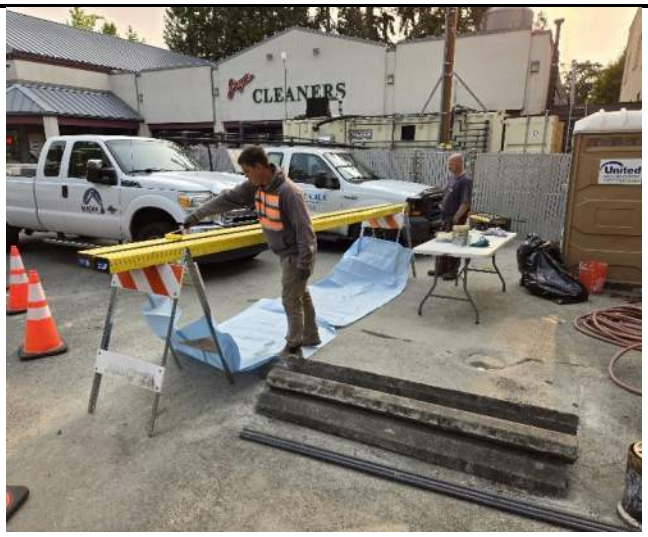
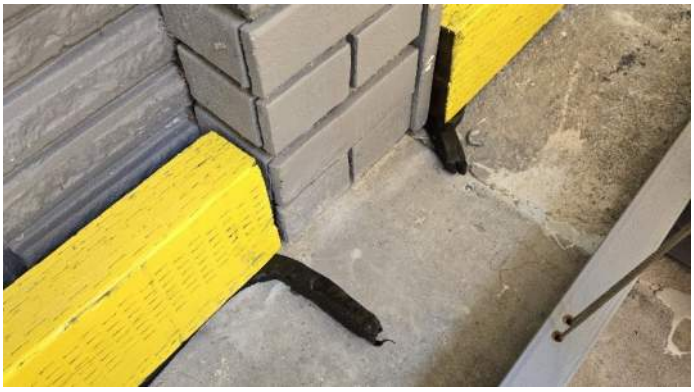
	
Caption 1: Pipe Rack placed in front of vapor GAC tanks.	Caption 2: Vapor GAC manifold being constructed
Caption 3: Completed Vapor GAC manifold with coalescence tank connected between vapor GAC vessels.	Caption 4: Electrical inspection approval from the City of Seattle.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Photos

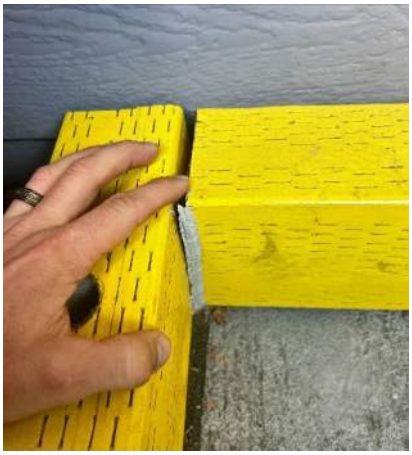
	
Caption 1: Glacier painting the walls of the secondary containment yellow.	Caption 2: Glacier cutting beams to specified length for the construction of secondary containment walls.
	
Caption 3: View of wall against dry cleaners, following the removal of the ground-level conduit and prior to installation of the secondary containment wall.	Caption 4: View of installed east walls of secondary containment, with black seal visible sticking out from underneath walls.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair, E.I.T. (8/13/2024)

Photos

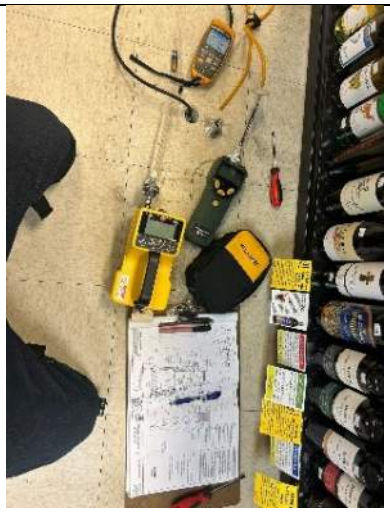
Caption 1: Moisture in electrical box. [Note: Item identified on punch list; completed by Contractor prior to final completion.]	Caption 2: Rusted components in Jbox for T-301 and T-400 float connection (see bottom right corner of box). [Note: Item identified on punch list; completed by Contractor prior to final completion.]
	
Caption 3: Need to add caulking to secondary containment, specifically NE corner. [Note: Item identified on punch list; completed by Contractor prior to final completion.]	Caption 4: CatOx discharge stack during operation

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (10/30/2024)

Jarod Fisher, P.E. (10/30/2024)

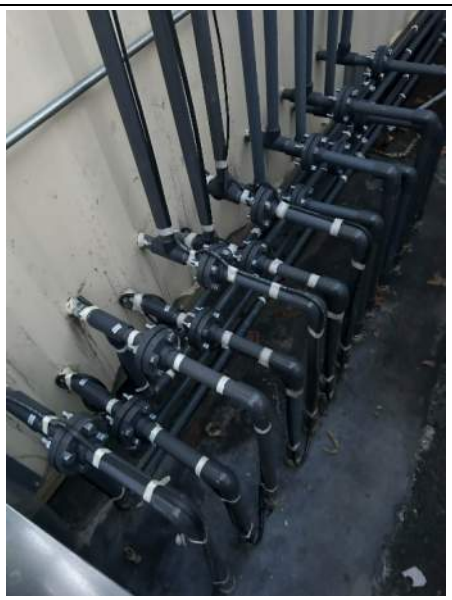
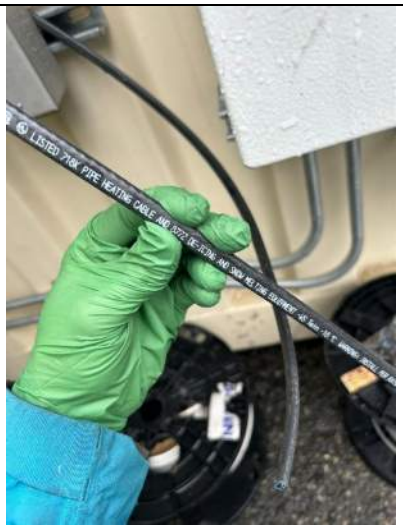
Photos

Caption 1: Step testing pressures to identify potential radius of influence (ROI).	Caption 2: ROI testing of adjacent well
	
Caption 3: Baseline pressure testing at VP-1.	

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Photos

	
Caption 1: Installing heat trace on 1" piping.	Caption 2: Notified Glacier that aluminum tape is required for installing heat trace per specs.
	
Caption 3: HMI Status screen. CatOx operating temperatures.	Captain 4: Self-regulating heat trace

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Caption 4: CatOX discharge PID sample location.	Caption 5: CatOx setpoint temperatures.
Caption 6: Glacier added barb fitting to coalescer valved drain and vinyl tubing back to MLS, adding tee fitting and barb, to test drainage from coalescer back to MLS inlet.	

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Photos

Caption 1: New discharge piping from treated water storage tank T-400. New flowmeter visible at tank outlet.	Caption 2: New discharge piping, looking east.
Caption 3: New flowmeter from tank T-400.	Captain 4: Discharge piping running south of property building. First picture looking west, second picture looking east to discharge point.

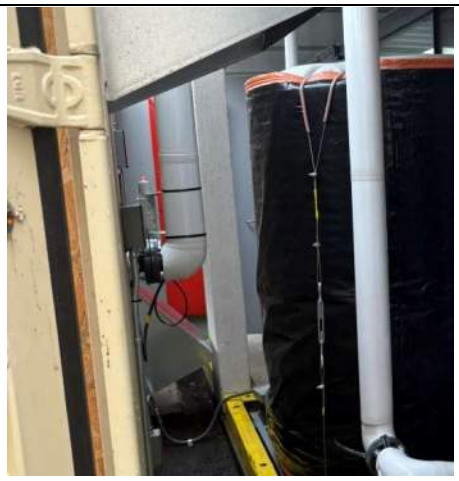
Ryan Hultgren, P.E. (02/28/2025)

Cayla Whiteside, P.E.

Caption 5: Parking lot striping, looking north.

Ryan Hultgren, P.E. (02/28/2025)

Cayla Whiteside, P.E.

Caption 1: Insulation of treated water tank T-400 (front) and untreated water water tank T-301 (behind).	Caption 2: Insulation on liquid GAC tanks.
	
Caption 3: New pressure gauges on injection well banks (0-150" WC / 0-5 psig).	Caption 4: Heat trace indicator light on east side of remediation system building.

Ryan Hultgren, P.E. (04/07/2025)

Cayla Whiteside, P.E.

Appendix F

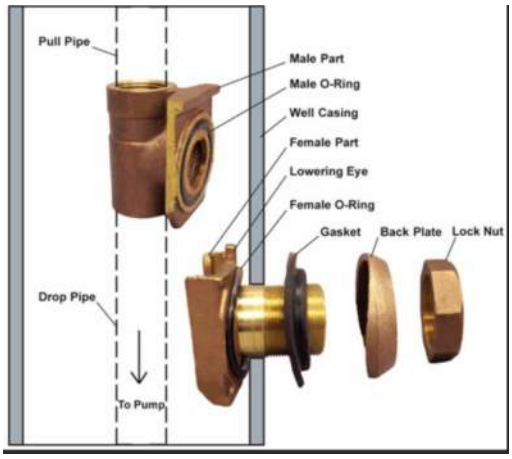
Requests for Information

Request for Information/
Design Clarification/Variation Request

RFI/DCVR No.:	01
Date:	04/09/2024
Contract Name:	Circle K Site 1461 Environmental Remediation System
Contract Number:	C2300123
PROJECT No.	23-008
Contractor:	Glacier Environmental Services Inc
Contractor Representative:	Lauren Golembiewski
Response Requested By:	ASAP
Nature of Work:	Well Head assemblies
Reference Drawings:	C-04
Reference Specification:	33 11 53.13

Description:
Detail 2 on sheet C-04 shows a pitless adapter going vertical to top of 4” pipe. The pitless adapter is basically an elbow 90 and does not have a pass through going vertically. The vertical pipe coming up is just to pull out the injection line. Then it shows a 4” compression fitting with a pass through for the 1” pipe with a 1” j-plug in it. You wouldn’t be able to sample through the 1” because of the blockage at the pitless adapter. Please clarify the fittings you are requesting and what access you need.

Detail 3 for slant well it does not show a pitless adapter and looks like it may show a wye. Plan does not show a 1” wye just a 4” wye. We would suggest using a pitless adapter on this application as well, that way all injection pipes can be removed as needed.



Request for Information/
Design Clarification/Variation Request

Engineer's Response:
19 April 2024

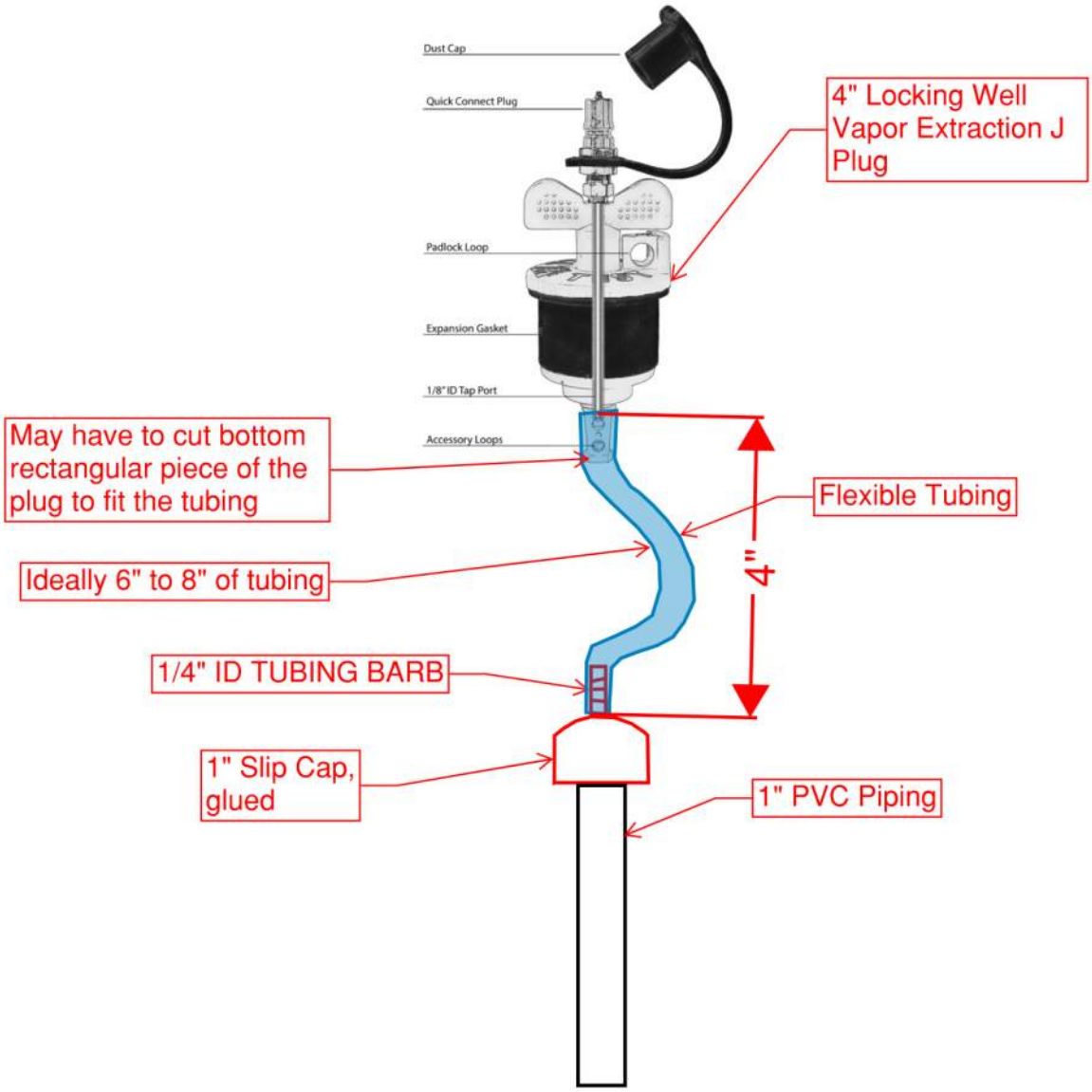
Intent is to be able to sample vapor and pressure directly from the 1-inch drop pipe without removing the 4-inch cap. Additionally, vertical drop pipes should be able to be removed to adjust drop pipe length if needed.

VERTICAL WELLS

1. Drill 3/8" hole centered through pitless adapter.
2. Use 1" slip cap, glued to pipe with tube barb fitting for flexible tube from cap up to bottom of 4-inch locking well vapor extraction J plug with quick disconnect. Picture below shows j-plug with quick disconnect fitting. J plug can be found here (or equal also acceptable): https://ectmfg.com/product/vapor-extraction-locking-well-plug

3. Connect tubing between barb on 1" cap and bottom of 4" J plug. Distance between bottom of 4" J plug and top of 1" cap should be approximately 4". Use 6" to 8" of tubing. Use appropriate size based on barb and accessory loops on 4" J plug. See sketch below for reference.
4. Provide vapor extraction quick connect coupling (https://ectmfg.com/product/vapor-extraction-quick-connect-coupling) to test construction.

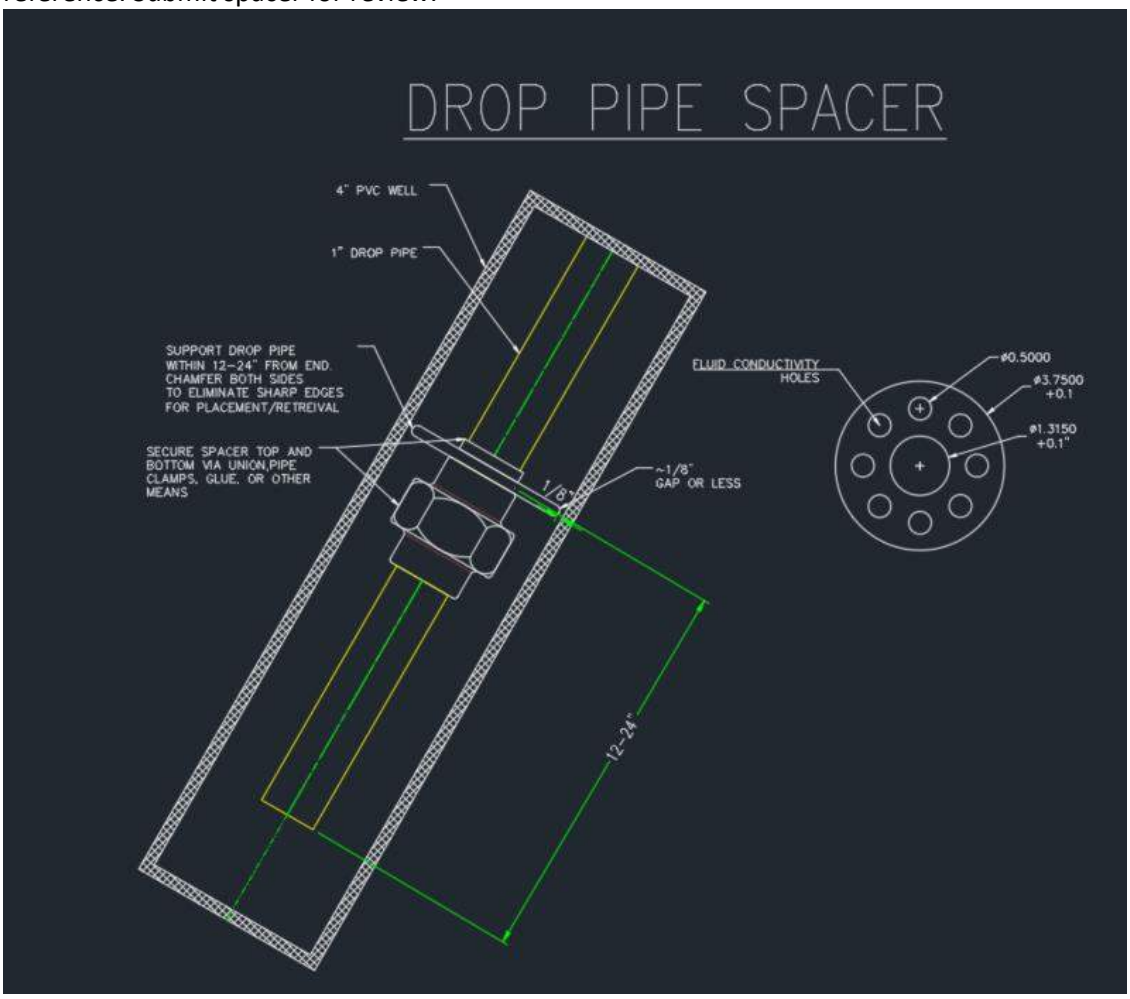
Request for Information/
Design Clarification/Variation Request



SLANTED WELLS

1. Utilize same cap and J plug detail above.
2. Pitless adapter may be used in-lieu of 1” wye inside 4” wye, assuming a 1” 45-degree elbow is installed outside well to avoid stressing/kinking HDPE tubing.
3. Provide contractor designed spacer for slanted drop pipe within 4” casing to support drop pipe near bottom. Spacer shall allow for fluid flow between annular space. See sketch below for

reference. Submit spacer for review.



Ryan Hultgren, P.E.

Distribution

	Submittal	Encl.	RESPONSE
Project Manager	Ryan Hultgren, KJ	x	
Resident Engineer	Cayla Whiteside, KJ	x	
Contractor	Lauren Golembiewski, Glacier	x	
Department of Ecology	Dale Myers	x	
File			

Request for Information/
Design Clarification/Variation Request

RFI/DCVR No.:	02
Date:	05/20/2024
Contract Name:	Circle K Site 1461 Environmental Remediation System
Contract Number:	C2300123
PROJECT No.	23-008
Contractor:	Glacier Environmental Services Inc
Contractor Representative:	Lauren Golembiewski
Response Requested By:	ASAP
Nature of Work:	Fence
Reference Drawings:	C-03
Reference Specification:	32 31 13

Description:
Please confirm that there is no barbed wire on the fence. The written spec mentions it on the gate but it is not shown on the drawing detail.

Also is the double swing gate width 10’ or 12’?

Engineer’s Response 5/21/24:
No barbed wire required on the fence.
Double swing gate width shall be 10’.

Request for Information/
Design Clarification/Variation Request

RFI/DCVR No.:	04
Date:	05/20/2024
Contract Name:	Circle K Site 1461 Environmental Remediation System
Contract Number:	C2300123
PROJECT No.	23-008
Contractor:	Glacier Environmental Services Inc
Contractor Representative:	Lauren Golembiewski
Response Requested By:	ASAP
Nature of Work:	Pipe slope and well boxes
Reference Drawings:	C-04
Reference Specification:	33 14 16.13

Description:

1. The existing vertical well boxes are 8”, the new vertical wells have 12” well boxes. Do you want to replace the existing ones with new 12” well boxes? This would be a change.

2. We do not see anywhere in the plans or specifications that specifies a minimum slope for the underground piping, please confirm that a minimum slope is not required.

Engineer’s Response:

1. Replace seven (7) existing 8-inch diameter well vaults with seven (7) new 12-inch diameter well vaults. During the 4 June 2024 Contractor Check-in Meeting, the cost for replacing these seven (7) well vaults was quoted at $880 by Glacier. Glacier stated that the replacement of the well vaults will reduce labor required for working around the existing ones.

2. Minimum slope is not required. If a slope is needed, pipes sloped back towards the wells would be preferred for draining moisture and easing injection.

Appendix G

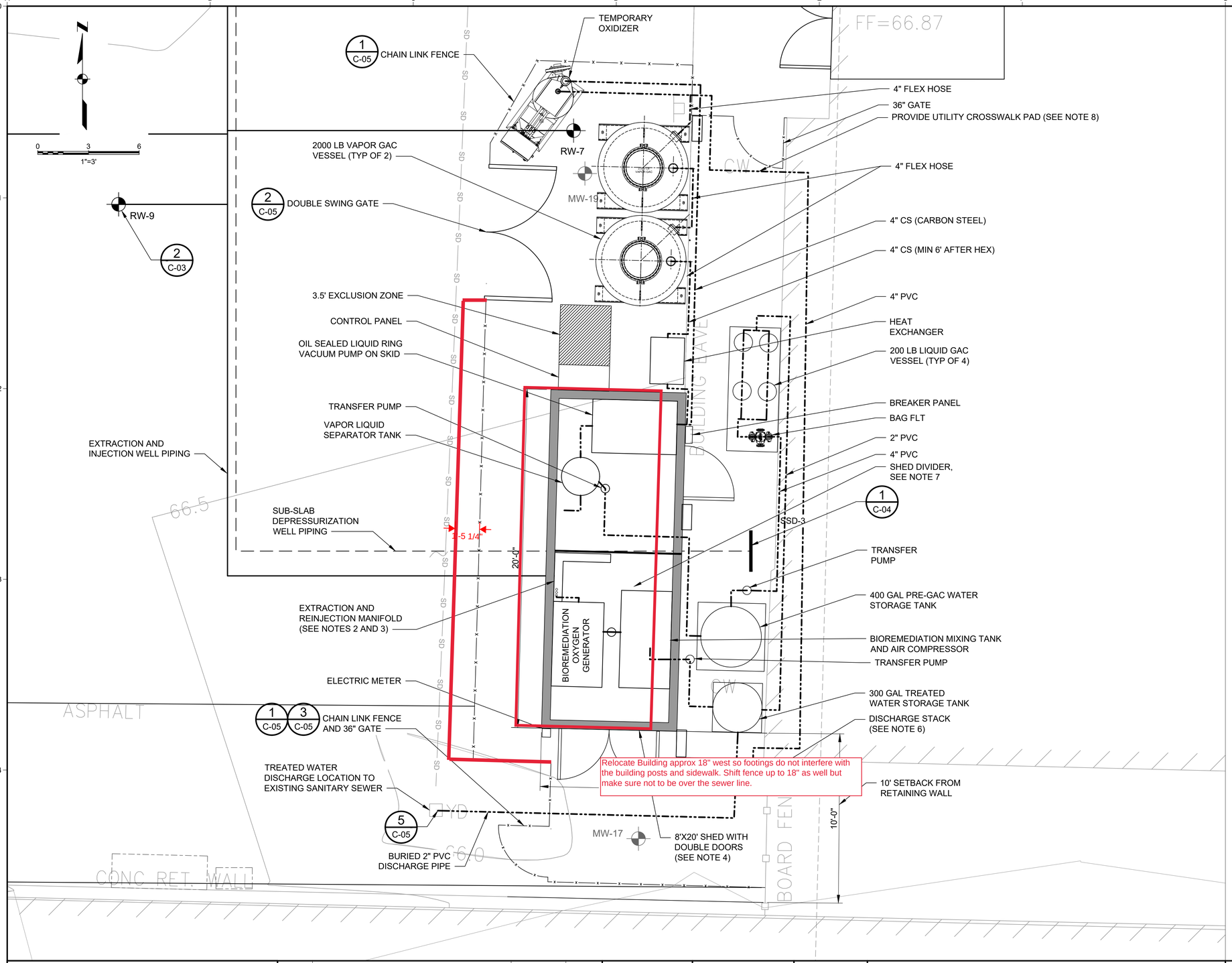
Work Change Directives

Work Change Directive Form
Change No: _01_____

Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	31 May 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

Relocate treatment system building up to 18" west so footings do not interfere with building posts and sidewalk. Shift fence up to 18" west. Refer to attached drawing. Do not interfere with existing sanitary sewer drain line.



GENERAL SHEET NOTES

1. WELL TERMINOLOGY:
   1A. MW = EXISTING MONITORING WELL
   1B. RW = REMEDIATION WELL (EITHER EXISTING OR TO BE INSTALLED
2. ALL MANIFOLDS SHALL BE EQUIPPED WITH GATE VALVE, SAMPLE PORTS, AND 1/4" TAP FOR FLOW INSERTION.
3. EXTRACTION AND REINJECTION MANIFOLDS SHALL BE EQUIPPED WITH CONTROL VALVES AND FLOW METER FOR EACH WELL.
4. PIPING AND VALVES SHALL BE STACKED VERTICALLY ALONG EQUIPMENT ENCLOSURE WALL FOR ACCESS TO FLOW PATH AND MEASUREMENTS.
5. CONTRACTOR SHALL RECREATE ALL PARKING SPACES AFFECTED BY THE REMEDIATION SYSTEM AS SHOWN ON SHEET C-06 INCLUDING REPAINTING PARKING LOT STRIPING AND HANDICAP SYMBOLS, AND REPLACING EXISTING CURBS WITH NEW CURBS.
6. INSTALL ANY NECESSARY PIPE SUPPORTS TO DISCHARGE STACK TO EXTEND TOP OF STACK TO 3 FEET ABOVE THE ROOF. DISCHARGE STACK PIPE SUPPORTS SHALL BE CONTRACTOR DESIGNED AND SUBMITTED TO THE ENGINEER FOR APPROVAL.
7. DIVIDER AND SHED CONSTRUCTION SHALL MEET IBC AND NFPA REQUIREMENTS TO SEPARATE ZONES. SHED CONSTRUCTION SHALL INCLUDE DIVIDER TO SEPARATE UNCLASSIFIED AND CLASS 1, DIVISION 2 RATED EQUIPMENT OR CONTRACTOR SHALL PROVIDE TWO SEPARATE SHEDS INSTALLED ADJACENT TO EACH OTHER.
8. PIPE ROUTING IS APPROXIMATE. FIELD ROUTE AS NEEDED TO MAINTAIN PATHWAYS AND ACCESS TO EQUIPMENT AND VALVES. PROVIDE STEP OVERS/RAMPS WHERE REQUIRED OR ELEVATE TO MINIMUM 7 FEET ABOVE GROUND TO MAINTAIN ACCESS PER SPECIFICATIONS. PROVIDE LOW POINT DRAINS AND HIGH POINT VENTS AS NEEDED. CONTRACTOR DESIGNED SUPPORTS SHALL BE FAVORABLY APPROVED BY ENGINEER. EXCEPT AS MAY BE REQUIRED FOR THE DISCHARGE STACK, SUPPORTS SHALL NOT BE ANCHORED TO THE BUILDING WALL, AWNING, ROOF, OR COLUMNS.
9. TREATMENT SYSTEM SHALL BE COMMISSIONED IN ACCORDANCE WITH SPECIFICATION SECTION 01 77 00.
10. EQUIPMENT AND PIPING LOCATIONS ARE SHOWN FOR CONCEPTUAL PURPOSES ONLY. ACTUAL EQUIPMENT AND PIPING LOCATIONS SHALL BE COORDINATED BY THE CONTRACTOR.

LEGEND

- EXTRACTION AND INJECTION PIPING
- SUB-SLAB DEPRESSURIZATION WELL PIPING
- REMEDIATION SYSTEM PROCESS PIPING (SEE NOTE 4)
- CHAIN LINK FENCE
- SUB-SLAB DEPRESSURIZATION WELL
- VAPOR MONITORING PIN
- WELL TO BE USED FOR EXTRACTION/INJECTION (NEW AND EXISTING, SEE NOTE 1 AND WELL TABLES ON SHEET C-01)
- EXISTING WELL NOT USED FOR EXTRACTION/INJECTION

THE CITY OF SEATTLE
DEPARTMENT OF CONSTRUCTION & INSPECTIONS
APPROVED
Subject to Errors and Omissions
05/17/2024

ISSUED FOR PERMIT

ANY PRINTS NOT BEARING THIS STAMP MAY HAVE BEEN PRINTED PRIOR TO ADVERTISING AND CANNOT BE CONSIDERED AS BID DOCUMENTS. USERS OF THIS DOCUMENT IN EDITABLE ELECTRONIC FORMATS ARE CAUTIONED AGAINST USE WITHOUT FIRST DETERMINING WHETHER CHANGES MAY HAVE BEEN MADE SUBSEQUENT TO ITS PREPARATION.

NO	REVISION	DATE	BY
1	SEATTLE DEPARTMENT OF TRANSPORTATION PERMIT	10/09/2023	CMW

SCALES 0 — 10"

BENJAMIN EDWARD FRANTES, STATE OF WASHINGTON, 88495, REGISTERED PROFESSIONAL ENGINEER, 4/16/2024

DESIGNED CMW
DRAWN CMW
CHECKED BEF

WASHINGTON STATE DEPARTMENT OF ECOLOGY
BELLEVUE, WASHINGTON
CIRCLE K SITE 1461 ENVIRONMENTAL REMEDIATION SYSTEM INSTALLATION
SEATTLE, WASHINGTON

Kennedy Jenks

REMEDIATION SYSTEM LAYOUT

SCALE 1" = 10'
JOB NO 2196008.00
DATE APRIL 2024
SHEET 8 OF 24
C-03

Plot Date: 4/16/2024 1:58 PM
User: RICHARD HILLS
File: C:\bms\jce-pwd\018157412\19600800-C-03.DWG

Work Change Directive Form
Change No: 02

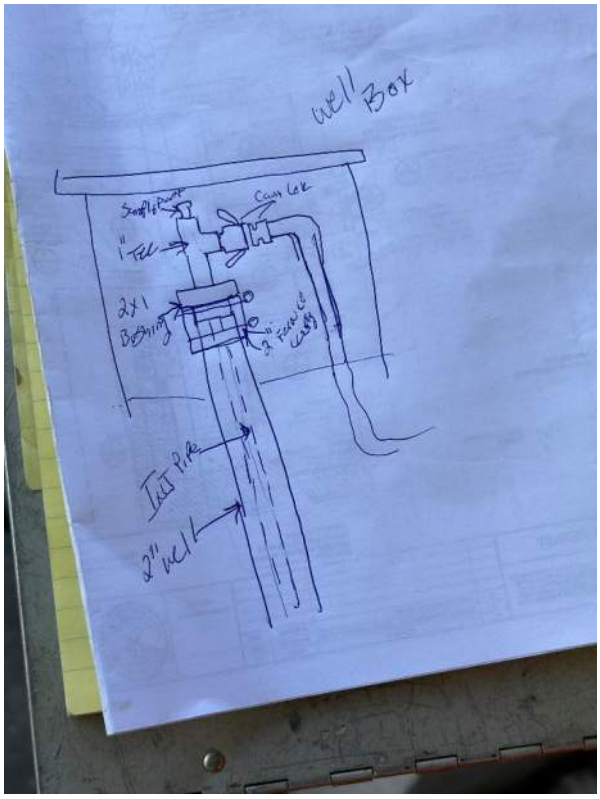
Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	31 May 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

At monitoring well MW-4 (total depth of 18 feet), increase the size of the well monument and well box to 18". Make piping connection to the well as shown in the sketch (provided by Glacier) below.

To account for the additional head these changes will create, when connecting the wells to the treatment system, move wells MW-4 and RW-6 to Well Bank 4 and wells SW-3 and RW-7 to Well Bank 1. The updated Well Bank configuration will be as follows:

- Well Bank 1: ~~MW-4, RW-6,~~ RW-9, RW-3, SW-3, RW-7
- Well Bank 2: RW-4, RW-8, SW-1
- Well Bank 3: RW-5, SW-2, RW-10
- Well Bank 4: ~~SW-3, RW-7,~~ RW-2, MW-4, RW-6



Work Change Directive Form
Change No: 03

Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	8 November 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

Coalescer Drainage
Excessive water is collecting in the coalescer. This accumulation poses concern for freezing in the coalescer, vapor phase GAC units and associated piping, clogging vapor phase GAC or reducing adsoprtion capacity, or causing issues to the CatOx system.

Contractor is directed to make the following changes:
Install barb fitting and flexible 5/16 to 3/8 vinyl tubing from coalescer drainage to vacuum gauge VI 210, directly upstream of the moisture separator tank (T-300) inlet. Add a tee fitting with valve and barb between VI 210 and the 4-inch piping. Tubing shall be routed along the 4-inch discharge piping to the north side of the building. The tubing shall penetrate the side of the north wall near the ceiling and routed high overhead before dropping down to the connection point. Protect and seal the wall penetration. Use zip ties to secure the tubing to existing pipe and piping supports.

FT-500 Totalizer
The specified ½-inch combination flowmeter / totalized FT-500 for the outlet of tank T-400 to the sanitary sewer was restricting flow to a rate that was not registering on the meter and was also backing up flow so the high-high level was engaging. On 8/29/2024, the King County Industrial Waste (KCIW) program approved providing an average daily discharge volume (calculated as the difference between recorded discharge volumes on a totalizer meter divided by elapsed time) instead of daily flow meter reading for KCIW Wastewater Discharge Authorization (WDA) No. 4614-01. Therefore, a flowmeter is not needed at this location, only a totalizer.

It is important that the totalizer cannot lose power and the total gallons value cannot be "erased". As such, a larger diameter analog totalizer is required. The totalizer may also include a pulse counter that could be tied into the PLC for remote monitoring and logging of the total gallons discharged.

Replace the FT-500 combination flowmeter / totalizer and associated ½" diameter SCH80 PVC piping with PRM 1-¼-inch Multi-Jet Brass Totalizing Water Meter with Pulse Output. Contractor shall transition the piping between the 2-inch piping and 1-¼-inch totalizer as quickly as possible to reduce friction losses.

Contractor shall provide a quote to perform the additional following work and receive approval prior to proceeding:
- Connect the pulse wire of the new totalizer installed above to the control panel.
- Modify the PLC to remotely monitor and log the discharge gallons to SS.
- Modify HMI Status screen to distinguish "Total Discharge Gallons" as "Total Injection Discharge Gallons" and add "Total SS Discharge Gallons" display.

Work Change Directive Form
Change No: _03_____

Kennedy Jenks

Work Change Directive Form
Change No: 04

Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	12 November 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

Sanitary Sewer Line
Water is ponding at the catch basin connected to the sanitary sewer discharge. Catch basin piping connection and filter fabric have been inspected and no blockages at the catch basin are apparent. This ponding poses an issue for discharge of treated water to the sanitary sewer during system operation.

Contractor is directed to make the following changes:
Use scope to investigate sanitary sewer lateral for blockages or breaks. Provide Engineer and Ecology with copies of the subsequent report and photos.

Obtain a quote for jetting the sanitary sewer and provide to Engineer and Ecology. If the scoping report identifies blockages that can be resolved through jetting and after approval by Ecology, Contractor is directed to jet the sanitary sewer to clear the blockage.

Identify the appropriate contact at the Seattle Public Utilities to contact if there does not appear to be a blockage on the sanitary sewer lateral on the property after scoping.

Work Change Directive Form
Change No: _04____

Kennedy Jenks

Work Change Directive Form
Change No: 05

Project:	Circle K 1461 Treatment System Installation	**Date of Issuance:**	12 December 2024
Client:	Washington Department of Ecology		
Engineer:	Kennedy/Jenks Consultants, Inc.	**KJ's Project No.:**	2196008*00
Contractor:	Glacier Environmental Services, Inc.		

You are directed to proceed promptly with the following change(s):

Treated Water Drainage
Water is ponding at the catch basin connected to the sanitary sewer discharge. Storm drain piping connecting catch basin to sanitary sewer main determined to be blocked after CCTV inspection. A new connection to sanitary sewer is necessary for discharge of treated water during system operation. Existing remediation piping in SE corner of the property was determined to be connected to the sanitary sewer and will be the new discharge location.

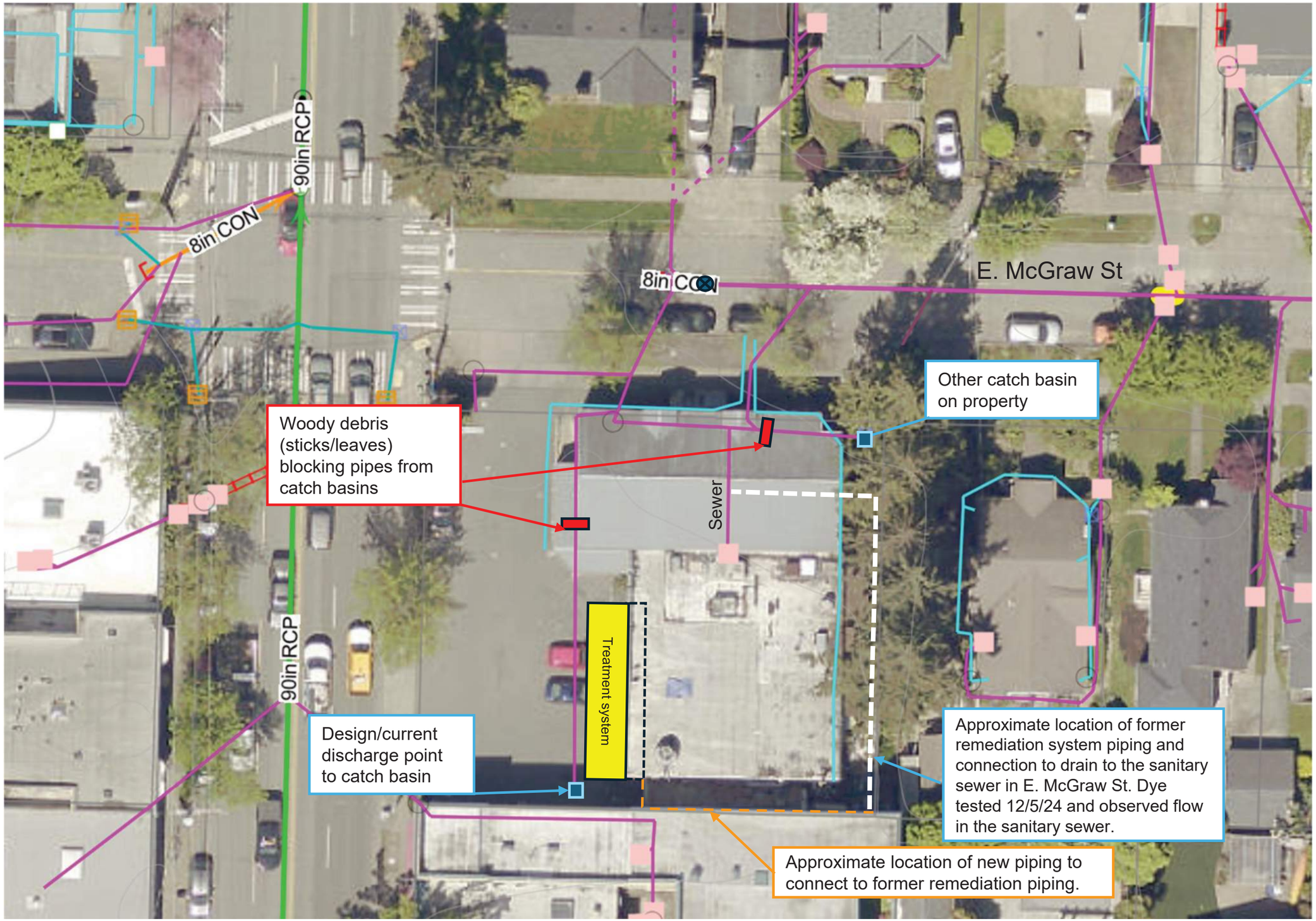
Contractor is directed to make the following changes:
Connect treated water discharge piping to existing remediation piping as shown on the attached figures.

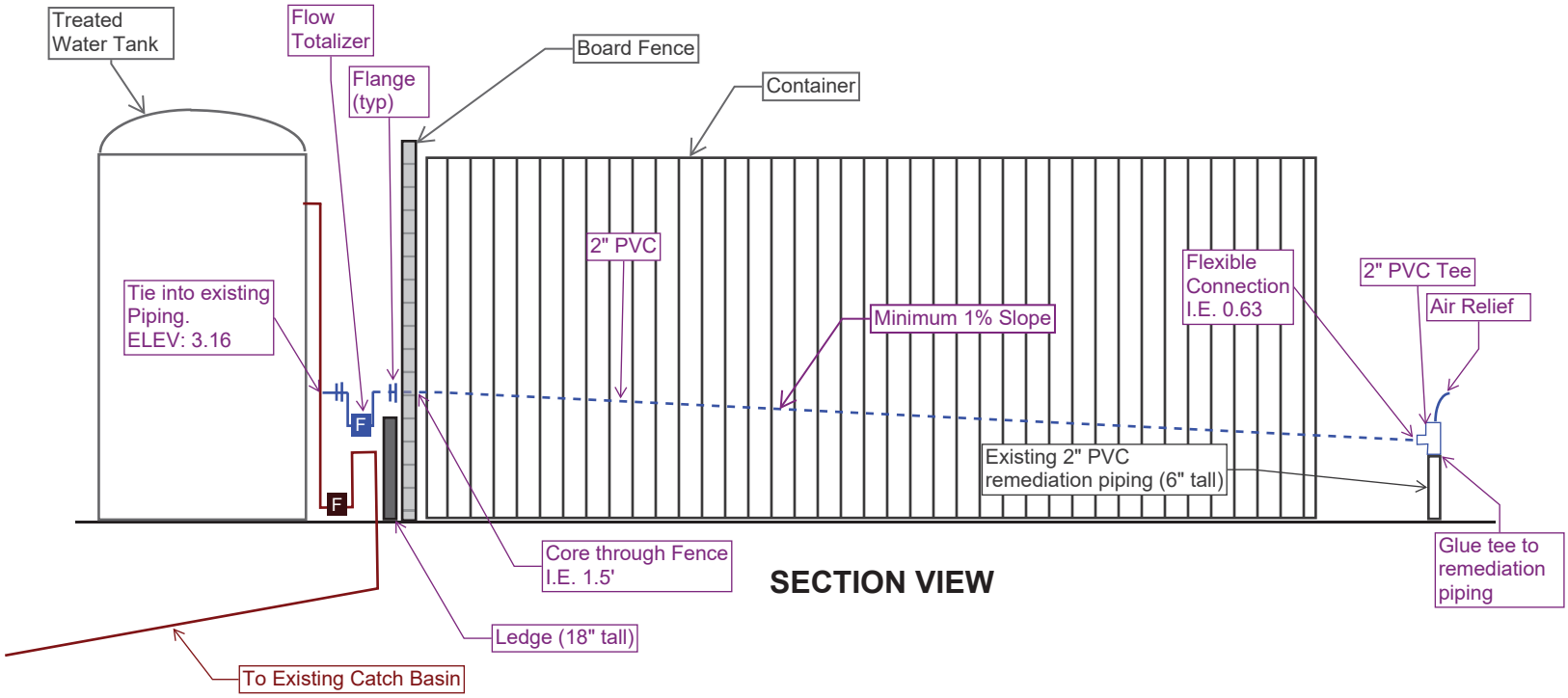
Install 2" SCH 80 PVC tee on 2" PVC existing remediation piping. Glue tee to piping. Provide air relief at top of tee.

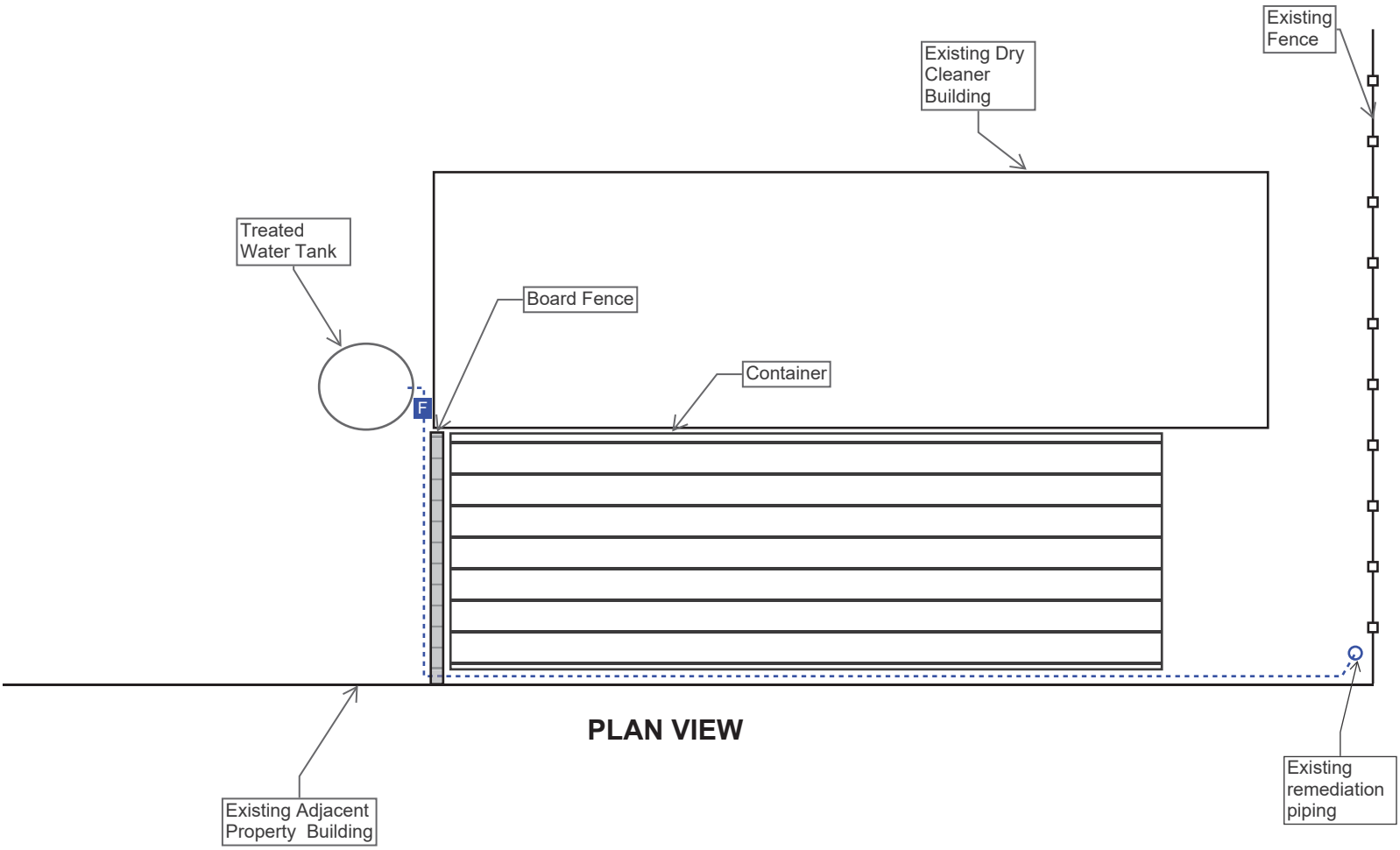
Connect 2" SCH 80 PVC pipe to existing 2" PVC discharge piping at treated water tank T-400. Install new FT-500 flow totalizer (refer to WCD 03). Route piping in front of board fence to building at southern property boundary. Core through board fence and run piping in the space between the container and the southern property boundary wall. Connect piping to tee using flexible connection to allow for slope. Flexible connection shall be 2-inch NPS x 2-inch barb with two stainless steel hose clamps on each hose connection. Alternatively, contractor may use cam-lock fittings.

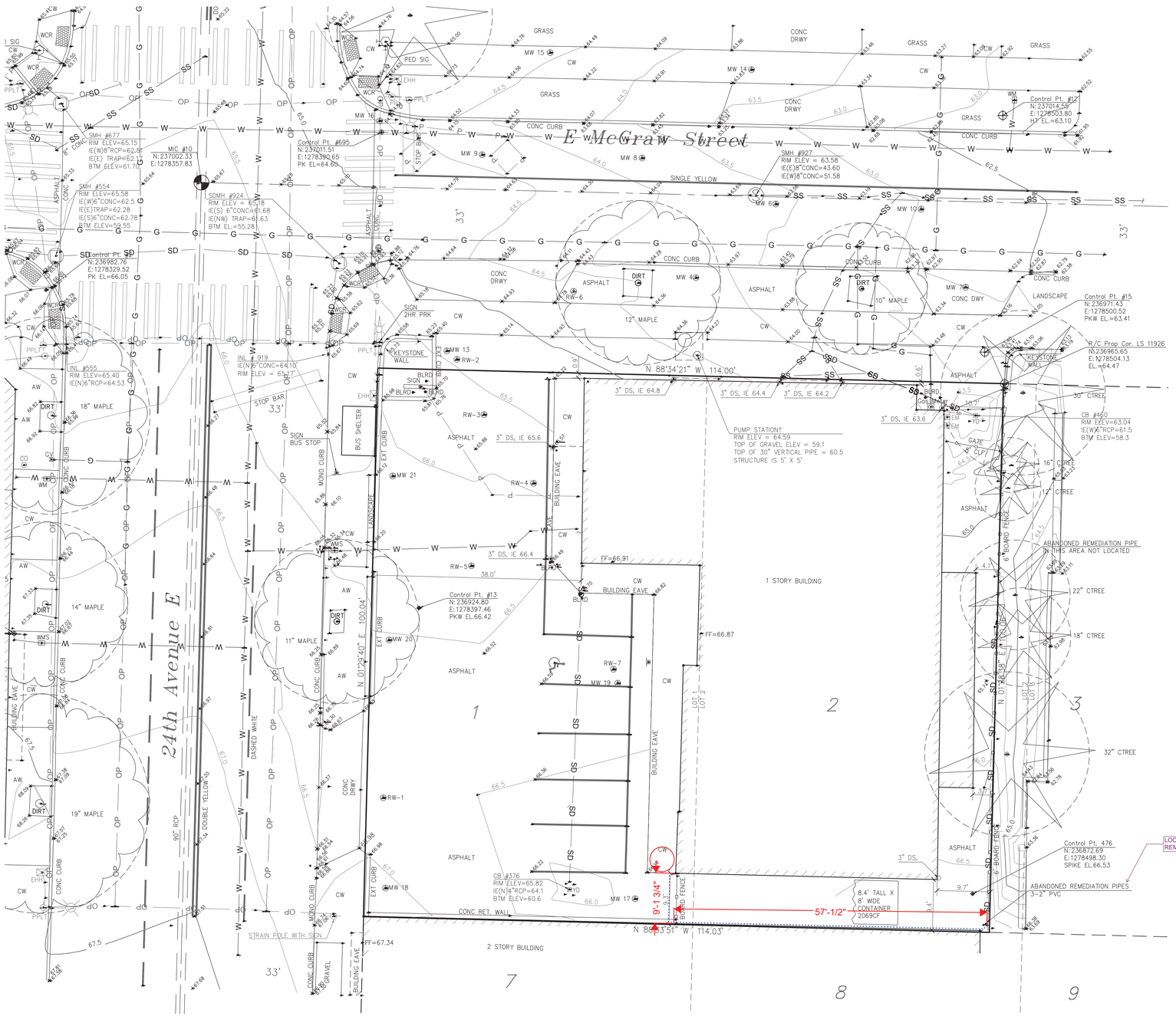
Contractor shall comply with the following requirements:

1. Install piping in accordance with the specifications.
2. Pipe core in fence shall be a minimum of 18" above the ground.
3. Pipe connection into T-400 piping shall be a minimum of 38" above the ground.
4. All pipe shall have a minimum slope of 1% and maximum slope of 2%.
5. Pipe shall be supported by freestanding pipe supports with cradle for piping, such as cinder blocks, every 5 feet, in accordance with Specification Section 33 14 16.13.
6. Pipe shall be insulated in accordance with Specification Section 40 41 00. No heat tracing is required.
7. Provide air relief (via tubing or mechanical air relief valve) on tee connected to existing remediation piping.


90in RCP
8in CON
8in CON
E. McGraw St
Other catch basin on property
Woody debris (sticks/leaves) blocking pipes from catch basins
Sewer
Treatment system
90in RCP
Design/current discharge point to catch basin
Approximate location of former remediation system piping and connection to drain to the sanitary sewer in E. McGraw St. Dye tested 12/5/24 and observed flow in the sanitary sewer.
Approximate location of new piping to connect to former remediation piping.


Treated Water Tank
Flow Totalizer
Flange (typ)
Board Fence
Container
2" PVC
Tie into existing Piping. ELEV: 3.16
Minimum 1% Slope
Flexible Connection I.E. 0.63
2" PVC Tee
Air Relief
F
F
Existing 2" PVC remediation piping (6" tall)
Core through Fence I.E. 1.5'
Glue tee to remediation piping
SECTION VIEW
Ledge (18" tall)
To Existing Catch Basin


Existing Fence
Existing Dry Cleaner Building
Treated Water Tank
Board Fence
Container
F
PLAN VIEW
Existing Adjacent Property Building
Existing remediation piping



LEGAL DESCRIPTION

LOTS 1 AND 2, BLOCK 29, LESS EASTERLY 6 FEET THEREOF, PIKE'S 2ND ADDITION TO UNION CITY, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 1 OF PLATS, PAGE 65A, IN KING COUNTY, WASHINGTON.

TAX PARCEL NO. 678820-1335

NOTES

1. HORIZONTAL DATUM: WASHINGTON STATE PLANE, NORTH ZONE, NAD83/91.
2. VERTICAL DATUM: NAVD 88.
3. DATE OF SURVEY: JUNE 8, 2017
4. EQUIPMENT USED: LEICA TS 12.
5. UTILITIES SHOWN HEREON WERE FROM PHYSICAL STRUCTURES ONLY.
6. 0.5' CONTOUR INTERVAL.
7. TOTAL AREA OF PROPERTY: 11,407 SQ. FT.

LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- CENTERLINE
- SD — STORM DRAIN
- OP — OVERHEAD POWER
- P — UNDERGROUND POWER
- G — GAS
- SS — SANITARY SEWER
- WOOD FENCE
- DECIDUOUS TREE W/DRIPLINE
- MONUMENT IN CASE
- WATER METER
- ELECTRIC METER
- GAS METER
- STREET SIGN
- POWER POLE
- TRAFFIC SIGNAL W/LUMINAIRE
- EHH — JUNCTION BOX
- SEWER MANHOLE
- STORM DRAIN MANHOLE
- CB — CATCH BASIN
- DS — DOWN SPOUT
- MW — MONITORING WELL
- BLRD — BOLLARD
- CW — CONCRETE WALK

ABBREVIATIONS

AW	ASPHALT WALK
BLRD	BOLLARD
CB	CATCH BASIN
CTREE	CONIFEROUS TREE
CW	CONCRETE WALK
DRWY	DRIVEWAY
DS	DOWNSPOUT
ECAB	ELECTRICAL CABINET
EHH	ELECTRIC HANDHOLE
EM	ELECTRIC METER
FF	FINISHED FLOOR
HYD	FIRE HYDRANT
IE	INVERT ELEVATION
MIC	MONUMENT IN CASE
MW	MONITORING WELL
PED SIG	PEDESTRIAN SIGNAL
PPLT	POWER POLE WITH LUMINAIRE
RW	RECLAMATION WELL
WM	WATER METER
WV	WATER VALVE
YD	YARD DRAIN

CONTROL POINT INFORMATION

POINT NO.	NORTHING	EASTING	ELEVATION
2	236982.76	1278329.52	66.05
12	237014.55	1278503.80	63.10
13	236924.80	1278397.46	66.42
15	236971.43	1278500.52	63.41
16	237010.81	1278536.57	61.93
476	236872.69	1278498.30	66.53
695	237011.51	1278390.65	64.60

N W E S

GRAPHIC SCALE

10 0 5 10 20

(IN FEET)

SURVEYED: KM/SW
DRAWN: JB
CHECKED: TI

REV	REVISION	DATE	BY	APP'D

True NORTH LAND SURVEYING, INC.
815 S. Weller Street
Suite 200
Seattle, WA 98104-3023
206.332.0800

EILEEN M. FORRESTER STATE OF WASHINGTON 31453 REGISTERED PROFESSIONAL LAND SURVEYOR

Date: 6-20-2017
Scale: 1" = 10'
Book: J16186.dwg

2401 E McGraw Street, Seattle, WA
SITE PLAN
For KENNEDY/JENKS

PORTION OF THE SE 1/4 OF THE NW 1/4 OF SECTION 21, T 25 N, R 4 E, W.M.

Job Number: J16-186.00
Sheet: 1 of 1

Appendix H

Daily Field Reports

Kennedy Jenks

Daily Inspection Construction Report

REPORT NUMBER: 01
CONTRACT TITLE: Circle K Remediation System Installation
CSID #5089
PRIME CONTRACTOR: Glacier (WA Ecology Contractor)
TIME WORK STARTED: 9:00
TIME WORK STOPPED: 16:30 HR

Inspection Date			
Year	Month	Day	Inspector
2024	02	07	MM/EG

Day of the Week						
Sat	Sun	Mon	Tue	Wed	Thu	Fri
				X		

Weather				
Clear	PC	Overcast	Lt Rain	Rain
AM/PM				

Temperature				
10-32	33-55	56-70	71-85	86+
	AM/PM			

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier arrives onsite.
1150	Glacier begins the tailgate safety meeting.
1250	Glacier works with KJ to hang Ecology site information sign on the northern side of Mont's Market building.
1505	Glacier speaks with Cascade about timeline for well development. Plan is to conduct Monday/Tuesday (2/12-2/13) of next week.
1630	Glacier and KJ head offsite.
Subcontractor: Cascade Environmental / Krazan and Associates / CNI Private Locates	
0730	Cascade arrives onsite.
0900	Cascade begins unloading drilling equipment/supplies.
0920	CNI private utility locates arrives at the site.
0925	CNI private utility locates begin marking underground utility lines with paint.
0945	CNI reported to Glacier that RW-9 is near an unknown underground utility (see field issues section).
1000	Cascade begins removing the asphalt from the surface of RW-8, east of bus stop.
1130	Krazan arrives onsite and begins setting up the sampling station.
1210	Cascade begins drilling at RW-8. Krazan geologists begin logging their first core.
1220	Krazan receives 0-5ft core and samples at 5 ft.
1225	Krazan receives 5-10ft core and samples at 9 ft.
1300	Krazan finishes preparing samples and heads offsite to send samples to lab.
1350	Cascade began installing well at RW-8. KJ confirms materials match specs. Schd. 40 PVC casing with 0.01" slotted screen/ Screen interval 5-20 ft.
1450	Cascade begins purging fines from RW-8 after well installation is complete.
1515	Cascade begins the site cleanup process/organization.
1600	Cascade grouts RW-8 and sets monument.
1630	Cascade heads offsite.

Cayla Whiteside, P.E. (2/21/24)

Michael McIntosh, G.I.T. (2/21/24)

Deliveries / Pick-ups / Miscellaneous	
0730	Glacier reported that children from Montlake Elementary were being dropped off in the dry cleaner/ market parking lot. Glacier contacted the school to rearrange the drop off/pick up location for future mornings and afternoons.

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
RW-9 Location	2/7/2024	Glacier/Cascade /CNI	RW-9 was originally to be located on top of an unknown utility line discovered by CNI. s	Glacier confirmed with KJ that the location of RW-9 will be moved four feet to the south as advised by CNI.
Bus stop Location	2/7/2024	Glacier	Glacier talked with the store owner about the school kids being dropped off in the morning. The store owner says there is no formal arrangement for drop-off.	Glacier contacted Montlake Elementary school to find other arrangements nearby for drop-off and pickup. Cascade given permission to block off parking lot entrance to prevent bus from arriving onsite.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Cayla Whiteside, P.E (2/21/24)

Michael McIntosh, G.I.T. (2/21/24)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 02/07/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 1
CSID #5089

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Cascade / Glacier / Krazan	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE worn at all times.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8	
Cascade	1	Operator	8	
Cascade	2	Laborers	8	
CNI	1	Utility Locator	1	

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Bobcat Skidsteer	4	4
Glacier	TSI 1500CC Compact Crawler	5	3

Cayla Whiteside, P.E (2/21/24)

Michael McIntosh, G.I.T. (2/21/24)

Photos

Caption 1: Cascade prepares screen intervals. Facing west.	Caption 2: Cascade working to install RW-8. Facing southwest.
Caption 3: RW-8 grouted, and monument placed. Facing southwest.	Caption 4: Cascade rearranges equipment at end of day. Facing southwest.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E (2/21/24)

Michael McIntosh, G.I.T. (2/21/24)

Kennedy Jenks

Daily Inspection Construction Report

REPORT NUMBER: 02
CONTRACT TITLE: Circle K Remediation System Installation
CSID #5089
PRIME CONTRACTOR: Glacier (WA Ecology Contractor)
TIME WORK STARTED: 7:00
TIME WORK STOPPED: 16:45

Inspection Date			
Year	Month	Day	Inspector
2024	02	08	MM

Day of the Week						
Sat	Sun	Mon	Tue	Wed	Thu	Fri
					X	

Weather				
Clear	PC	Overcast	Lt Rain	Rain
AM/PM				

Temperature				
10-32	33-55	56-70	71-85	86+
	AM/PM			

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier arrives onsite.
0817	Glacier holds a tailgate safety meeting.
1645	Glacier offsite.
Subcontractor: Cascade Environmental / Krazan and Associates / Seattle Concrete Core Drilling	
0710	Cascade onsite. Cascade begins setting up the site and closing off sections of the parking lot.
0810	Seattle Concrete Core Drilling arrives onsite.
0815	Krazan arrives onsite.
0830	Cascade begins removing asphalt from the ground surface at RW-9.
0843	Cascade begins drilling RW-9.
0850	Krazan samples the 0-5ft core for RW-9 at 4ft.
0900	Krazan samples the 5-10ft core at 7.5ft.
0915	Krazan screens the 10-15ft core with PID. No samples taken.
0940	Krazan screens the 15-17 ft core with PID. No samples taken.
0945	Seattle Concrete Coring begins coring at SW-2.
0950	Krazan screens 17-22ft with PID. No samples taken.
1000	Cascade begins a clean out run of RW-9 prior to well installation.
1040	Cascade ready to install well. KJ confirms materials match specs. Schd. 40 PVC casing with 0.01" slotted screen, screen interval 5-20ft.
1045	Seattle Concrete completed coring SW-1, SW-2, and SW-3. Seattle Concrete offsite.
1145	Cascade begins bailing fines from RW-9.
1215	Cascade moves equipment and starts setting up at RW-10.
1220	Cascade begins removing asphalt from the ground surface at RW-10.
1230	Cascade begins drilling RW-10.
1245	Krazan samples the 0-5ft core for RW-10 at 5ft.
1255	Krazan samples the 5-10ft core for RW-10 at 10ft.
1315	Krazan screens the 10-15ft core with PID. No samples taken.
1320	Krazan screens the 15-20ft core with PID. No samples taken.
1330	SDOT arrives onsite (see visitors to site section).

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (02/26/2024)

1340	SDOT offsite.
1350	Krazan screens the 20-25ft core with PID. No samples taken.
1400	Krazan screens the 25-30ft core with PID. No samples taken.
1440	Krazan offsite to submit soil samples to the lab.
1505	Cascade completes a clean out run of RW-10 prior to well installation.
1515	Cascade ready to install well. KJ confirms materials match specs. Schd. 40 PVC casing with 0.01" slotted screen, screen interval 23-28ft.
1600	Cascade begins purging the fines from RW-10. No water observed in RW-10.
1615	Cascade grouts RW-10 and sets monument.
1630	Cascade rearranges equipment for overnight storage.
1645	Cascade heads offsite.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
	SDOT	1330-1340	For introductions and to observe property lines.

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Cascade / Glacier / Krazan	Site Safety		Small area with high foot traffic, use spotters.

Cayla Whiteside

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh

Michael McIntosh, G.I.T. (02/26/2024)

			Slips, trips, and falls. Proper PPE always worn.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	9.5	
Cascade	1	Operator	9.5	
Cascade	2	Laborers	9.5	
Seattle Concrete	1	Operator	2.5	

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Cascade	Bobcat Skidsteer	7	2.5
Cascade	TSI 1500CC Compact Crawler	7	2.5

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (02/26/2024)

Photos

Caption 1: Cascade closing off section of parking lot around RW-9. Facing southwest.

Caption 2: Seattle Concrete Coring begins coring SW-2. Facing west.

Caption 3: Cascade removing asphalt from the surface of RW-10. Facing south.

Caption 4: Cascade finished grouting RW-10 and set the monument. Facing south.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (02/26/2024)

Kennedy Jenks

Daily Inspection Construction Report

REPORT NUMBER: 03
CONTRACT TITLE: Circle K Remediation System Installation
CSID #5089
PRIME CONTRACTOR: Glacier (WA Ecology Contractor)
TIME WORK STARTED: 7:00
TIME WORK STOPPED: 16:30

Inspection Date			
Year	Month	Day	Inspector
2024	02	09	MM

Day of the Week						
Sat	Sun	Mon	Tue	Wed	Thu	Fri
						X

Weather				
Clear	PC	Overcast	Lt Rain	Rain
PM		AM		

Temperature				
10-32	33-55	56-70	71-85	86+
	AM			

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier arrives onsite.
0805	Glacier holds tailgate safety meeting.
1350	Glacier must leave the site by 1500. Not enough time to continue site operations. (See field issues section).
1430	Glacier offsite.
Subcontractor: Cascade Environmental / Krazan and Associates	
0700	Cascade arrives onsite.
0730	Cascade rearranges drilling rig and closes off sections of the parking lot.
0800	Krazan arrives onsite.
0825	Cascade begins removing asphalt from SW-3.
0900	Cascade begins drilling SW-3.
0905	Krazan samples the 0-5ft core at 4ft (3.46ft BGS).
0915	Krazan samples the 5-10ft core at 8ft (6.92ft BGS).
0945	Krazan screens the 10-15ft core with PID. No samples taken.
0950	Krazan samples the 15-20ft core at 15ft (13ft BGS).
1050	Krazan screens the 20-23ft core with PID. No samples taken.
1100	Cascade completes a clean out run of SW-3 prior to well installation.
1105	Krazan offsite to drop off soil samples. Field discussion regarding time to finish SW-3.
1112	Cascade begins well installation for SW-3. KJ confirms materials match specs. Schd. 40 PVC casing with 0.01" slotted screen, screen interval 6-21ft.
1235	Cascade begins bailing fines from SW-3.
1255	Cascade begins grouting and placing the monument for SW-3.
1350	Cascade begins organizing equipment for storage over the weekend.
1430	Cascade offsite.
Deliveries / Pick-ups / Miscellaneous	
N/A	

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Insufficient time to install SW-2	02/9/2024		Due to the length of time that installing the slanted wells takes and because Cascade mentioned that starting and stopping a slanted is difficult since lining the drill up again will likely be difficult.	The continued installation of slanted wells will continue Monday instead of just focusing on well development as originally planned.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
N/A		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Cascade / Glacier / Krazan	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE worn at all times.

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

			Since installing slanted wells is more physically taxing, always have assistance.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	7.5	
Cascade	1	Operator	7.5	
Cascade	2	Laborers	7.5	

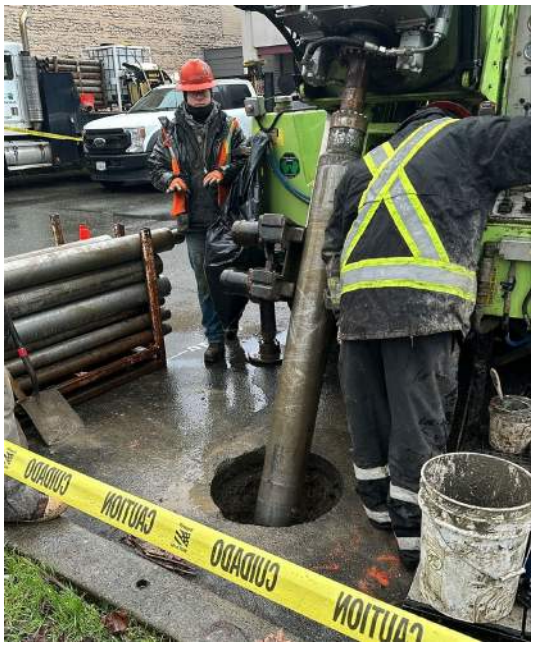
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Cascade	Bobcat Skidsteer	7	0.5
Cascade	TSI 1500CC Compact Crawler	5.5	2.0

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Photos

	
Caption 1: Cascade begins drilling SW-3. Facing southeast	Caption 2: Cascade installing well at SW-3. Facing southeast.
Caption 3: Cascade begins to grout for SW-3.	Caption 4: Krazan sampling the 0-5ft core. Facing North.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Kennedy Jenks

Daily Inspection Construction Report

REPORT NUMBER: 04
CONTRACT TITLE: Circle K Remediation System Installation
CSID #5089
PRIME CONTRACTOR: Glacier (WA Ecology Contractor)
TIME WORK STARTED: 8:00
TIME WORK STOPPED: 17:00

Inspection Date			
Year	Month	Day	Inspector
2024	02	10	EC

Day of the Week						
Sat	Sun	Mon	Tue	Wed	Thu	Fri
X						

Weather				
Clear	PC	Overcast	Lt Rain	Rain
AM/PM				

Temperature				
10-32	33-55	56-70	71-85	86+
	AM/PM			

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0800	Glacier arrives onsite. Begins setting up sidewalk signs.
0945	Glacier offsite to obtain concrete saw.
1055	Glacier arrives onsite with concrete saw. Begins to cut SW-1 concrete.
1700	Glacier and KJ offsite.
Subcontractor: Cascade Environmental / Krazan and Associates	
0630	Cascade arrives onsite.
0900	Cascade begins removing cut concrete slab from SW-1 location. Krazan onsite.
0905	Cascade notices a tree root running through the middle of hole (see field issues).
0930	Cascade begin setting up drill rig at SW-1 to break concrete pad (sidewalk).
0938	Cascade starts cutting into sidewalk section. Decides to switch to a saw for cutting.
0945	Cascade set up to cut concrete (vacuum & water source).
1120	Cascade finishes cutting the concrete and removes topsoil layer with shovel. More tree roots were encountered but were smaller than 1” diameter.
1130	Cascade prepares to start drilling SW-1.
1144	Cascade maneuvers drill rig and well placement to avoid tree roots.
1200	Krazan samples the 0-5ft core at 4ft angled depth (3.46ft vertical)
1215	Krazan samples the 5-10ft core at 10ft angled depth (8.66ft vertical).
1220	Krazan screens the 10-15ft core with PID. No samples taken.
1230	Krazan samples the 15-20ft at 20ft angled depth (17.32 vertical feet).
1240	Krazan screens the 20-23ft core with PID. No samples taken since no impact observed.
1320	Cascade finishes drilling. Krazan heads offsite.
1520	Cascade finishes well installation and begins bailing fines out of SW-1.
1535	Cascade begins prepping monument in place and concrete surfacing.
1605	Cascade finishes pouring concrete for SW-1 and begins cleaning up the site.
1700	Cascade offsite.
Deliveries / Pick-ups / Miscellaneous	
1400	SDOT employee visits the site. Asks if work will be done by 17:00 today.

Cayla Whiteside, P.E. (2/26/2024)

Ella Clair, E.I.T. (2/26/2024)

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Tree root	2/10/2024		Tree root is running through hole at SW-1. Diameter of root is approximately 2.5-3". Tree protection plan states that roots over 2" diameter can't be cut.	Cascade and Glacier decide to break more concrete closer to the parking lot and move well to the northeast. Glacier will return later to finish cutting/prepping for well/ monument installation.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
Yes	Working in the 24th Ave E right of way.	Cascade is drilling a slant well in the right of way. Overhead power lines were turned off by 6:15am. Traffic control plan in place.

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
Edward Malveaux	SDOT	1400-1410	To confirm time for today's work to be done.

Cayla Whiteside, P.E. (2/26/24)

Ella Clair, E.I.T. (2/26/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:2/10/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 04
CSID #5089

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Cascade / Glacier / Krazan	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Right-of-way work.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	9.0	
Cascade	1	Operator	11.5	
Cascade	2	Laborers	11.5	

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Cascade	Bobcat Skidsteer	9	2.5
Cascade	TSI 1500CC Compact Crawler	7	4.5

Cayla Whiteside, P.E. (2/26/24)

Ella Clair, E.I.T. (2/26/2024)

Photos

Caption 1: Large tree root observed at initial SW-1 location.	Caption 2: Cascade starts cutting into sidewalk section. Facing south.
Caption 3: Monument placement and concrete surfacing. Facing east.	Caption 4: Site cleaned up for the day and prepared for weekend storage. Facing southwest.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (2/26/24)

Ella Clair, E.I.T. (2/26/2024)

Kennedy Jenks

Daily Inspection Construction Report

REPORT NUMBER: 05
CONTRACT TITLE: Circle K Remediation System Installation
CSID #5089
PRIME CONTRACTOR: Glacier (WA Ecology Contractor)
TIME WORK STARTED: 7:00
TIME WORK STOPPED: 15:25

Inspection Date			
Year	Month	Day	Inspector
2024	02	12	MM

Day of the Week						
Sat	Sun	Mon	Tue	Wed	Thu	Fri
		X				

Weather				
Clear	PC	Overcast	Lt Rain	Rain
PM		AM		

Temperature				
10-32	33-55	56-70	71-85	86+
	AM/PM			

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier arrives onsite.
1525	Glacier and KJ offsite.
Subcontractor: Cascade Environmental / Krazan and Associates	
0700	Cascade arrives onsite.
0740	Cascade begins rearranging equipment and blocking off sections of parking lot.
0830	Cascade begins removing asphalt from SW-2.
0905	Cascade begins drilling at SW-2.
0920	Krazan samples the 0-6ft core at 5ft angled depth (4.33ft vertical depth).
0930	Krazan samples the 6-11ft core at 10ft angled depth (8.66ft vertical depth).
0955	Krazan screens the 11-16ft with PID. No samples taken.
1000	Krazan samples the 16-21ft core at 20ft angled depth (17.3ft vertical depth).
1030	Krazan screens the 21-23ft core with PID. No samples taken.
1040	Cascade completes drilling SW-2. Takes a short break.
1050	Krazan offsite.
1110	Cascade begins clean out run of SW-2.
1130	Cascade ready to begin installing well SW-2. KJ confirms materials match specs.
1220	Cascade finishes installing well.
1230	Cascade begins to grout and install monument for SW-2.
1250	Cascade rearranges site for well development.
1330	Cascade begins developing SW-1.
1400	Cascade begins developing RW-8.
1445	Cascade confirms that water in SW-1 is running clear. Will confirm again tomorrow.
1500	Cascade begins moving equipment for overnight storage.
1520	Cascade offsite.
Deliveries / Pick-ups / Miscellaneous	
N/A	

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 02/12/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 05
CSID #5089

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Cascade / Glacier / Krazan	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE worn at all times. Since installing slanted wells is more physically taxing, always have assistance.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.5	
Cascade	1	Operator	8.5	
Cascade	2	Laborers	8.5	

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Cascade	Bobcat Skidsteer	7	0.5
Cascade	TSI 1500CC Compact Crawler	6.5	2.5

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Photos

Caption 1: Cascade sets up on SW-2. Facing southwest	Caption 2: Casccade begins grouting and placing monument for SW-2.
Caption 3: Well tag for SW-2.	Caption 4: Krazan sampling the final impacted area of SW-2.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Kennedy Jenks

Daily Inspection Construction Report

REPORT NUMBER: 06
CONTRACT TITLE: Circle K Remediation System Installation
CSID #5089
PRIME CONTRACTOR: Glacier (WA Ecology Contractor)
TIME WORK STARTED: 6:30
TIME WORK STOPPED: 12:00

Inspection Date			
Year	Month	Day	Inspector
2024	02	13	MM

Day of the Week						
Sat	Sun	Mon	Tue	Wed	Thu	Fri
			X			

Weather				
Clear	PC	Overcast	Lt Rain	Rain
		AM/PM		

Temperature				
10-32	33-55	56-70	71-85	86+
	AM/PM			

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0630	Glacier arrives onsite.
0700	Glacier holds tailgate safety meeting.
1030	KJ talks with Glacier about measuring groundwater parameters for each well (see field issues).
1100	KJ confirms well tags and depths before and after development: RW-8 (BPR-842): 10.4ft, 12.0ft SW-2 (BPR-847): 12.5ft angled (10.8ft vertical), 13.7ft angled (11.8ft vertical). SW-3 (BPR-845): 13.6ft angled (11.7ft vertical), 14.0ft angled (12.1ft vertical). SW-1 (BPR-845): 13.2ft angled (11.4ft vertical), 13.9ft angled (12.0ft vertical). RW-9 (BPR-843): 10.75ft, 11.6ft. RW-10 (BPR-844): 22.25ft, 24.1ft.
1200	Glacier and KJ offsite.
Subcontractor: Cascade Environmental	
0630	Cascade arrives onsite.
0715	Cascade begins setting up equipment for the day.
0720	Cascade rearranges owner's vehicles for access to the well that is being decommissioned on south side of market.
0730	Cascade begins decommissioning dug well on south side of market. Plan is to place 9.5ft of pea gravel followed by 4ft of bentonite chips and seal it with a concrete cap.
0800	Cascade has laborer continue to develop wells while well decommission occurs.
1015	Most of the wells are developed. Waiting for RW-10 and RW-9 to recharge before final reading. KJ confirmed water is running clear in each well prior to resealing.
1045	
1100	RW-9 has been developed and is running clean.
1105	All wells have had readings taken have been developed. All wells sealed. Cascade organizes site prior to leaving. They planned on returning the following morning for full demobilization of drill and remainder of equipment.
1130	Equipment onsite is ready for overnight storage.

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

1145	Cascade offsite.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Groundwater Parameters	2/13/2024		Glacier/Cascade were not prepared to take groundwater parameter measurements as was in the scope for the well development process.	Groundwater parameters should be taken prior to future construction activities onsite.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:02/13/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 06
CSID #5089

Participants	Topic	Relevant Contract References	Summary
KJ / Cascade / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	7.0	
Cascade	1	Operator	7.0	
Cascade	3	Laborers	7.0	

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Cascade	Bobcat Skidsteer	6.0	1.0

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Photos

Caption 1: "Slide" that Cascade developed for dug well decommissioning. Facing southwest.

Caption 2: Glacier placing bentonite chips in dug well. Facing southwest.

Caption 3: Dug well prior to decommissioning.

Caption 4: Well tag of SW-2 prior to sealing well.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (2/26/24)

Michael McIntosh, G.I.T. (2/26/2024)

Kennedy Jenks

Inspection Date			
Year	Month	Day	Inspector
2024	05	30	MM

Day of the Week						
Sat	Sun	Mon	Tue	Wed	Thu	Fri
					X	

Weather				
Clear	PC	Overcast	Lt Rain	Rain
PM	AM			

Temperature				
10-32	33-55	56-70	71-85	86+
		AM/PM		

Daily Inspection Construction Report

REPORT NUMBER: 07

CONTRACT TITLE: Circle K Remediation System Installation

CSID #5089

PRIME CONTRACTOR: Glacier (WA Ecology Contractor)

TIME WORK STARTED: 11:00

TIME WORK STOPPED: 14:00

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
1100	Mike with KJ arrives onsite to gauge well depth to water and total depths and to inspect site activity.
1130	Prior to KJ's arrival, approximate trench locations were drawn with orange spray-paint.
1200	Mike talks with Ryan about which wells to gauge and overall scope of work.

Well ID	Depth to Water (ft btoc)	Total Well Depth (ft btoc)	Notes
RW-7	9.19	20.30	
MW-18	11.36	15.0	
MW-17	10.42	20.0	
RW-1	-	-	Unable to open
MW-4	31.66	90.0	
MW-4B	9.27	18.0	Unknown well
RW-6	9.81	20.0	
RW-2	10.56	20.0	
RW-3	-	-	Unable to open
RW-4	10.7	20.0	
RW-8	-	-	Unable to open
RW-5	11.3	20.0	
RW-10	-	-	Unable to open
RW-7	-	-	Unable to open
RW-9	-	-	Unable to open

1400	KJ offsite.
1405	

Cayla Whiteside

Cayla Whiteside, P.E. (Date)

Michael McIntosh

Michael McIntosh, G.I.T. (5/31/2024)

Construction Activities

Time	Description
	Thayne with Glacier informs Mike that saw cutting will start tomorrow (5/31/2024) at 7:30 am.
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Well access	5/30/2024		KJ was unable to access all remediation wells on-site due to the lids being hard to remove.	KJ has asked Cascade to help remove the select well lids in the morning.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Cayla Whiteside, P.E. (5/31/24)

Michael McIntosh, G.I.T. (5/31/2024)

KJ			

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Photos

Cayla Whiteside, P.E. (5/31/24)

Michael McIntosh, G.I.T. (5/31/2024)

Caption 1: Proposed trench locations featuring RW-5, Facing Northeast	Caption 2: Proposed trench locations continued featuring RW-10 and RW-7, Facing west
Caption 3: Unknown well next to MW-4, Facing Northwest	Caption 4: Proposed trench locations connecting MW-4 and RW-6 to other remediation wells.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (5/31/24)

Michael McIntosh, G.I.T. (5/31/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 05/31/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 08
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier arrives onsite.
0715	Mike with KJ arrives onsite.
0720	Todd with Glacier is using a shop vac to clean up debris as cutting continues.
0735	KJ begins scoping MW-4 with camera.
0750	Well slots appear to begin at 13.5 ft bgs. Unable to see past 14 ft bgs due to organic debris blocking the pipe.
1000	Glacier helps KJ open wells for continued gauging.
1100	All wells have been gauged with the help of Glacier.

Well ID	Depth to Water (ft btoc)	Total Well Depth (ft btoc)
RW-1	11.0	20.0
RW-3	10.56	20.0
RW-7	10.98	20.0
RW-8	10.65	20.0
RW-9	10.70	20.0
RW-10	19.0	30.0

	Difference in depth to water at RW-10 compared to other site wells is consistent with previous data collected during well installations.
1130	Glacier and KJ offsite.
Subcontractor: Salinas Cutting	
0720	Chase with Salinas Cutting begins cutting down the western side of the central trench, heading north near RW-9.
0800	Salinas begins cutting asphalt near RW-10, heading towards cleaners.
0830	Salinas continues cutting the asphalt around RW-10.
0845	Salinas continues cutting asphalt for central trench heading north towards RW-4.
0910	Salinas cuts asphalt around RW-3 and trench heading towards RW-2.
0920	Salinas continues cutting trench from RW-2 to MW-4.
0950	Salinas cuts final trench towards MW-4. Stopping short until approval of changes goes through.
1000	Salinas Cutting offsite.
Deliveries / Pick-ups / Miscellaneous	

Cayla Whiteside, P.E. (06/03/2024)

Michael McIntosh, G.I.T. (06/03/2024)

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Footings	5/31/2024	Accepted Site Plans	Glacier noted that the footings for the O&M building are in line with existing structural support for cleaner building.	Saw cutting near this region halted until a decision is made by Glacier to either redesign the footings or move them 18 inches west.
Pitless Adaptor	5/31/2024		Glacier noted that they were unable to put a pitless adaptor to existing MW-4 pipe due to it being 2" diameter and not a 4" diameter pipe.	Thayne with Glacier provided suggested changes in the field for modifying connection to MW-4. Kennedy Jenks sent response to Glacier via email approving the Glacier-suggested changes and also indicated need to change wells in Well Banks 1 and 4 to offset head and additional piping/fittings being added to MW-4.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Cayla Whiteside

Cayla Whiteside, P.E. (06/03/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (06/03/2024)

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier / Salina Cutters	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls – especially with tubing crossing the site. Proper PPE always worn.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	4.5	0
Salinas Cutting	1	Operator	4.0	0
Glacier	1	Laborers	4.5	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Salinas Cutting	Husqvarna FS 7000 D	4.0	0

Cayla Whiteside

Cayla Whiteside, P.E. (06/03/2024)

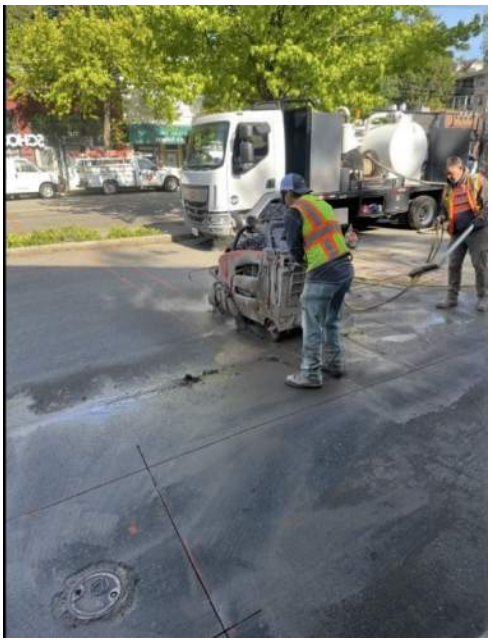
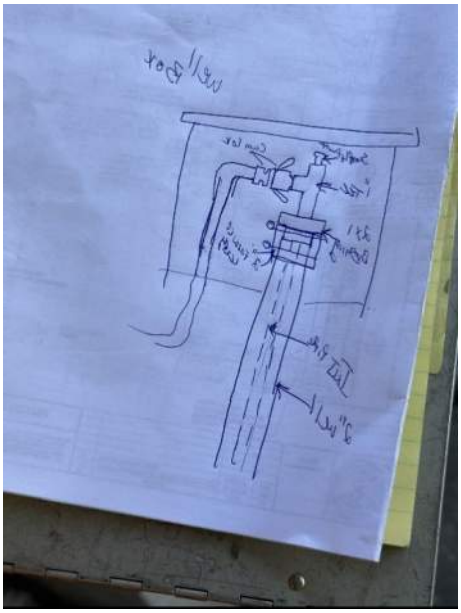
Michael McIntosh

Michael McIntosh, G.I.T. (06/03/2024)

Cayla Whiteside, P.E. (06/03/2024)

Michael McIntosh, G.I.T. (06/03/2024)

Photos

	
Caption 1: Footing and trench locations marked by Glacier and the support beams directly in-line.	Caption 2: Salinas Cutting – making cuts in asphalt for future trenching.
	
Caption 3: Drawings provided by Glacier for changes to MW-4.	Caption 4: Saw cuttings complete up to previous MW-4. Work halted until changes are approved.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (06/03/2024)

Michael McIntosh, G.I.T. (06/03/2024)

Kennedy Jenks

Daily Inspection Construction Report

REPORT NUMBER: 09
CONTRACT TITLE: Circle K Remediation System Installation
CSID #5089
PRIME CONTRACTOR: Glacier (WA Ecology Contractor)
TIME WORK STARTED: 7:00
TIME WORK STOPPED: 15

Inspection Date			
Year	Month	Day	Inspector
2024	06	03	MM

Day of the Week						
Sat	Sun	Mon	Tue	Wed	Thu	Fri
		X				

Weather				
Clear	PC	Overcast	Lt Rain	Rain
AM/PM				

Temperature				
10-32	33-55	56-70	71-85	86+
		AM/PM		

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Thayne and Dave with Glacier arrives onsite.
0705	Mike with KJ arrives onsite.
0720	Ray with Glacier arrives on site with signs, jumping jack plate compactor, an electric 60 lbs jackhammer, and generator.
0750	Ray with Glacier offsite.
0810	Todd with Glacier arrives on-site.
0830	Glacier arrives on-site with three cubic yards of pea gravel (from salmon bay) and black 1” HDPE pipe.
0845	Ray with Glacier back on-site, brought chain-link fencing.
0900	Glacier begins assembling fencing around work area perimeter.
0950	Ray with Glacier offsite.
1005	Todd with Glacier on-site with 4-inch perforated PVC pipe and 2-inch PVC pipe for SE lines.
1040	Todd with Glacier back on-site with 4-inch perforated PVC pipe and 2” SE lines PVC pipes.
1045	Todd with Glacier offsite.
	Glacier begins jackhammering asphalt and concrete around MW-4.
1055	Glacier working on removing part of well cap.
1120	Glacier continues to remove apshalt from surface near MW-4 to connect to
1125	existing saw cuts.
	Glacier removes asphalt/concrete from surface near MW-4 to connect to existing
1130	saw cuts.
	Thayne with Glacier begins welding 1” PVC pipe while the other two cover
1200	stockpiles with tarp.
1215	Ray with Glacier offsite.
1220	Glacier preps the site for overnight storage.
1230	Everyone offsite.

Michael McIntosh

Cayla Whiteside, P.E. (6/4/2024)

Michael McIntosh, G.I.T. (6/4/2024)

Subcontractor: NC Rentals	
0920	NC Rentals arrives on-site with excavator for drop off.
0940	NC Rentals offsite.
1050	NC Rentals on-site with skid steer for drop off.
1100	NC Rentals offsite.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn.

Cayla Whiteside

Cayla Whiteside, P.E. (6/4/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/4/2024)

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	5.5	1.0
Glacier	3	Laborers	5.5	1.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Jumping Jack Rammer BS 60-4s	0	6.5
Glacier	Hilti TE 3000-AVR jackhammer	1.0	5.5
Glacier	GP 3800 Generator	3.0	3.5
Glacier (NC Rentals)	CAT 307E2 Excavator	1.0	5.5
Glacier (NC Rentals)	2593D Skid Steer	1.5	5.0

Cayla Whiteside

Cayla Whiteside, P.E. (6/4/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/4/2024)

Photos

Caption 1: Type 17 and pea gravel stockpiles, stored in northwest corner of site.	Caption 2: NC Rentals dropping off skid steer at site.
Caption 3: Cascade digging up asphalt and concrete surrounding MW-4.	Caption 4: Chain link fence segments brought in.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/4/2024)

Michael McIntosh, G.I.T. (6/4/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/04/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 10
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier arrives onsite.
0715	Mike with KJ arrives onsite.
0720	Glacier begins jackhammering asphalt along MW-4 trench surface.
0735	Glacier begins hand digging MW-4 trench.
0745	Thayne with Glacier begins welding pipes.
0800	Glacier has been placing excavated material into bucket of skid steer. Dumping the material into the bed of truck once the bucket is filled.
0845	Glacier resumes hand digging of MW-4 trench.
0900	Glacier confirms depth of trench to be approximately 3-feet deep. Spends time cleaning out trench and making it uniform depth.
0930	Glacier places 3/8" x #4 pea gravel in trench as pipe bedding.
0935	Glacier covers open trench with steel plate.
0940	Glacier continues jack hammering the next section of trench for MW-4 and the section connecting MW-4 to RW-6.
0950	Glacier jackhammering trench section connecting MW-4 to RW-6.
1020	Glacier begins hand digging these sections of trench.
1115	Glacier wrapping 4-inch perforated PVC pipe with geotextile fabric while excavation continues.
1230	Glacier places pea gravel in remainder of trench.
1245	Glacier begins assembling 2-inch pipe with 4-inch perforated section.
1250	Thayne with Glacier begins welding the 1-inch pipe.
1255	Glacier performs an unofficial pressure test on the recently welded 1-inch pipe.
1300	Glacier begins placing pea gravel on pipe placed in trench.
1310	Glacier places caution tape above pea gravel.
1320	Glacier begins placing Type 17 gravel above caution tape in trench.
1325	Glacier begins compacting trench backfill with jumping jack plate compactor.
1345	Glacier places cold patch over sidewalk portion of trench after backfilling & compacting.
1400	Glacier compacts cold patch asphalt with jumping jack place compactor.
1405	Glacier places erosion control around stockpiles for overnight storage (straw waddles) and places wood covers over the trench not in the ROW.
1420	Glacier prepares site for overnight storage.
1440	Everyone offsite.
Subcontractor:	
0820	Sunbelt Rentals arrives on-site with steel plates to drop off.

Cayla Whiteside

Cayla Whiteside, P.E. (6/5/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/5/2024)

0840	Sunbelt Rentals offsite.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Cayla Whiteside, P.E. (6/5/2024)

Michael McIntosh, G.I.T. (6/5/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/04/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 10
CSID #5089

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	7.5	0
Glacier	4	Laborers	7.5	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Jumping Jack Rammer BS 60-4s	2.5	5.0
Glacier	Hilti TE 3000-AVR jackhammer	7.5	0
Glacier	GP 3800 Generator	7.5	0
Glacier (NC Rentals)	CAT 307E2 Excavator	1.0	6.5
Glacier (NC Rentals)	2593D Skid Steer	5.0	2.5

Cayla Whiteside

Cayla Whiteside, P.E. (6/5/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/5/2024)

Photos

Caption 1: 2-Inch PVC pipe connecting to 4-inch perforated pipe with geotextile fabric.	Caption 2: Glacier placing the cold patch in the ROW, prior to compaction.
Caption 3: Glacier welding the 1-inch PVC pipes.	Caption 4: Condition of trenches at end of day.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/5/2024)

Michael McIntosh, G.I.T. (6/5/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/05/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 11
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
	Glacier arrives onsite.
0700	Mike with KJ arrives onsite.
0710	Site safety meeting is held.
0720	Glacier prepares the site for working.
0730	Glacier begins jackhammering around RW-6 and the trench to the south.
0740	Glacier continues to stockpile asphalt near pea gravel and type 17 stockpiles on
0800	site.
0920	Glacier finished jackhammering through sidewalk portion of trench. Sidewalk appeared reinforced in this location.
0950	Glacier excavating trench south of RW-6 with excavator. A large root was observed and is being avoided while trenching.
	Glacier cleaning out trench south of RW-6. Depth confirmed to be 3 feet bgs.
1100	Glacier places removed material from trench in stockpile next to existing
1110	stockpiles. Stockpile has tarp placed beneath it.
1115	Well tag from RW-6 has been removed during construction process and stored together until construction is completed.
1135	Top of RW-6 has been cut down 18.5 feet in order to install pitless adaptor.
1145	Glacier installing pitless adaptor for RW-6.
1200	Glacier performs unofficial pressure test on 1-inch pipe placed in RW-6 trench.
1205	Glacier places pea gravel in trench prior to placing 1-inch pipe.
1215	Glacier begins placing type 17 as trench backfill and compacts it with jumping jack plate compactor.
1245	Lunch break. Matthew Corrin with HD Fowler on-site.
1315	Work resumes. Glacier reconnects 18.5-inch section of RW-6 pvc pipe with coupling.
1335	Glacier begins cold patching the sidewalk section of trench.
1340	Glacier placing steel plate over uncovered section of trench, south of cold patch.
1400	Glacier preparing site for overnight storage.
1430	Everyone offsite.
Subcontractor:	
0925	NC Rentals arrive onsite with smaller excavator.
0945	NC Rentals offsite.
Deliveries / Pick-ups / Miscellaneous	

Cayla Whiteside, P.E. (6/6/2024)

Michael McIntosh, G.I.T. (6/6/2024)

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
Matthew Corrin	HD Fowler	06/05/2024 12:45 – 13:15	Dropping off pitless adaptors for Glacier

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Cayla Whiteside, P.E. (6/6/2024)

Michael McIntosh, G.I.T. (6/6/2024)

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	3	Laborers	8.0	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Jumping Jack Rammer BS 60-4s	1.0	7.0
Glacier	Hilti TE 3000-AVR jackhammer	0	0
Glacier	GP 3800 Generator	6.0	2.0
Glacier (NC Rentals)	CAT 305.5E excavator	5.0	3.0
Glacier (NC Rentals)	2593D Skid Steer	5.0	3.0

Cayla Whiteside

Cayla Whiteside, P.E. (6/6/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/6/2024)

Photos

Caption 1: RW-6 cut down by 18.5-inches and equipped with pitless adaptor.	Caption 2: Sled plate compactor used to compact cold patch asphalt in sidewalk.
Caption 3: RW-6 well tag labeled and kept separately until final stages of well reinstallation.	Caption 4: Steel plate placed over open trench for overnight storage and cold patched.

Cayla Whiteside, P.E. (6/6/2024)

Michael McIntosh, G.I.T. (6/6/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/6/2024)

Michael McIntosh, G.I.T. (6/6/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/06/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 12
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier arrives onsite.
0710	Mike with KJ arrives onsite. James with Glacier offsite to dispose of excavated material.
0715	Site safety meeting is held. Glacier prepares the site for working.
0720	Glaciers uses excavator to remove steel plates from trench surfaces.
0740	Glacier jackhammers around RW-2.
0810	James with Glacier onsite.
0820	Glacier continues excavating trench towards RW-2.
0900	Glacier reveals am out of service electrical line in trench near RW-2.
0935	James with Glacier offsite for disposal of excavated material.
0945	One of the excavator tracks had become dislocated. Glacier begins repairs.
0950	Ray with Glacier offsite.
1030	Repairs to excavator tread finished.
1035	Glacier continues excavating around RW-2.
1200	Glacier cuts the top 15.5 inches of pipe from RW-2.
1210	Glacier installing pitless adaptor to RW-2.
1225	Glacier reconnects piece of pvc pipe to RW-2 with coupling.
1255	Glacier begins digging central 3-foot-wide trench. Heading south.
1330	Ray and James with Glacier heading offsite. Thayne and Todd stay to clean out trenches more prior to backfilling.
1345	Glacier begins to place pipe RW-2 trench connecting back to MW-4/RW-6 trenches.
1440	Pipes from all 3 wells as welded and placed in trench. Glacier begins to clean up the site for overnight storage.
1320	Everyone offsite.
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Cayla Whiteside

Cayla Whiteside, P.E. (6/7/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/7/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/06/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 12
CSID #5089

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Excavator track	06/06/2024		One of the excavator tracks had become dislocated while the machine was turning.	Glacier began repairs in order to have the track be restored so work may resume.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Cayla Whiteside, P.E. (6/7/2024)

Michael McIntosh, G.I.T. (6/7/2024)

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	3	Laborers	8.0	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Jumping Jack Rammer BS 60-4s	1.0	7.0
Glacier	Hilti TE 3000-AVR jackhammer	0.0	0.0
Glacier	GP 3800 Generator	6.0	2.0
Glacier (NC Rentals)	CAT 305.5E excavator	8.0	0.0
Glacier (NC Rentals)	2593D Skid Steer	3.0	5.0

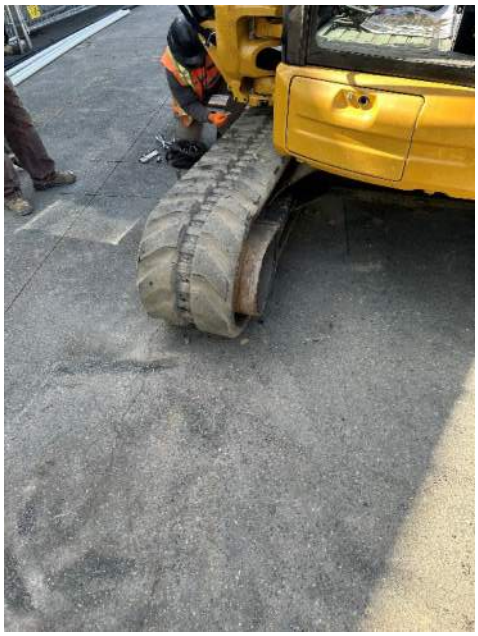
Cayla Whiteside

Cayla Whiteside, P.E. (6/7/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/7/2024)

Photos

	
Caption 1: Unknown utility line exposed. Runs length of RW-2 trench. Was able to work around.	Caption 2: Dislocated tread prior to repairs.
Caption 3: RW-2 with reconnected pvc pipe and pitless adaptor installed.	Caption 4: Northern portion of central trench with all pipes leading from MW-4, RW-2, and RW-6.

Cayla Whiteside

Cayla Whiteside, P.E. (6/7/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/7/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/7/2024)

Michael McIntosh, G.I.T. (6/7/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/07/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 13
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier and KJ arrived onsite. Glacier arrived with 5.3 CY of 1-1/4-inch minus.
0705	Job safety meeting is conducted.
0710	Glacier unable to remove 12" bucket from rental excavator. New excavator being brought in.
0835	Glacier begins placing pea gravel in trench, heading towards RW-6/RW-2 from MW-4.
0845	Glacier begins placing Type 17 as trench backfill material.
0900	Glacier begins placing asphalt/concrete chunks from stockpile in back of truck for offsite removal. In order to stockpile 1-1/4-inch minus onsite in its place.
0940	Glacier compacts Type 17 material placed in RW-2 trench with jumping jack plate compacter.
1020	Glacier begins backfilling trench with 1-1/4-inch minus.
1045	Ray with Glacier headed offsite to dispose of asphalt and concrete chunks.
1130	Ray with Glacier back onsite.
1215	Glacier compacting 1-1/4-inch minus with sled plate compactor.
1225	Glacier moving steel plates back onsite with excavator.
1310	Glacier begins cleaning up the site.
1320	Glacier repairs western cold patch asphalt.
1400	Everyone offsite.
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Excavator bucket	06/07/2024		Glacier noticed that the 12-inch excavator bucket was stuck on the machine.	Glacier worked on repairing the connection with the bucket. Likely bringing in new excavator.
Cold Patch Asphalt	06/07/2024		While placing pea gravel, the skid steer turned while on the cold patch asphalt and disturbed the material.	At the end of the workday, Glacier replaced the missing asphalt and recompacted the material with a sled plate compactor.

Cayla Whiteside

Cayla Whiteside, P. E. (6/8/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/8/2024)

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Cayla Whiteside, P. E. (6/8/2024)

Michael McIntosh, G.I.T. (6/8/2024)

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	2	Laborers	8.0	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Jumping Jack Rammer BS 60-4s	2.0	6.0
Glacier	GP 3800 Generator	5.0	3.0
Glacier (NC Rentals)	CAT 305.5E excavator	8.0	0.0
Glacier (NC Rentals)	2593D Skid Steer	4.0	4.0

Cayla Whiteside

Cayla Whiteside, P. E. (6/8/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/8/2024)

Photos

Caption 1: Compacting trench backfill with jumping jack plate compactor.	Caption 2: View of unknown utility running parallel to RW-2 trench.
Caption 3: 1-1/4-inch minus being used as base course.	Caption 4: Sled plate compactor being used on the base course.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P. E. (6/8/2024)

Michael McIntosh, G.I.T. (6/8/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/10/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 14
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier and KJ arrived onsite.
0725	Job safety meeting is conducted.
0740	Glacier removes asphalt towards RW-3. Asphalt being placed directly in dump truck.
0755	Glacier jackhammering around RW-3 monument.
0800	NC Rentals onsite with new 12-inch bucket for excavator.
0815	NC rentals offsite.
0845	Start breaking asphalt around RW-4 using excavator bucket and breaker bar. Break up and remove asphalt from north side of trench working south. Thayne re-marks power and water utilities in that area. Will need to dig carefully/by hand around these locations as they run through/perpendicular to trench
0910	Bring second dump truck on site and start digging out soil from north end of trench. James leaves site to dispose of truck load of asphalt.
1005	Stop trenching. Resume 30 minutes later.
1050	Glacier uncovers at least 5 or 6 unknown conduits running perpendicular to trench, just south of RW4 and north of existing electrical utility. Stop work and evaluate next steps, Glacier defers to KJ as the Engineering Contractor.
1100	James back on site, picked up more pea gravel (4 CY). James leaves site to dump truck of excavated soil.
1120	After internal KJ discussion, decide to further uncover unknown conduits by hand, as well as adjacent electrical utility to confirm locations.
1130	Place several steel plates over southernmost section of removed asphalt. Dump peat gravel on site in existing stockpile.
1205	Start excavating around RW-3 using combination of shovel and excavator.
1250	Continue excavating near unknown conduit by RW-4.
1400	James back on site, picked up crushed gravel.
1420	Stop trenching and begin site cleanup. Gravel stockpiles covered with plastic and weighed down, straw berm placed around edges.
1500	All offsite for the day.
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Cayla Whiteside

Cayla Whiteside, P.E. (6/11/2024)

Ella Clair

Ella Clair, E.I.T. (6/11/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/10/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 14
CSID #5089

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Unknown Conduits Encountered During Trenching	06/10/2024		Glacier uncovered a cluster of unknown conduits/piping running perpendicular to trench just south of RW4 and north of existing electrical utility. These were not found during previous utility locate activities.	Glacier stopped work and waited for KJ to approve next steps. After internal KJ discussion, Glacier proceeded with hand digging around piping for now until a permanent solution can be agreed upon.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Cayla Whiteside

Cayla Whiteside, P.E. (6/11/2024)

Ella Clair

Ella Clair, E.I.T. (6/11/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/10/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 14
CSID #5089

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	2	Laborers	8.0	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	8.0	0.0

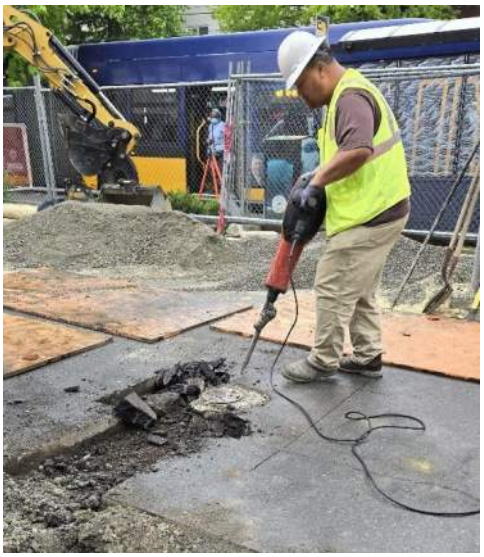
Cayla Whiteside

Cayla Whiteside, P.E. (6/11/2024)

Ella Clair

Ella Clair, E.I.T. (6/11/2024)

Photos

	
Caption 1: Breaking up asphalt with jackhammer around RW-3 monument.	Caption 2: View of trench following asphalt layer removal.
Caption 3: View of active trenching north of RW-4 following removal of asphalt layer.	Caption 4: View of unknown utility piping running perpendicular to trench, just south of RW-4 (visible in bottom left corner).

Cayla Whiteside, P.E. (6/11/2024)

Ella Clair, E.I.T. (6/11/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/11/2024)

Ella Clair, E.I.T. (6/11/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/11/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 15
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0650	KJ and Glacier (James, Todd, and Dave with Thayne) on site. Thayne occupied for now/on the phone, waiting to start work.
0725	Conduct JSB.
0730	Start work, continue digging around unknown utility from yesterday. James dumps a load of crushed gravel on site (picked up yesterday).
0740	Excavator starts adding pea gravel on north most end of trench. Thayne prepping to connect piping from north end of trench.
0820	Thayne asks for update about how to proceed regarding unknown conduits. KJ
0845	communicated issue last night with Ecology (Dale Myers) who requested to discuss the issue at today's scheduled 1pm meeting.
0830	Glacier installing pitless adaptor on RW3 well. Cut off top section of pipe (15.5 to 16", uneven cut).
0855	Thayne communicates that he would like to move forward by clearing 12" underneath the unknown conduits by RW4 to be safe.
0900	Begin excavating trench to create slope north of RW4 to reach 12" clearance under
1050	unknown conduits. Glacier (Ray) back onsite with smaller dump truck to offload more type 17 material. Take photos of manifest.
0925	While excavating south of unknown piping, medium strong petroleum hydrocarbon odor observed in soil. No obvious soil discoloration. Several bricks and chunks of concrete observed in excavated soil.
0930	Encounter 2 more unknown steel conduits perpendicular to trench at about 3 ft bgs. Strong Petroleum hydrocarbon oil in soils around them, visible sheen on soil.
0940	Encounter water line perpendicular to trench 24" bgs, copper conduit, expected location based on engineering drawings and utility markings.
1010	Ray offsite to dump load of excavated soil. Excavation stops.
1110	Start excavating again, south of water conduit.
1125	Start adding peat gravel to bottom of trench. Glacier installing pitless adaptor at RW4.
1135	KJ asks Glacier to move focus away from area with unknown conduits until KJ and Ecology can confirm minimum vertical clearance needed between the system piping and these crossings. Glacier adds more peat gravel to area north of RW4 to prepare for pipe install.
1155	Glacier starts connecting piping at north end of trench, adds spacer and connects RW3 line too.
1205	Unofficial pressure test on newly installed lines. Passes.

Cayla Whiteside

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Ella Clair

Ella Clair, E.I.T. (6/12/2024)

1225	Start adding pea gravel over newly installed piping.
1240	Compacting with jumping jack plate compactor and adding type 17 soil on top to 18" bgs.
1257	Add crushed gravel (CSBC) on top. Compact to grade. Temporarily install monument at RW3 surrounding with gravel.
1320	Ray off site with dump truck of soil. Start site cleanup for the day. Place steel plates over southernmost end of excavated trench. Glacier will sample hydrocarbon-smelling soil in trench at several locations tomorrow.
1415	All off site for the day.
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Unknown Conduits Encountered During Trenching- Update	06/10/2024		On 6/10 Glacier uncovered a cluster of unknown conduits/piping between 2.5 and 3 ft bgs running perpendicular to trench just south of RW4. Today the piping was fully exposed within the trench.	KJ consulted design requirements for electrical utility clearance at crossing with water piping. Determined that a 12 inches clearance between the bottom of the conduits and top of system piping is appropriate.
Unknown Conduits Encountered During Trenching (2)	6/11/2024		Glacier uncovered two unknown steel conduits at 3 ft bgs running perpendicular to trench south of RW4 and north of existing known water line. Soils surrounding pipes have strong petroleum hydrocarbon odor and sheen. These were not found during previous utility locate activities.	Ecology was notified, soil around pipes was removed by hand and clearance of 12 inches above the bottom of the trench (see above). Per the request of Ecology, odorous soils will be sampled for TPH gasoline and diesel, and BTEX compounds. Ecology also requests that a utility locator be brought on site to follow where the lines are elsewhere on site.
Water Utility Encountered Across Trench	6/11/2024		Glacier encountered known/marked water utility line at 2 ft bgs running perpendicular to trench south of RW4 and just north of RW5.	Soil around pipe was removed by hand and clearance of 18 inches above the bottom of the trench, per local design requirements for crossing of

Cayla Whiteside, P.E. (6/12/2024)

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				potable and non-potable water lines.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Item	Description
N/A	

Cayla Whiteside

Cayla Whiteside, P.E. (6/12/2024)

Ella Clair

Ella Clair, E.I.T. (6/12/2024)

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	6.0	1.0
Glacier	2	Laborers	6.0	1.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	6.0	0.0
Glacier	GP 3800 Generator	2.0	4.0
Glacier	Jumping Jack Rammer BS 60-4s	1.0	6.0

Cayla Whiteside

Cayla Whiteside, P.E. (6/12/2024)

Ella Clair

Ella Clair, E.I.T. (6/12/2024)

Photos

Caption 1: 12-inch well monuments brought on site.	Caption 2: Spacer used for horizontal system piping support, placed every 10 linear feet of pipe.
Caption 3: View of RW-4 (bottom left), first cluster of unknown utilities (1), second cluster of unknown utilities (2), and water utility line (3). Facing South.	Caption 4: Taken after system piping installed and connected, and unofficially pressure tested. Backfilled and compacted up to RW-4 location. Facing North.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/12/2024)

Ella Clair, E.I.T. (6/12/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/12/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 16
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	KJ and Glacier (James, Todd, Ray, and Dave with Thayne) on site.
0710	Conduct JSB. Thayne prepares for soil sampling.
0715	Thayne with Glacier takes inventory of supplied bottles and labels while the rest of the crew prepares for site work.
0720	A mechanic (Dave) with Sunstate Equipment arrives on-site to work on dump truck horn.
0740	Glacier prepares sample locations by digging 2-inches down in each spot.
0745	Thayne with Glacier begins collecting northern set of soil samples (one from west wall, one from east, and one from bottom of trench.
0800	Thayne collects southern set of soil samples (approx 8.5 feet offset between both sample sites.
0805	Glacier confirms samples are being sent to ALS (analytical resources)
0815	Glacier begins placing 2-inch pipe, heading south along central trench, at sufficient depths below existing utilities.
0830	Thayne begins making spacers for pvc pipe organization. Each hole of spacer is approximately 1-inch apart.
0845	Glacier begins removing asphalt from trench towards SW-1.
0850	Utility lines uncovered near connection of SW-1 and central trench about 26-inches bgs. Three 1.5-inch, one 1-inch, and one 1 ¾ inch utilities.
0930	Glacier preparing pvc pipes for installation in central trench. Ray offsite for disposal run and James offsite for backfill material run.
0935	Glacier placing both 1 and 2-inch pipes through spacers.
1000	Glacier performs unofficial pressure tests on all 1-inch pvc pipes recently placed.
1015	Ray with Glacier onsite from disposal run
1035	Glacier begins placing pea gravel around recently placed pipes.
1045	Glacier places type 17 trench backfill above pea gravel, just west of RW-4.
1050	Glacier begins to compact type 17 with jumping jack plate compactor.
1055	Glacier places 1 ¼ inch minus above type 17 backfill up to surface.
1100	Glacier places monument around RW-4 to surround with pea gravel. Compacts the 1 ¼-inch minus with jumping jack plate compactor.
1105	Glacier reworks stockpiles for future access to RW-8 trench location.
1130	Sunstate Equipment returns to site with lunch for crew. Lunch break starts.
1155	Work resumes.
1205	Glacier places steel places steel plates over excavated trench sections
1210	James with Glacier returns with 5.54 tonnes of 1 ¼ inch minus.

Cayla Whiteside

Cayla Whiteside, P.E. (6/13/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/13/2024)

1215 **1400** **1420**	Glacier removes asphalt from RW-8 trench, from SW-1 trench. Glacier prepares the site for overnight storage. Everyone offsite.
Subcontractor:	
1225 **1355**	CNI on-site for utility locates. CNI offsite. Utility locate completed.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Unknown Conduits Encountered During Trenching- Update	06/10/2024		On 6/12, Glacier encountered more unmarked utilities near junction of SW-1 trench and central trench.	Glacier had CNI come provide utility locates across the site. Full markup of the site is completed.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
Kirubail Ambaye	CNI	06/12 1225 to 1355	Complete utility markup

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Cayla Whiteside

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Michael McIntosh

Michael McIntosh, G.I.T. (6/13/2024)

KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
6/12/24 7:50	TPHg, TPHd, BTEX	Glacier submitted to ALS for analysis	Pending	Sample names: NW Trench, NB Trench, NE Trench
6/12/24 8:15	TPHg, TPHd, BTEX	Glacier submitted to ALS for analysis	Pending	Sample names: SW Trench, SB Trench, SE Trench

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	6.0	1.0
Glacier	4	Laborers	6.0	1.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	6.0	1.0
Glacier	GP 3800 Generator	5.0	2.0
Glacier	Jumping Jack Rammer BS 60-4s	1.0	6.0

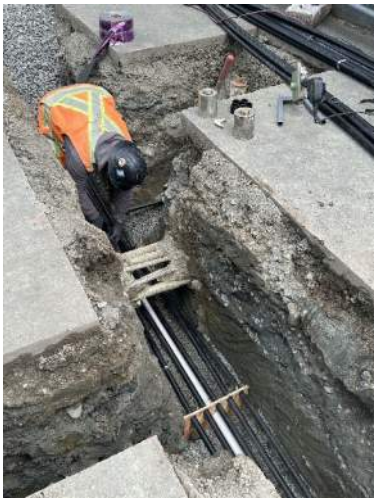
Cayla Whiteside

Cayla Whiteside, P.E. (6/13/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/13/2024)

Photos

Caption 1: CNI mark utilities with silver paint across site.	Caption 2: Glacier placing 1-¼-inch minus near RW-4.
	
Caption 3: Samples collected by Glacier that were sent to ALSf or analysis.	Caption 4: Glacier places pvc 1-inch PVC pipes through spacer at base of trench.

Cayla Whiteside, P.E. (6/13/2024)

Michael McIntosh, G.I.T. (6/13/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/13/2024)

Michael McIntosh, G.I.T. (6/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/13/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 17
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier onsite (3 laborer, 1 operator and Thayne)
0710	KJ onsite.
0715	Safety meeting is held
0720	Glacier cleans the site and prepares for work by moving steel plates and brushing debris. Operator begins removing asphalt of RW-5 trench.
0730	Glacier removes asphalt around RW-5.
0750	Glacier blocks off sidewalk around SW-1.
0755	James with Glacier offsite for disposal run.
0800	Glacier begins jackhammering around SW-1.
0815	Glacier digging underneath the concrete curb along 24th Ave, near bus stop to reach SW-1.
0900	NC Rentals arrives onsite to pick up skid steer.
0915	NC Rentals offsite
0920	Glacier begins installing pitless adaptor on SW-1. No further need to cut down pvc pipe to installs Thayne developed a tool that allows him to install the pitless adaptor without having cut through pipe (linger stick with grooves that hold pitless adaptor in place).
0955	James with Glacier back onsite from disposal run.
1000	Glacier removing backfill from SW-1 excavation into bed of truck. Thayne welds 1-inch PVC pipe for future placement.
1030	Glacier places pipe in trench of SW-1.
1045	Glacier does unofficial pressure test on recently placed pipe.
1050	Glacier places pipe in RW-8 trench and does unofficial pressure test.
1055	Glacier placing pea gravel around both SW-1 and RW-8 1 inch piping.
1100	Glacier begins placing type 17 as backfill near SW-1 in ROW and along RW-8 trench.
1105	Glacier compacts type 17 with jumping jack plate compactor in SW-1 and RW-8 trenches.
1115	Glacier Begins placing 1-1/4 inch minus in ROW.
Subcontractor:	
1130	Glacier compacts 1-1/4 inch minus with jumping jack in ROW.
1135	Glacier continues to place 1-1/4 inch minus along the SW-1 trench to the east. Glacier begins pouring blacktop patch over ROW section near SW-1.
1140	Glacier bedding pipe in eastern portion of SW-1 trench.

Cayla Whiteside

Cayla Whiteside, P.E. (6/14/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/14/2024)

1150	Glacier backfilling SW-1 trench with Type 17 east of RW-8 junction.
1210	Glacier compacting type 17 in SW-1 trench with jumping jack plate compactor.
1215	Glacier begins removing asphalt heading towards SW-2. 2 inch utility line revealed just south of RW-5.
1220	Glacier places 1-1/4 inch minus over compacted Type 17 in SW-1 trench.
1245	Glacier compacting 1-1/4 inch minus with sled plate compactor in SW-1 trench.
1250	Rocky with Glacier arrives onsite with food for crew.
1300	Rocky offsite.
1310	Ray offsite for disposal run.
1320	Glacier compacting central trench with jumping jack plate compactor and sled plate compactor, west of RW-4.
1330	Glacier begins site cleanup.
1340	Thayne with glacier offsite. Todd in charge.
1400	Everyone offsite.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Cayla Whiteside, P.E. (6/14/2024)

Michael McIntosh, G.I.T. (6/14/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/13/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 17
CSID #5089

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	6.0	1.0
Glacier	4	Laborers	6.0	1.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	6.0	1.0
Glacier	GP 3800 Generator	5.0	2.0
Glacier	Jumping Jack Rammer BS 60-4s	1.0	6.0

Cayla Whiteside

Cayla Whiteside, P.E. (6/14/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/14/2024)

Photos

Caption 1: Utility line observed near RW-5	Caption 2: Glacier digs beneath concrete curb to access SW-1.
Caption 3: Glacier places cold patch asphalt in ROW west of the site.	Caption 4: Glacier bedding pipes with pea gravel.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/14/2024)

Michael McIntosh, G.I.T. (6/14/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE:06/14/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 18
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	KJ and Glacier onsite. Ray offsite grabbing load of Type 17.
0705	Job safety meeting is held
0715	Thayne working on paperwork. James offsite to get hoses for future water usage.
0740	Ray with Glacier back onsite with 4 CY of type 17.
0745	Dave with Glacier excavating existing material in SW-2 trench, just west of RW-5. Placing excavated material in bed of recently returned truck.
0830	SW-1 trench excavated down to 3' BGS. Hand digging over to SW-1 in order to install pitless adaptor.
0900	Pitless adaptor installed on SW-2.
0910	Glacier excavating around RW-5.
0930	James with Glacier back onsite with 5.91 tons of 1-1/4inch minus.
0945	Glacier welding 1-inch pvc pipes for connections to SW-1 and RW-5.
1030	Glacier performs unofficial pressure test on pipes coming from SW-1 and RW-5.
1045	Glacier begins bedding pipes with pea gravel.
1050	Glacier placing type 17 above pea gravel.
1055	Glacier compacting Type 17 with jumping jack plate compactor.
1100	Glacier placing 1-1/4 inch minus above type 17.
1120	Glacier compacting 1-1/4-inch minus with jumping jack and sled plate compactors.
1135	Glacier observed 2-inch pipe heading south in central portion of main trench. Pipe appears disconnected on one end (in line with RW-10 trench).
1140	Glacier cut off the other end of the pipe since it appeared hollow and not in use. Pipe was removed from the trench and excavation of central trench continued south.
1150	Glacier encounters reinforced concrete along central trench, just south of recently found utility line.
1200	Glacier begins jackhammering reinforced concrete in trench.
1220	Ray with Glacier offsite for disposal run.
1235	Glacier cleaning up site. Thayne looking for water access to wet the CSBC and recompact.
1245	Glacier unable to locate connection to water and is trying to contact the owners for input.
1300	Glacier compacting CSBC with sled plate compactor.
1320	Glacier prepares the site for weekend storage.
1330	Everyone offsite.

Cayla Whiteside

Cayla Whiteside, P.E. (6/17/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/17/2024)

Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Unknown utility line update	06/142024		Another unknown utility was observed running down the center of the main trench, just east of RW-10.	Glacier noted that one end was broken already and full of debris. Glacier cut the other end flush with the trench sidewall and proceeded.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Cayla Whiteside

Cayla Whiteside, P.E. (6/17/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/17/2024)

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	5.0	1.0
Glacier	4	Laborers	5.0	1.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	5.0	1.0
Glacier	GP 3800 Generator	5.0	1.0
Glacier	Jumping Jack Rammer BS 60-4s	2.0	4.0

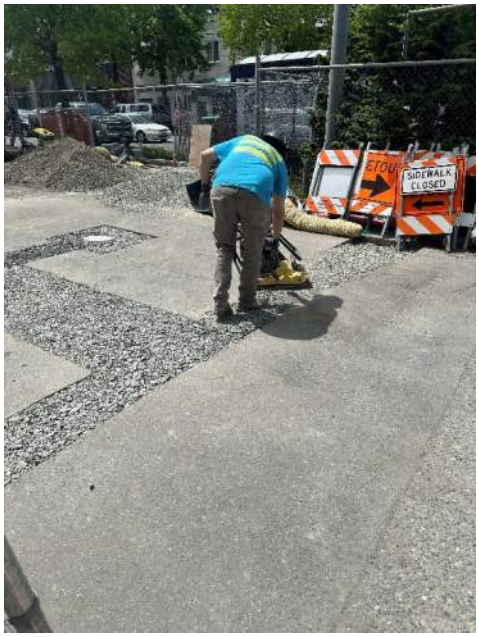
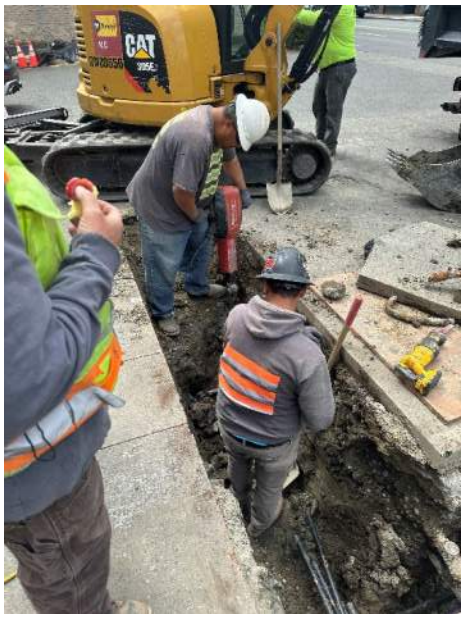
Cayla Whiteside

Cayla Whiteside, P.E. (6/17/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/17/2024)

Photos

	
Caption 1: Glacier compacting final lift of CSBC prior to closing the site for the weekend.	Caption 2: Glacier excavating towards RW-5.
	
Caption 3: Glacier removes disconnected utility line from the trench.	Caption 4: Glacier removes reinforced concrete from the central trench, west of RW-10.

Cayla Whiteside, P.E. (6/17/2024)

Michael McIntosh, G.I.T. (6/17/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/17/2024)

Michael McIntosh, G.I.T. (6/17/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/17/2024
INSPECTOR'S NAME: BOBBY ARDISSONO
REPORT NUMBER: 19
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0650	KJ and Glacier on site.
0700	Job safety meeting is held
0715	Glacier begins breaking up asphalt for SW-3 trench with excavator
0730	Glacier encounters two 1/2" pipes marked by utility locator, picture taken.
0740	Glacier completes trench SW-3 to 3 feet below ground surface at well, glacier cleaning up area around exposed SW-3 pipe casing.
0800	Glacier drills hole in SW-3 well casing and installs connection 3 feet below ground surface.
0815	Glacier continues digging trench from MW-3 to the west towards the central trench.
0835	Ray off site with a load of excavated material for disposal.
0850	Glacier installs 1" HDPE pipe in SW-3 trench, BA verifies depth of trench >3' and 12" clearance below crossing power lines
0900	Glacier installs pea gravel bedding around pipe in SW-3 trench and adds detectable warning tape above the pea gravel.
0910	Glacier adds backfill material to SW-3, and compacts with vibratory compactor.
0915	Glacier adds second lift of backfill in SW-3 trench, and compacts with vibratory compactor.
0920	Glacier begins adding lifts of stone in the SW-3 trench.
0922	Ray returns to site with disposal manifest.
0930	Glacier levels final lift of stone in SW-3 trench and compacts it level with the ground surface.
0940	James off site to pick up more stone, glacier begins extending main trench to the north to meet SW-3 trench.
0950	Glacier encounters concrete slab 2 feet below ground surface, 9" thick and 18" wide. Unable to move slab with excavator.
1000	Glacier breaks up concrete slab with jackhammer.
1015	Glacier finishes extending main trench to junction with SW-3 trench.
1025	Glacier excavates the first 3 feet of SSD-2 trench.
1105	Thayne off site for the day.
1125	Glacier lays pipes in the central trench toward SW-3 trench.
1130	James back on site with a load of rock.
1210	Glacier finishes laying pipe to trench SW-3 with wooden pipe guide installed.
1215	Glacier begins backfilling around the new pipes with pea gravel.
1220	Ray off site to dispose of excavation spoils

Cayla Whiteside

Cayla Whiteside, P.E. (6/18/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (6/18/2024)

1225	Glacier places backfill in thick lift in north end of main trench to protect water pipes, then compacted.
1230	Glacier places rock over backfill then compacts it level with the surrounding ground surface.
1240	Glacier begins cleaning up for the day.
1250	Ray back on site with disposal manifest.
1255	Glacier loads concrete remnants into Ray's truck for disposal.
1330	Site secured, open trench covered with steel plates outside of fence. All off site for the day.
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Cayla Whiteside, P.E. (6/18/2024)

Robert Ardissono, E.I.T. (6/18/2024)

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	5.0	1.0
Glacier	4	Laborers	5.0	1.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	5.0	1.0
Glacier	GP 3800 Generator	3.0	3.0
Glacier	Jumping Jack Rammer BS 60-4s	2.0	4.0
Glacier	Jackhammer	1.0	5.0

Cayla Whiteside, P.E. (6/18/2024)

Robert Ardissono, E.I.T. (6/18/2024)

Photos

Caption 1: Glacier adding pea gravel bedding to SW-3 trench following pipe placement.	Caption 2: Fitting for pipe attachment in SW-3 casing.
Caption 3: Glacier using the jackhammer to break up concrete slab encountered in main trench.	Caption 4: Pipe manifold installed with spacer in main trench.

Cayla Whiteside

Cayla Whiteside, P.E. (6/18/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (6/18/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/18/2024)

Robert Ardissono, E.I.T. (6/18/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/18/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 20
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	KJ and Glacier on site.
0705	Job safety meeting is held
0710	Glacier prepares monument form at RW-4
0740	Glacier prepares monument form at RW-5
0815	Glacier prepares monument form at RW-8
0820	Ray arrives on site with concrete mixer and ready mix
0830	Glacier uses jackhammer to break up remaining asphalt around RW-8
0844	Glacier prepares monument form at RW-2
0920	Glacier prepares monument form at RW-6
0940	Glacier prepares monument form at RW-8
1005	Glacier prepares monument form at SW-2, uses jackhammer to break up concrete around SW-2.
1025	Glacier finishes breaking up concrete at SW-2, cuts sonotube to complete form.
1030	Glacier begins mixing concrete
1040	Glacier begins pouring concrete for RW-5 monument
1045	Glacier finishes monument form at SW-2
1055	Glacier finishes monument at RW-5
1100	Glacier finishes monument at RW-4
1110	Glacier completes monument at SW-2
1120	Glacier completes monument at RW-8
1135	Glacier completes monument at RW-2
1150	Glacier completes monument at RW-6
1205	Glacier completes monument at RW-3
1230	Glacier begins cleaning up for the day, informs KJ that they won't be on site tomorrow to allow well monuments to cure.
1300	Ray off site, Glacier cleaning up and brush-finishing monuments.
1350	Site secured, all off site.

Cayla Whiteside

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (6/24/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/18/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 20
CSID #5089

Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Cayla Whiteside

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (6/24/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/18/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 20
CSID #5089

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	6.0	1.0
Glacier	2	Laborers	6.0	1.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	0.0	7.0
Glacier	GP 3800 Generator	4.0	3.0
Glacier	Jumping Jack Rammer BS 60-4s	0.0	7.0
Glacier	Jackhammer	1.0	6.0

Cayla Whiteside

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (6/24/2024)

Photos

Caption 1: Glacier preparing form for RW-6 monument.	Caption 2: Glacier pouring concrete for RW-5 monument.
Caption 3: Glacier finishing concrete well monument at RW-4.	Caption 4: Finished well monument at RW-5

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono, E.I.T. (6/24/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/21/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 21
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0705	KJ on site, Glacier already on site, job safety meeting already held. Glacier moving rock stockpile into truck and remeasuring/marking sawcut locations.
0715	Salinas Sawcutting on site.
0730	Sawcutting begins for remaining trenches on the southern half of the site.
0820	Sawcutting complete.
0835	Salinas sawcutting off site.
0837	Glacier moves rock stockpile to SW corner of site.
0840	James off site for the day.
0845	Glacier begins excavating backfill from trench adjacent to RW-5 to collect soil samples.
0915	Glacier begins moving equipment from south side of site to the north side.
1015	Glacier wets down stone on top of north side trenches for additional compaction.
1029	Glacier collects sample W-B from native material in bottom of SW-2 trench, between the suspected fuel pipes adjacent to RW-5. No odors or signs of impacts observed.
1025	Glacier collects sample W-N from sidewall of SW-2 trench underneath eastern pipe (material between pipes in this location is fill from the RW-5 trench). No odors or evidence of impacts observed.
1030	Glacier collects sample W-S from native material in south wall of SW-2 trench between the two 1.5" pipes. No odors or evidence of impacts observed.
1045	Glacier replaces broken conductible tape and backfills SW-2 trench.
1100	Glacier waters and compacts stone on trench surface with vibratory compactor.
1215	Glacier moves fencing to southern portion of the site, continues compacting stone.
1240	All fence in place, Glacier begins cleaning up for the weekend.
1330	Site is cleaned up for the weekend, all off site.
Subcontractor:	
0715	Salinas Sawcutting
Deliveries / Pick-ups / Miscellaneous	

Cayla Whiteside

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (6/24/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/21/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 21
CSID #5089

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Cayla Whiteside

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (6/24/2024)

6/21/24 10:15	TPHg, TPHd, BTEX	Glacier submitted to ALS for analysis	Pending	WN Trench, WB Trench, WS Trench

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	6.0	1.0
Glacier	2	Laborers	6.0	1.0
Glacier	1	Laborer	1.75	0.0
Salinas Sawcutting	1	Laborer	1.5	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	3.0	4.0
Glacier	GP 3800 Generator	4.0	3.0
Glacier	Jumping Jack Rammer BS 60-4s	2.0	5.0
Salinas Sawcutting	Husqvarna walk behind saw floor cutter	1.25	0.25
Salinas Sawcutting	Husqvarna handheld saw floor cutter	0.25	1.25

Cayla Whiteside

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (6/24/2024)

Photos

Caption 1: Salinas Sawcutting preparing to sawcut pavement along marked lines.	Caption 2: Glacier collecting sample W-S from native material in sidewall of SW-2 trench.
Caption 3: Glacier using vibratory compactor to compact stone in backfilled trenches.	Caption 4: Fences moved into place to protect equipment and open trenches on southern half of site.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/24/2024)

Robert Ardissono, E.I.T. (6/24/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/24/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 22
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier onsite (Ray, James, Todd and Thayne).
0705	Mike with KJ onsite.
0710	Job safety meeting is held.
0715	Glacier begins rearranging fencing around site to contain working area near dry cleaners.
0730	Glacier removes steel plates from trench sections recently excavated.
0750	Glacier brings jackhammer over to SSD-2 section to begin hand digging away from building.
0815	Todd and Thayne perform unofficial pressure test on recently placed 1-inch pipes while Ray and James continue jackhammering near SSD-2 concrete.
0940	Glacier completes jackhammering nearing SSD-2.
0945	Glacier begins using excavator to remove asphalt heading west towards RW-10.
1000	James offsite.
1020	Glacier places pea gravel in base of SSD-2 trench. Thayne cutting 4-inch, .020 perforated pipe to install SSD-2.
1040	Glacier wrapping 4-inch pipe with geotextile fabric.
1050	Glacier bedding 4-inch perforated pvc pipe with pea gravel.
1055	Glacier placing 1-1/4 inch minus above pea gravel in SSD-2 trench.
1100	Glacier begins compacting trench backfill with jumping jack plate compactor.
1120	Glacier places cold patch of asphalt for hand dug section of trench for SSD-2.
1125	Glacier begins removing asphalt and concrete near footings for O&M shed will be located.
1145	James with Glacier back onsite with 5 CY of Type 17.
1245	Ray with Glacier offsite for disposal run.
1300	Glacier begins cleaning up and rearranging the site.
1315	Glacier pours the 5 CY of Type 17 into stockpile onsite.
1325	James with glacier headed offsite.
1400	Everyone offsite
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Cayla Whiteside, P.E. (6/25/2024)

Michael McIntosh, G.I.T. (6/25/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/24/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 22
CSID #5089

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Cayla Whiteside

Cayla Whiteside, P.E. (6/25/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/25/2024)

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	7.0	0
Glacier	3	Laborers	7.0	0

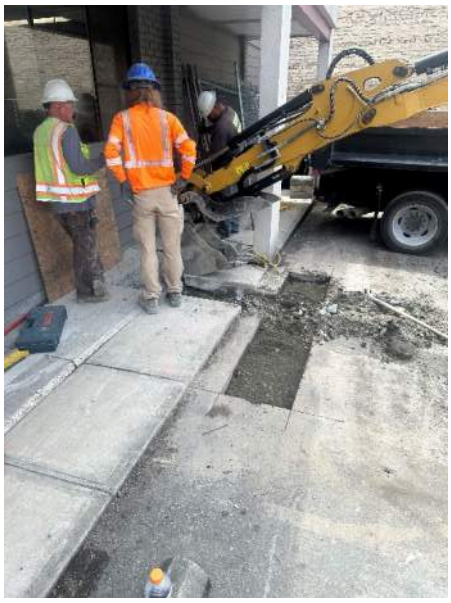
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	5.0	2.0
Glacier	GP 3800 Generator	6.0	1.0
Glacier	Jumping Jack Rammer BS 60-4s	1.0	6.0

Cayla Whiteside, P.E. (6/25/2024)

Michael McIntosh, G.I.T. (6/25/2024)

Photos

	
Caption 1: Glacier excavating asphalt and concrete from footing locations.	Caption 2: Glacier jackhammering concrete near SSD-2 location.
Caption 3: Glacier rolling geotextile fabric around 4-inch 0.020 perforated PVC pipe for SSD-2.	Caption 4: Glacier placing cold patch asphalt near SSD-2.

Cayla Whiteside, P.E. (6/25/2024)

Michael McIntosh, G.I.T. (6/25/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/25/2024)

Michael McIntosh, G.I.T. (6/25/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/25/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 23
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier onsite (James, Ray, and Thayne)
0715	Mike with KJ onsite.
0720	Job safety meeting is held.
0725	Glacier excavating the trenching south of RW-7, headed west away from building towards RW-9. Ray with Glacier onsite.
0740	Red tape encountered approximately 2.8 feet BGS running north to south in trench. Excavation down to 3-feet carefully by hand did not reveal anything.
0745	¾-inch conduit line uncovered approximately 4 feet west of red tape, 2 feet south of northwestern footing location.
0800	2-inch utility line and ½-inch conduit revealed in easternmost section of RW-9 trench, near dry cleaners. Glacier excavating by hand around utilities to at least 1-foot below the utilities.
0830	Glacier begins excavating NW footing of remediation shed.
0915	James with Glacier offsite for disposal run.
0920	Glacier continuing to dig around utilities adjacent to dry cleaner by hand. Going for 1-foot of clearance.
0945	Thayne with Glacier confirming 55-gal drum contents. Mentioned he has a truck coming by to pick them up sometime soon.
1000	Glacier places 4-inch perforated pvc pipe with geotextile fabric beneath in the eastern portion of SSD-3 trench (1-foot clearance).
1010	Glacier places 2-foot pvc pipe to connect with 4-inch perforated pipe in RW-9 trench, southeast of NW footing.
1015	James with Glacier back onsite from disposal run.
1020	Glacier begins bedding pipes with pea gravel.
1025	Glacier placing Type 17 above pea gravel.
1030	Glacier begins compacting the Type 17 with jumping jack plate compactor.
1040	Glacier excavating the N-S trench on either side of RW-9, near footings.
1110	¾-inch pipe revealed in the southern of the two N-S trenches near the footings.
1130	Glacier removing asphalt from surface of SE footing for remediation shed.
1135	Glacier removing asphalt from SW footing for remediation shed.
1140	Glacier proceeding to keep utility in western 7' footing and incorporate it instead of moving footings west.
1220	Glacier notices petroleum odors coming from both southern footing excavations (primarily SW).

Cayla Whiteside

Cayla Whiteside, P.E. (6/26/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/26/2024)

1245 **1300** **1330** **1415** **1420** **1440**	Glacier removing material from NW footing. Glacier continues removing material from RW-9 main trench. Glacier begins emptying 55 gal drums of IDW (solids) into back of truck for offsite disposal. Thayne mentioned that a vac truck will arrive tomorrow to remove water from drums. Glacier placed 7 barrels worth of IDW soil in the back of truck for offsite disposal. Glacier organizing the site for overnight storage. Everyone offsite.
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Cayla Whiteside, P.E. (6/26/2024)

Michael McIntosh, G.I.T. (6/26/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/25/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 23
CSID #5089

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	3	Laborers	8.0	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	7.0	1.0
Glacier	GP 3800 Generator	8.0	0
Glacier	Jumping Jack Rammer BS 60-4s	1.0	7.0

Cayla Whiteside

Cayla Whiteside, P.E. (6/26/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (6/26/2024)

Photos

Caption 1: Southeastern footing excavation by Glacier. One of two locations where petroleum odor was observed.	Caption 2: Glacier connecting 4 inch perforated pipe with 2-inch pipe, 1 foot below unknown utility lines.

Cayla Whiteside, P.E. (6/26/2024)

Michael McIntosh, G.I.T. (6/26/2024)

Caption 3: Glacier hand digging around recently discovered utility lines.	Caption 4: Glacier unloading IDW barrel content into truck bed.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (6/26/2024)

Michael McIntosh, G.I.T. (6/26/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/26/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 24
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier onsite (James, Ray, Todd, and Thayne).
0710	Mike with KJ onsite. James offsite for disposal run.
0715	Job safety meeting is held.
0720	Glacier begins removing asphalt from SSD-2 trench headed towards RW-10.
0730	Thayne prepping 55-gal drums for disposal. Glacier jackhammering the second lift of asphalt revealed below the surface of trench running from SSD-2 to RW-10.
0830	James with a Cascade back onsite. Removal of asphalt from RW-7 trench starts.
0840	Glacier removes asphalt around RW-7.
0845	Mar Vac arrives onsite to pump water from three 55-gal drums and any water from the surface of the soil filled barrels.
0850	Glacier removes asphalt around RW-10.
0855	Ray with Glacier offsite.
0920	Glacier continues excavating SSD-2 trench to RW-10. 2-inch utility line crossing N-S 3 feet east of RW-10 along with possibly a log 2-feet further east.
0930	Thayne cutting 2x4's for footing forms.
0950	Glacier excavating around RW-10.
1000	Thayne begins building footing forms.
1020	Two 3/4-inch lines are revealed west of RW-10 in trench.
1045	James with Glacier offsite for disposal run. Ray back onsite with 4 CY of pea gravel.
1100	Todd with Glacier offsite.
1130	James with Glacier back onsite.
1145	Glacier places 2-inch pvc pipe in SSD-2 trench, heading west.
1200	Glacier beds the 2-inch pipe with pea gravel.
1205	Ray with Glacier cutting rebar.
1220	Glacier placing type 17 as trench backfill heading towards RW-10.
1240	Glacier compacting trench backfill with jumping jack plate compactor.
1250	Todd with Glacier back onsite with pvc pipes. Glacier places 1-1/4-inch minus in SSD-2 trench above type 17.
1255	Glacier compacting 1-1/4-inch minus with jumping jack plate compactor.
1325	Glacier begins installing pitless adaptor on RW-10.
1350	Pitless adaptor installation on RW-10 complete.
1400	Glacier welding 1-inch pvc pipe.
1430	Glacier cleaning up site for overnight storage.
1500	Everyone offsite.
Subcontractor:	

Cayla Whiteside, P.E. (6/27/20246/27/2024)

Michael McIntosh, G.I.T. (6/27/20246/27/2024)

0900 **0915**	Mar Vac and Thayne cleaning out barrels from yesterday's IDW removal (7 barrels). Mar Vac offsite.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
	Mar Vac	06/26/2024 0900 - 0915	Pumping out water from IDW barrels and water barrels from well drilling.

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations.

Michael McIntosh

Cayla Whiteside, P.E. (6/27/20246/27/2024)

Michael McIntosh, G.I.T. (6/27/20246/27/2024)

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	3	Laborers	8.0	0

Resources – Equipment

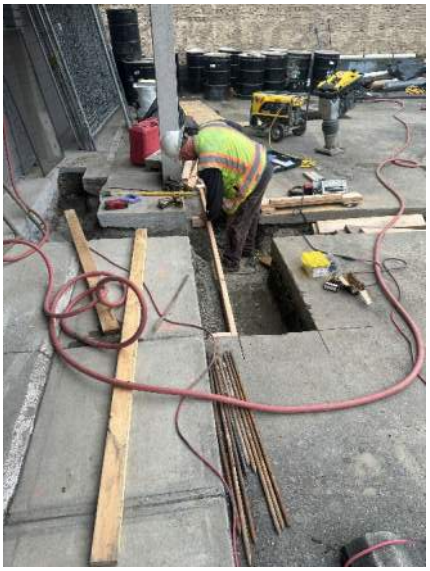
Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	7.0	1.0
Glacier	GP 3800 Generator	8.0	0
Glacier	Jumping Jack Rammer BS 60-4s	1.0	7.0

Michael McIntosh

Cayla Whiteside, P.E. (6/27/20246/27/2024)

Michael McIntosh, G.I.T. (6/27/20246/27/2024)

Photos

	
Caption 1: Glacier removing material around RW-10 in order to install pitless adaptor.	Caption 2: Glacier constructing wooden footing forms with 2x4's.

Michael McIntosh

Cayla Whiteside, P.E. (6/27/20246/27/2024)

Michael McIntosh, G.I.T. (6/27/20246/27/2024)

Caption 3: Mar Vac and Glacier working to remove water from 55-gal drums.	Caption 4: Glacier removing asphalt towards RW-7.

**All photos have been uploaded to SharePoint.*

Michael McIntosh

Cayla Whiteside, P.E. (6/27/20246/27/2024)

Michael McIntosh, G.I.T. (6/27/20246/27/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/27/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 25
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier onsite (James, Ray, Todd, and Thayne)
0710	Mike with KJ onsite.
0715	Job safety meeting is held.
0720	Glacier working on installing footing forms and cleaning out the excavations. Thayne assembling forms, Ray and James finishing excavations and cleaning them out, and Todd is connecting rebar.
0820	James with Glacier offsite.
0825	Glacier rearranges site extents to continue trenching.
0830	Glacier placing 1-1/4-inch minus in SSD-3 trench.
0840	Glacier compacting recently placed 1-1/4-inch minus with jumping jack plate compactor.
0850	Glacier rearranging steel plates to begin trenching for RW-7.
0900	Glacier places 2-inch and 1-inch PVC pipe in SSD-2 trench, west of RW-10.
0915	Glacier connecting pipes from SSD-2 trench to central trench.
0925	Glacier connecting 4-inch pvc pipe from SSD-2 to central trench.
0930	Glacier welding 1-inch pipe from SSD-2 to main trench 1-inch pipe.
0950	Glacier excavating trench towards RW-7. 3/4-inch utility line observed running parallel to central trench and crossing RW-7 trench.
1030	Another utility crossing RW-7 trench, about 4 feet east of first line at end of RW-7 trench near central trench. Three pipes observed, a 2-inch pipe and two 3/4-inch pipes. Likely a continuation of 2-inch pipes and 3/4 inch near RW-10.
1055	Thayne with Glacier offsite. Before leaving, he said that they are going to have concrete dropped off around 1300-1400. Likely going to place today instead of projected timeline of tomorrow (6/28).
1145	Ryan with KJ onsite.
1155	James with Glacier offsite for disposal run.
1200	Glacier arranges steel plates over to SSD-3 trench.
1240	Thayne with Glacier back onsite.
1310	James with Glacier onsite.
1330	Glacier excavating around RW-7 to install pitless adaptor.
1340	Thayne putting finishing touches on concrete footings.
1345	Glacier using tarp to cover recently poured concrete footings.
1400	Ray with Glacier offsite.
1410	Glacier placing type 17 in SSD-2 trench, just east of RW-10.

Cayla Whiteside

Cayla Whiteside, P.E. (7/1/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (7/1/2024)

1420	Glacier compacting type 17 with jumping jack plate compactor.
1430	Glacier cleaning up the site for overnight storage.
1500	Glacier covers concrete footings with tarp for overnight protection.
1520	Everyone offsite.
Subcontractor: Krazan Associates, Salmon Bay Sand and Gravel Co.	
0935	Krazan onsite to perform footing inspection. Footings appeared in good condition and satisfactory for the project according to personnel. Unofficial pressure testing being performed on recently placed pipes.
0950	Krazan offsite.
1215	Salmon Bay Sand and Gravel Co onsite with concrete (2.5 CY). Prepares to pour concrete in SW footing.
1220	Concrete poured into SE footing.
1225	Concrete poured into SW footing.
1235	Concrete poured over SSD-3 for the sidewalk.
1240	Concrete poured into NE footing.
1300	Salmon Bay off site.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Pipe location within spacer	06/27/2024		Glacier realize they had connected 3 of the 1-inch pipes to the wrong slots on pipe spacer.	Glacier cuts the top of the spacer off from the select pipes in order to rearrange the pipes to better locations within the spacer near the SSD-2 / main trench intersection.
Concrete amount	6/27/2024		Samon Bay didn't bring enough concrete to complete all four footings and the sidewalk over SSD-3.	Glacier decided to remove the concrete from the sidewalk section over SDD-3 to completely fill the NE footing with concrete.

Rejected Work

Cayla Whiteside, P.E. (7/1/2024)

Michael McIntosh, G.I.T. (7/1/2024)

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
	Krazan	06/27/2024 0935-0950	Footing inspection.
	Salmon Bay	06/27/2024 1215 - 1300	Pouring concrete footings.

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Cayla Whiteside

Cayla Whiteside, P.E. (7/1/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (7/1/2024)

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	3	Laborers	8.0	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	7.0	1.0
Glacier	GP 3800 Generator	8.0	0
Glacier	Jumping Jack Rammer BS 60-4s	1.0	7.0

Cayla Whiteside, P.E. (7/1/2024)

Michael McIntosh, G.I.T. (7/1/2024)

Photos

Caption 1: Glacier places rebar into NE footing.	Caption 2: Glacier cut off the top of the spacer to rearrange three 1-inch pipes
Caption 3: Salmon Bay arrives onsite to pour concrete.	Caption 4: Glacier finalizing the concrete in the forms prior to everyone heading offsite.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/1/2024)

Michael McIntosh, G.I.T. (7/1/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 06/28/2024
INSPECTOR'S NAME: RYAN HULTGREN
REPORT NUMBER: 26
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0630	Ryan with KJ onsite.
0635	Glacier onsite (James, Todd, and Thayne)
0645	Glacier unloading generator.
0655	Job safety meeting is held.
0700	Glacier prepping for work. Concrete footings poured 6/27/2024 still covered with plastic sheeting.
0710	Todd (operator) planning to continue excavating main N-S trench for connection to remediation system building. Glacier repositioning equipment and dump truck.
0715	Glacier begins removing concrete N-S trench (south of west trench to SW-3).
0719	Glacier (James) sweeps parking lot surface of dust and rock.
0722	Glacier removing concrete on side trench leg to RW-9. Begins excavating soil from N-S main trench, direct loading to dump truck.
0729	Glacier encounters 2 x 1" conduits / pipe at base of excavation approximately 1.5 feet south of SW-3 trench. Top pipe approximately 32" from concrete surface, bottom of bottom pipe, 34" deep. Grey staining on soil, slight petroleum like odor approximately 2 feet below concrete surface.
0745	Glacier continued to excavate trench, clearing approximately 6" below the exposed pipeline/conduits. Also excavated side trench to RW-9 and covered open trench with metal sheet. N-S trench has what appears to be grey staining at about 2-2.5 feet below surface in silty sand layer, below the fill gravelly sand layer; petroleum-like odor. Transition to light brown silty sand layer below the stained zone.
0815	James offsite to dispose excavated soil. Waste ticket shows disposal at 0836.
0845	Thayne and Todd install pitless adapter on RW-7.
0900	Ryan talks with Ben Fuentes about pipe situation. Decide to go under and maintain 12" separation between bottom of pipes and top of remediation piping. Tell Thayne decision to route piping 12" below the conduit/pipes in trench. Glacier begins to excavate deeper, may require 5 feet total depth to account for vertical height of the remediation pipe spacer setup (2 x 2" PVC and 2 rows of 1" HDPE). To account for added depth, digging out more soil to the north and south to slope under the 2 pipes. Stained soil at approximately 4 feet bgs. James back onsite.
1000	Thayne offsite to get 45 degree fittings to get the 2" lines beneath the pipes.
1010	Glacier excavating to 5 feet total depth in vicinity of two exposed conduits. Soil has petroleum like odor and grey staining from approximately 3 feet to 5 feet at trench

Cayla Whiteside, P.E. (7/3/2024)

Ryan Hultgren, P.E. (7/3/2024)

	base. Lengthwise (N to S) the impacts are approximately 22 feet long (from southern side of trench for RW-10).
	James offsite for soil disposal.
1036	Thayne working on PVC connections for going under 2 conduits. Todd removing
1110	monument for RW-9 to work on pipe connections.
	Thayne installs piping spacer board for 10 x 1" pipes (not all 10 openings used) and
1125	2 x 2" pipes, just north of RW-7 trench.
	James back onsite. Take picture of disposal ticket.
1140	Todd excavating East trench towards future system building location. Expose what
1145	appears to be a 2" drain line running E-W along southern side of trench. About 12" below concrete surface. May interfere with 1" lines entering system building.
	Thayne offsite to buy more 45 deg fittings for 2" pipe. Needed 8 total but had
1214	originally only purchased 4. Todd removing more soil from base of N-S trench to angle in from the south.
	Thayne back onsite.
1245	Mont Mart tenant asks KJ if the driveways can both be open over the weekend.
1250	(Confirm with Glacier later in day during prep to leave).
	Check excavation status. Glacier had found that the 2" line running east towards
1255	dry cleaner building had been previously cut. But found a different 1" conduit going diagonal across the trench. Thayne will test and if dead cut it and remove. Concrete sewer encountered at 36" at point where Glacier needs to start fanning out 1" lines to connect to the system building.
	James offsite with load of soil to dispose (third load today).
1315	The conduit line was dead and removed by Glacier – determined no wiring in the
1317	conduit on the east end but some on west end (as it crossed the trench). Todd excavates soil from fanning out area on east end of trench.
	Glacier begins connecting remediation piping to go under the 2 x 1" lines near
1322	trench to SW-3.
	Glacier making 2" and 1" pipe connections in main N-S trench.
1400	James back onsite from soil disposal. Begins cleaning up site for end of day. Glacier
1425	routes fencing to allow for both driveways through the parking area to be open. Glacier and KJ Staff offsite.
1510	
Subcontractor: None	
Deliveries / Pick-ups / Miscellaneous	

Cayla Whiteside, P.E. (7/3/2024)

Ryan Hultgren, P.E. (7/3/2024)

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Pipes encountered in trench	6/28/24		Excavate to allow for 12" between bottom of discovered pipes and top of remediation piping	

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Cayla Whiteside, P.E. (7/3/2024)

Ryan Hultgren, P.E. (7/3/2024)

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	2	Laborers	8.0	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E Excavator	7.0	1.0
Glacier	GP 3800 Generator	4.0	4.0
Glacier	Jumping Jack Rammer BS 60-4s	0.0	8.0

Cayla Whiteside, P.E. (7/3/2024)

Ryan Hultgren, P.E. (7/3/2024)

Photos

Caption 1: Looking southwest; two 1-inch pipes across N-S trench, cleared to approximately 3 feet bgs.	Caption 2: Looking south; two 1-inch pipes across N-S trench, cleared to 5 feet bgs below pipes. Grey-stained soil visible on sidewalls from approx. 3 to 5 feet bgs.

Cayla Whiteside, P.E. (7/3/2024)

Ryan Hultgren, P.E. (7/3/2024)

Caption 3: Looking west. View of N-S trench sidewall (5 feet at concrete surface).	Caption 4: Looking south; piping connections routed beneath the two 1-inch conduit pipes crossing the main N-S trench.
Caption 5: Looking south to E-W main trench. One 2-inch previously cut drain line and one 1-inch conduit line before testing and removal by Glacier.	Caption 6: Looking southeast; partially cleared fanned section of main E-W trench.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/3/2024)

Ryan Hultgren, P.E. (7/3/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/01/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 27
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier onsite (Ray, James, Todd, and Thayne).
0705	Mike with KJ onsite. Glacier refilling gas for vehicles.
0710	Thayne looking at blueprint sets. Job safety meeting happens after.
0730	Glacier placing asphalt chunks into bed of truck for offsite disposal.
0735	Ray with Glacier removing wooden forms from concrete footings.
0815	Ray with Glacier offsite for disposal run and Type 17 purchase.
0825	Glacier cleaning out trench near RW-9 with excavator and hand tools.
0835	Glacier continues excavating out SSD-3 trench, working east from central trench.
0840	Ray with a glacier accidentally steps into trench. Work stops to check on condition.
0845	Ray's condition appears good, and he says he is unhurt. He is taking a break and drinking water/ eating snacks. Apparently, he had been feeling under the weather prior to arriving to work. Heads offsite for disposal run.
0855	Glacier reveals 6-inch concrete sewer pipe running N-S in SSD-2 trench in line with storm drain on southern edge of site. 6-inch line is deep enough to place pipes over.
0900	Glacier cleaning out SSD-3 trench sidewalks and finishing up removal of material.
0920	Thayne offsite grab demo saw.
0950	Ray with Glacier returns to the site with 4 CY of Type 17.
1000	Todd with Glacier begins welding the 1-inch pvc pipes.
1020	Glacier placing 1-inch pipes in central trench east of RW-9.
1030	Unofficial pressure test on all recently connected 1-inch pipes begins.
1045	Glacier cutting concrete along southern side of SSD-3 trench.
1130	Glacier tightens RW-7 pitless adaptor. Found leak during pressure test.
1145	Glacier places load of Type 17 into stockpile.
1220	Glacier working figuring out what's causing the loss of pressure in RW-7. Pitless adaptor tightening appears to solve issue.
1255	Glacier placing 2-inch pipe in central trench, heading south at main trench/ RW-9 intersection.
1300	Ryan (KJ) confirms with Mike that they should have 6 inches of separation from bottom of remediation pipes to top of 6-inch sewer pipe.
1305	Glacier placing remediation pipes in final spacer at 90 degrees turn east towards SSD-3 from central trench.
1315	Thayne trimming ends of pvc pipes to make 90 degrees turn towards SSD-3.
1345	Glacier begins excavating out beneath the recently cut out section of SSD-3 trench.

Cayla Whiteside

Cayla Whiteside, P.E. (7/2/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (7/2/2024)

1400 **1415** **1500**	Thayne with Glacier offsite. Glacier starts preparing the site for overnight storage. Everyone offsite
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Sewer pipe encountered	07/01/2024		Glacier encountered sewer pipe	Place remediation piping with 6" clearance above top of sewer piping
Loss of pressure	07/01/2024		Glacier noticed that the RW-9 1-inch piping was losing pressure during the preliminary pressure testing.	Glacier retightened and reapplied the pitless adaptor to RW-9. No pressure drops detected.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Cayla Whiteside

Cayla Whiteside, P.E. (7/2/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (7/2/2024)

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome
Misstep into trench	Ray with Glacier missed the step while crossing over the central trench and fell into the trench.	Ray landed standing up in the trench and caught themselves during the fall. Ray mentioned that they had been feeling "in a haze" prior to incident. Ray took break/ drank water and had a shortened day. Ray went to walk in clinic once offsite to confirm health. No updates.

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	8.0	0
Glacier	3	Laborers	8.0	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	7.0	1.0

Cayla Whiteside

Cayla Whiteside, P.E. (7/2/2024)

Michael McIntosh

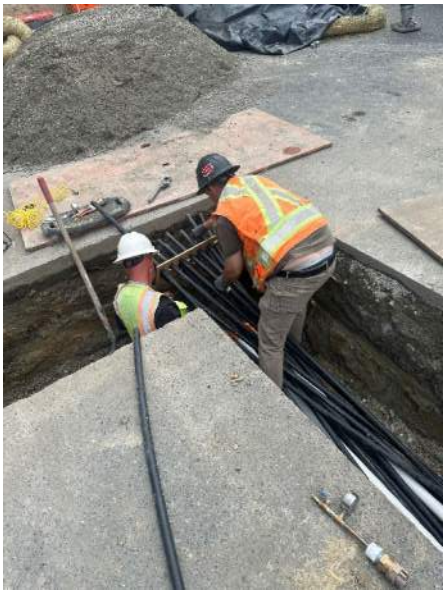
Michael McIntosh, G.I.T. (7/2/2024)

Glacier	GP 3800 Generator	7.0	1.0
Glacier	Jumping Jack Rammer BS 60-4s	0.0	8.0

Cayla Whiteside, P.E. (7/2/2024)

Michael McIntosh, G.I.T. (7/2/2024)

Photos

Caption 1: Southeast concrete footing after wooden forms have been removed.	Caption 2: Glacier performing unofficial pressure testing.
	
Caption 3: Section of SSD-3 trench cut out for removal.	Caption 4: Glacier placing pipes through spacer at southern end of central trench.

Cayla Whiteside, P.E. (7/2/2024)

Michael McIntosh, G.I.T. (7/2/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/2/2024)

Michael McIntosh, G.I.T. (7/2/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/02/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 28
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier onsite (Thayne and Todd - James offsite and Ray coming later)
0710	Mike with KJ onsite.
0715	Job safety meeting is held. Glacier begins bedding RW-7 pipe with pea gravel.
0720	Glacier placing pea gravel on SW-3 and RW-9 trenches as well as on all piping in central trench south of SW-3.
0735	James with Glacier onsite.
0800	Glacier begins placing Type 17 above recently placed pea gravel.
0845	Glacier begins compacting the Type 17 with jumping jack plate compactor.
0900	Glacier begins placing 1-1/4-inch minus in RW-10 trench.
0910	Glacier placing 1-1/4-inch minus in central trench headed south from RW-10 trench intersection.
0950	Glacier welding pipe to continue towards remediation shed.
1000	James with Glacier offsite to pick up type 17.
1100	James with Glacier returns to site with 6 CY of type 17.
1125	Glacier dumps type 17 into stockpile in SW corner of site. Ray with Glacier onsite with 3 CY of pea gravel.
1130	James offsite to get more 1-1/4 inch minus.
1145	Glacier working on the stickup section of pipes in SSD-3 trench as well as connecting 1-inch pipe heading east towards SSD-3 from central trench.
1210	Ray with Glacier offsite.
1245	Ray with Glacier onsite. Thayne and Todd with Glacier still connecting both 1 and 2-inch pipes in SSD-3 trench.
1330	Ray with Glacier excavating around RW-7 and setting form prior to pouring new 18-inch monument. Todd and Thayne welding and connecting pipes.
1345	James with Glacier back onsite with 6.45 CY 1 1/4-inch minus.
1400	Pressure testing completed.
1430	Glacier cleans up the site prior to heading out. James with Glacier offsite.
1500	Everyone offsite.
Subcontractor:	
Deliveries / Pick-ups / Miscellaneous	

Cayla Whiteside

Cayla Whiteside, P.E. (7/3/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (7/3/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/02/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 28
CSID #5089

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Cayla Whiteside

Cayla Whiteside, P.E. (7/3/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (7/3/2024)

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	7.0	1.0
Glacier	3	Laborers	7.0	1.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	7.0	1.0
Glacier	GP 3800 Generator	7.0	1.0
Glacier	Jumping Jack Rammer BS 60-4s	0.0	8.0

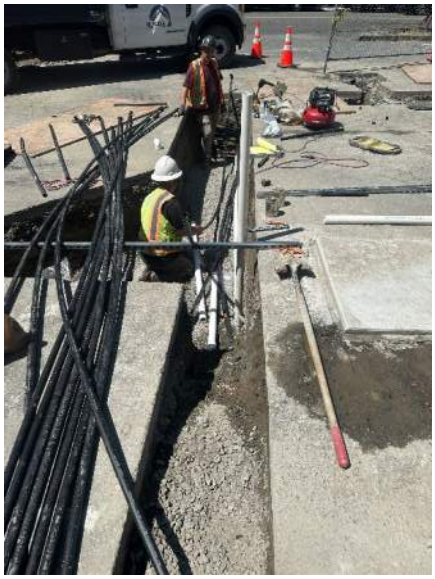
Cayla Whiteside

Cayla Whiteside, P.E. (7/3/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (7/3/2024)

Photos

Caption 1: Glacier placing pea gravel over recently placed pipes in central trench, headed south.	Caption 2: Glacier compacting the recently placed Type 17 trench backfill.
	
Caption 3: Glacier placing pipes in section of SSD-3 trench.	Caption 4: Glacier placed form for RW-7 for future monument pouring.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/3/2024)

Michael McIntosh, G.I.T. (7/3/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/08/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 30
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier onsite (James, Todd, and Thayne).
0715	Ella (KJ) on site. Glacier is putting up sidewalk signs on McGraw St and 24th Ave intersection.
0725	Ray (Glacier) on site. Glacier is setting up/moving construction fencing around entire parking lot, blocking pedestrian and vehicle traffic. Thayne says scope for today is to prep for paving work tomorrow, and close vault on McGraw St. Job safety meeting occurs, today will be in the mid 90s temperature-wise, be cautious of heat stress.
0740	Glacier hooks water hose up to dry cleaners, will use to control dust and to operate pressure washer later.
0750	Glacier starts using excavator to remove several inches of gravel (type 17 material) at north side of parking lot (previously compacted to match grade of parking lot) so 6" below grade. Using water hose to spray down gravel being removed for dust control. Jason using tape measure to confirm target depth.
0800	Convenience store owner comes out to speak with Thayne to confirm how many days that the parking lot will be blocked off. Thayne confirms three days (prep today and paving tomorrow) and Friday when remediation system gets delivered.
0817	Thayne starts using the vibrating compactor (WP 1550) on areas with target depth achieved (6" below grade)
0825	Glacier starts excavating type 17 material from trenches on northwest side of parking lot (6" below grade).
0910	Ray begins using jumping jack compactor on NW trenches while Thayne uses vibrating compactor for north side. Dump gravel removed from top layer of trenches over at south side of site next to open trench near future location of system.
0945	Ray uses vibrating compactor on trench in front of store, and west area of parking lot. Thayne removing paper molds from concrete well monuments.
1000	Start filling trench around future system location with type 17 material removed from top 6" of other trenches.
1015	Glacier moves on to work on trenches and vault on McGraw St. Glacier prepping to enter vault, using oxygen meter.
1025	Issue with oxygen meter, indicates not safe oxygen levels inside vault (19%). Ray leaves site to go rent equipment to vent. Meanwhile, Glacier sets up generator and jackhammer to break up/remove vault opening.
1045	Todd starts saw-cutting asphalt at boundary of area to remove around vault.

Cayla Whiteside

Cayla Whiteside, P.E. (7/9/2024)

Ella Clair

Ella Clair, E.I.T. (7/9/2024)

1055	Ray back on site with blower and tunnel to vent vault.
1125	Glacier checks oxygen level in vault and installs meter to be hanging while occupied. Oxygen levels ok. Thayne enters vault to start clearing out old equipment.
1135	Glacier mixes cement and uses to grout holes in vault wall from removed equipment.
1200	Jason uses jackhammer to break up ceiling of vault.
1215	Glacier uses excavator to resume filling and compacting type 17 at south end of site.
1315	Glacier still using jackhammer to break apart top of vault. Exposed rebar, so use angle grinder to cut/remove. Krazan on site for compaction testing
1345	Done cutting rebar, vault hole is ready to fill with type 17 material on site.
1400	Krazan can't confirm results of compaction testing, results will be shared in 72 hours when ready.
1445	Start dumping type 17 material to fill vault. Using compactor in layers.
1530	Glacier starts cleaning up for the day. Place metal plate over vault hole and sweep up parking lot, use water to clean up.
1620	Everyone offsite.
Subcontractor: Krazan and Associates, Inc.	
1315	On site for compaction testing of base course in trenches
1400	Off site.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Oxygen level too low (~19%) to safely enter and work inside former vault located in the right of way on McGraw Street.	7/8/2024		Glacier rented a blower fan and hose to blow air into vault for approximately one hour.	Oxygen levels returned to normal, safe to enter vault. Oxygen meter present before and during work inside vault, oxygen levels were safe for remainder of work.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions

Cayla Whiteside

Cayla Whiteside, P.E. (7/9/2024)

Ella Clair

Ella Clair, E.I.T. (7/9/2024)

N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations. Heat stress.
KJ / Glacier / Property Owner	Parking Lot Closure		Property owner asked how long the parking lot would be completely closed off for, Glacier let him know that for 3 days this week (7/8, 7/9, and 7/12) the lot would need to be closed. On 7/8 and 7/7 the trenches will be prepped and paved, and on 7/12 the system will be delivered and a crane will be used to put it in place.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Cayla Whiteside

Cayla Whiteside, P.E. (7/9/2024)

Ella Clair

Ella Clair, E.I.T. (7/9/2024)

7/8 1315	Compaction testing of base course beneath asphalt paving	Krazan	pending	Proctor compaction test takes 72 hours to obtain results following field testing.

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	9.33	0
Glacier	3	Laborers	9.33	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	4.0	5.33
Glacier	GP 3800 Generator	5.33	4.0
Glacier	Jumping Jack Rammer BS 60-4s	1.0	8.33
Glacier	Vibrating Compactor	1.0	8.33
Glacier	Mi-T-M 2505 Pressure Washer	0.0	9.33
Glacier	HILTI TE 3300-AVR Jack Hammer	6.33	3.0
Glacier	Concrete Saw Cutter	0.33	9.0

Cayla Whiteside

Cayla Whiteside, P.E. (7/9/2024)

Ella Clair

Ella Clair, E.I.T. (7/9/2024)

Photos

Caption 1: Glacier removing type 17 material and compacting to six inches below grade on the north side of the site.	Caption 2: Glacier using jack hammer to break up and remove asphalt around former vault in right of way on McGraw Street.
Caption 3: Glacier using a blower fan and flexible tunnel to blow air into vault (located in right of way on McGraw Street) to increase oxygen levels prior to entering.	Caption 4: Photo of vault following removal of surrounding asphalt, concrete ceiling, and rebar skeleton. Contents at bottom of vault are debris from the ceiling removal.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/9/2024)

Ella Clair, E.I.T. (7/9/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/08/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 31
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier on site (Ray, Todd, James). Thayne will not be on site today, Todd is in charge.
0710	KJ (Ella) on site. Quick JSB, discuss heat stress and staying cool. Glacier starts work, removing last of top layer of type 17 material (northmost end of parking lot and right of way on McGraw St in preparation for paving happening later today. Using water hose to spray down material and control dust.
0735	Emilia from Krazan on site for compaction testing of pavement. She was told to come at 0730 for testing the pavement, but James says they will not be paving until after 2pm today.
0748	Emilia off site, will return around 2pm for compaction testing of pavement. Ray starts using jumping jack compactor to compact trench and filled in vault on McGraw St.
0820	Glacier finished prepping aggregate for paving, all trenches are compacted to 6" below grade.
0830	KJ follows up with Glacier about compaction testing, Todd says he needs to confirm with Thayne details.
0835	Todd says that the compaction testing done by Krazan yesterday was a proctor test and takes 72 hours to get the results for. This means that, based on the current schedule, the compaction results will be available only after the paving has been completed.
0840	Ella calls Cayla and Ryan (KJ) to discuss how to proceed. Conclude that it is up to Glacier to decide if they want to proceed with paving without knowing the results of the compaction testing. If the aggregate base compaction does not meet the spec (95% relative compaction), Glacier will be responsible for destroying and redoing the aggregate base and paving.
0850	Ella relays decision to Todd who just spoke with Lauren (Glacier) who said the same thing, and they are confident in their compaction. Glacier starts cleaning up edges of existing asphalt to prep the areas for paving, using concrete saw and hammer and chisel.
0940	Olympic Paving crew on site, 4 workers and 1 man in charge. Setting up equipment. Dump truck of asphalt material arrives on site, park at south end of parking lot.
1020	Paving crew begins laying asphalt. Todd says the compaction tester is not returning to test because they don't need to test compaction of the asphalt.
1050	James off site. Asphalt layer being applied in approximately 3 inch lifts.

Cayla Whiteside

Cayla Whiteside, P.E. (7/22/2024)

Ella Clair

Ella Clair, E.I.T. (7/22/2024)

1210 **1220** **1235** **1345** **1420**	Krazan back on site, Glacier let's her know that they do not need compaction testing, they should have been notified. Asphalt truck empty but more material needed to finish paving the north part of the parking lot. Olympic Pavers let's Todd know that they can't put on a tack coat to joints and edges because of the heat. They claim that it will never set until the temperatures cool down, and will result in it smearing all over the parking lot. Second truck of asphalt material on site. Paving crew off site. No fog sealing or tack coat applied, pavers say the heat will prevent it from setting and it will be a mess once the lot is open to traffic. They recommend calling them back another day when it is not so hot. Discussion with Todd and Ray about scope for tomorrow. Plan is to clean up the site, load off excess materials and have IDW pickup for drums, get the area ready for the system to be delivered on Friday. Todd and Ray hose off asphalt (to cool down), clean up parking lot, close well lids fully after cleaning out asphalt bits from bolt holes. Glacier finished cleaning up, closing off site. All off site for the day.
Subcontractor: Olympic Paving, Inc.	
0940 **1345**	On site for paving trenches in parking lot and right of way on McGraw St. Off site.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Cayla Whiteside, P.E. (7/22/2024)

Ella Clair, E.I.T. (7/22/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/08/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 31
CSID #5089

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Open excavations. Heat stress.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	3	Laborers	7.5	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	CAT 305.5E excavator	3.0	4.5
Glacier	Jumping Jack Rammer BS 60-4s	1.0	6.5
Glacier	Vibrating Compactor	3.0	4.5
Glacier	Concrete Saw Cutter	0.5	7.0

Cayla Whiteside, P.E. (7/22/2024)

Ella Clair, E.I.T. (7/22/2024)

Photos

Caption 1: Glacier using jumping jack compactor to compact base course prior to asphalt paving, located in right of way on McGraw St.	Caption 2: Glacier using concrete saw to clean up edges of cut asphalt in parking lot, in preparation for asphalt paving.
Caption 3: Olympic Paving crew adding asphalt to parking lot.	Caption 4: Photo of finished asphalt paving in parking lot, taken from north side of parking lot facing south. Pavement was wetted to cool down fresh asphalt.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/22/2024)

Ella Clair, E.I.T. (7/22/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/12/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 33
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	Glacier on site (Thayne, Todd, James). Trailer with system and tanks drives on site. Arrived yesterday but parked off site, couldn't unload until today. Crane truck is parked offsite, crane operator on site (Ford Crane)
0710	KJ (Ella) on site. Quick JSB. Parking lot is open (no fencing) but coned off since truck on site and will be using crane later. Truck driver is parked on site, removing straps that hold down tanks. Glacier is strategizing about how to offload everything. Forklift arrived on site yesterday (NC rentals). Thayne says that only work done yesterday (7/11) was hauling off remaining backfill soil from site.
0720	Using forklift to offload tanks from truck.
0750	Glacier starts staging water tanks in approximate locations for layout. Note that the "400 gal pre GAC water storage tank" is actually 500 gal capacity. All other external tanks match specifications.
0825	All tanks offloaded from trailer. Truck driver pulls further into site so crane truck can have room to pull in.
0830	Crane truck pulls into parking lot, Glacier uses spotters to help him enter and back in. Crane operator gets set up.
0855	Glacier connects straps attached to roof of system container, begin lifting container off of trailer and moving onto footings. Glacier using ropes to control spin of container, making sure to center on footings.
0905	Container in place on poured concrete footings. Thayne inspecting inside and outside of container. Todd removing straps from roof of container. Crane operator breaking down, preparing to leave.
0940	Crane and operator off site.
0945	Truck/trailer driver off site. Glacier working on situating tanks in proper layout. See that the side doorway was installed to swing open the opposite direction as indicated in drawings, Glacier has to place liquid GAC vessels more north than originally anticipated. Only by about a foot.
1010	Ray with Glacier on site with truck, loading up some of remaining odds and ends left on site (straw berms, etc.).
1100	Ella speaks with Ryan about orientation of tanks, confirm that layout is all up to Glacier to fit everything and be able to connect, don't necessarily need to follow design layout exactly, especially considering PRM supplied products with slightly different dimensions/configurations than the plan drawings. Glacier working on moving around GAC tanks. Will place cat ox later.
1220	Glacier moves port a potty on site against south wall.

Cayla Whiteside

Cayla Whiteside, P.E. (7/22/2024)

Ella Clair

Ella Clair, E.I.T. (7/22/2024)

1246 **1300**	KJ asks Glacier to confirm distance between South end of container and building wall, distance is 10' 2.5". Glacier getting ready to leave site, need to pick up fasteners, anchors for container, and don't have their plumbing supplies yet. All off site
Subcontractor: Ford Crane	
0700 **0940**	On site with crane to move system container from delivery truck into place on site. Off site.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn.

Cayla Whiteside, P.E. (7/22/2024)

Ella Clair, E.I.T. (7/22/2024)

			Open excavations. Heat stress.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	3	Laborers	6.0	0.0
Glacier	1	Project Manager	6.0	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (NC Rentals)	Forklift	5.0	1.0

Cayla Whiteside

Cayla Whiteside, P.E. (7/22/2024)

Ella Clair

Ella Clair, E.I.T. (7/22/2024)

Photos

Caption 1: Glacier using forklift to move tanks from trailer onto southwest portion of site.

Caption 2: Glacier attaching straps to system container in preparation for lifting off of truck trailer. Crane operated by Ford Crane operator.

Caption 3: Crane operator lowering system container onto concrete footings at southwest corner of site. Glacier using ropes on opposite corners to orient the container to align with footings.

Caption 4: Photo of liquid GAC tanks (middle of photo) and vapor GAC tanks (left side of photo) placed north of the system container. Exclusion zone between vapor GAC tank and control panel is approximately 3.5ft.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/22/2024)

Ella Clair, E.I.T. (7/22/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/16/2024
INSPECTOR'S NAME: PHILIP HOOPER
REPORT NUMBER: 34
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	KJ on site (Phil). Glacier on site (Thayne). Work area is currently fenced off. Discuss scope of work for the day and quick JSB. Today's scope: Glacier will work on exterior pipe connections.
0810	Glacier begins working on piping connections exterior of container.
0920	Todd with Glacier on site to assist Thayne.
1000	Glacier installing vent covers/silencers on exterior of container.
1330	Glacier has truck with crane arrives on site to remove steel panels from site.
1400	Crane truck off site with steel panels.
1455	All off site for the day.
Subcontractor: Stusser Electric	
0729	Stusser Electric on site (Eli, Neil). Quick jsb. Discuss where to bring pole in and where electrical connections are located on system. Stusser will need to move pole slightly to the north due to the containers concrete footing.
0824	Stusser Electric (Erin) truck arrives on site.
0940	Stusser Electric begins cutting asphalt with hand tools (hand drills) to set pole near southwest corner of container.
1005	Stusser Electric through asphalt, begins hand digging to 4 feet bgs to set pole. Soil removed is placed into steel drum.
1120	Stusser Electric places pole to 4 feet bgs near southwest corner of container, then backfilled with soil removed from the hole.
1155	Stusser Electric begins working on float switch electrical connections at 300 gal treated water storage tank and 400 gal pre-gac water storage tank.
1400	Stusser Electric off site for the day.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Cayla Whiteside, P.E. (7/17/2024)

Philip Hooper, E.I.T. (7/17/2024)

N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Heat stress.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Cayla Whiteside, P.E. (7/17/2024)

Philip Hooper, E.I.T. (7/17/2024)

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Laborers	5.5	0.0
Glacier	1	Project Manager	8.0	0.0
Stusser (HSJ)	2	Laborers	6.5	0.0
Stusser (HSJ)	1	Laborers	5.5	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier (Sunbelt Rentals)	Crane Truck	1.0	0.0

Cayla Whiteside, P.E. (7/17/2024)

Philip Hooper, E.I.T. (7/17/2024)

Photos

Caption 1: Stusser Electric using hand drill to cut out asphalt to place pole at southwest corner of container.	Caption 2: Electric pole placed near southwest corner of container.

Cayla Whiteside, P.E. (7/17/2024)

Philip Hooper, E.I.T. (7/17/2024)

Caption 3: Sound hood installed over container vents.	Caption 4: Exterior pipe connections completed by Glacier.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/17/2024)

Philip Hooper, E.I.T. (7/17/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/17/2024
INSPECTOR'S NAME: PHILIP HOOPER
REPORT NUMBER: 35
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0650	KJ (Phil) on site. Glacier (Thayne, Todd) on site.
0700	Discuss scope of work and JSB. Glacier is determining how to arrange system piping so that it can reach system components and will continue to work on making container exterior pipe connections.
0815	Glacier installing unistrut on container west exterior side and constructing pipe connections. Making connections for zone 1 and zone 2 piping.
1300	Glacier continues to make exterior piping connections.
1430	All off site for the day.
Subcontractor: Stusser Electric	
0700	Stusser Electric (Nick, Neil, Eli) on site. Discuss scope of work and JSB. Electricians plan to work on installing electrical panels (meter and switch) on pole installed yesterday and setting up piping for temporary oxidizer electrical.
0745	Erin with Stusser Electric on site.
0845	Stusser Electric installs electric panel on pole and works on system electrical lines.
0950	Stusser installs conduit on electrical panel.
1010	Stusser removes electrical panel and conduit from pole to pull wire through conduit.
1050	Stusser re-installs electrical panel and conduit to pole.
1300	Stusser wiring electrical panels.
1415	Stusser Electric off site for day.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Laborers	7.5	0.0

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Glacier	1	Project Manager	7.5	0.0
Stusser (HSJ)	3	Laborers	7.25	0.0
Stusser (HSJ)	1	Laborers	6.5	0.0

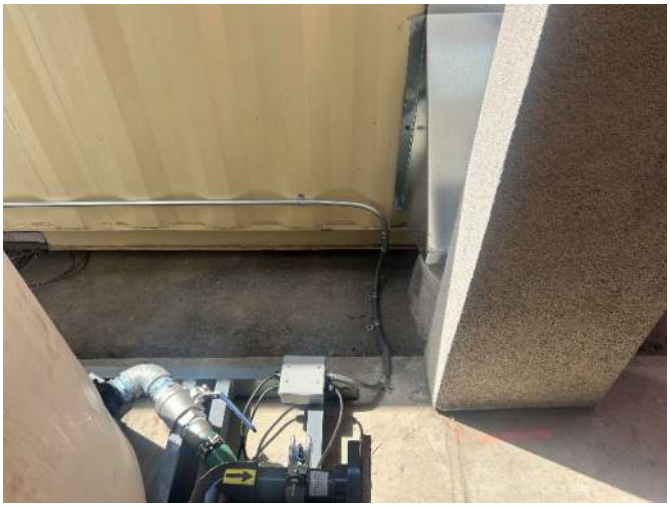
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
N/A		0.0	0.0

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Photos

Caption 1: Electric meter and switch panels installed at southwest corner of container.	Caption 2: Zone 1 and Zone 2 exterior piping connections at south end of container.
	
Caption 3: Zone 1 and Zone 2 exterior piping connections at north end of container.	Caption 4: Electrical conduit installed on east side of container at 400 gallon pre-gac water storage tank.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/18/2024
INSPECTOR'S NAME: PHILIP HOOPER
REPORT NUMBER: 36
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0700	KJ (Phil) on site. Glacier (Thayne, James) on site. Quick JSB. Glacier will continue making exterior piping connections.
0830	Glacier placing unistrut on west side of container to support exterior pipe connections.
0930	Glacier crew continues making exterior piping connections.
1130	Glacier continuing to make exterior pipe connections.
1445	Glacier cleaning up site for the day.
1500	All off site for the day.
Subcontractor: Stusser Electric	
0700	Stusser Electric (Nick, Neil, Eli) on site. Quick JSB. Stusser will continue placing conduit and wiring for exterior system components.
0830	Stusser Electric reviewing wiring for temporary oxidizer.
0930	Adam with Stusser on site. All Stusser crew takes break.
1120	Erin with Stusser Electric on site with materials.
1130	Stusser crew returns from break, begin constructing conduit from switch panel on pole to system components and connecting wiring to PLC panels.
1400	Stusser Electric off site.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Laborers	8.0	0.0
Glacier	1	Project Manager	8.0	0.0
Stusser (HSJ)	3	Laborers	5.0	0.0
Stusser (HSJ)	2	Laborers	2.5	0.0

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

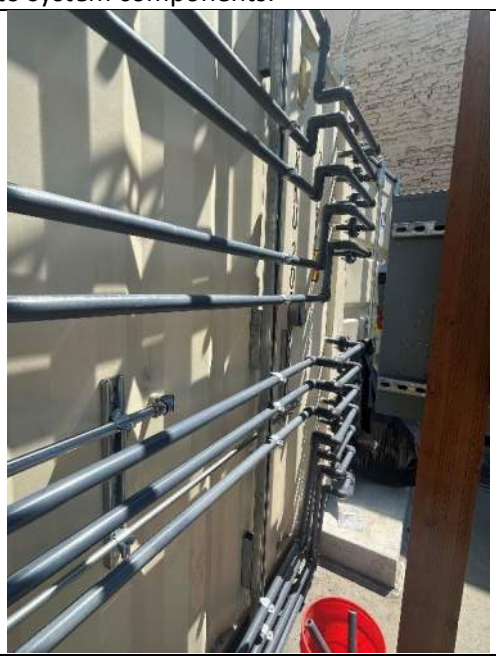
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
N/A		0.0	0.0

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Photos

Caption 1: Electric wiring being installed on north side of container.	Caption 2: Electrical conduit installed from switch panel to system components.
	
Caption 3: Zone 1, 2, 3, and 4 exterior piping connections on west side of container.	Caption 4: Zone 1, 2, 3, and 4 exterior piping connections on west side of container.

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/19/2024
INSPECTOR'S NAME: PHILIP HOOPER
REPORT NUMBER: 37
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier Environmental Services, Inc.	
0650	KJ (Phil) on site. Glacier (Thayne, James, Todd) on site, Quick JSB. Glacier will continue making exterior piping connections.
0800	Glacier completes connections to manifold piping on west exterior of container, still need to make connections to HDPE lines.
0815	Glacier tightening flanges where exterior piping connects to manifold piping at southwest corner of container.
0830	Glacier cuts all HDPE lines to the same height.
0845	Glacier installs shark bite connections to HDPE lines.
0900	EERG (Fernando) on site to look at the system. Asks if there is a finalized O&M and sampling plan, referred to Ryan and Cayla.
0920	EERG off site.
1145	Glacier completes HDPE pipe connections.
1215	Glacier asks how oxidizer discharge will be tied into gac tank discharge.
1300	Glacier installs sound hoods on west and east side of container. Begins working on 300 gallon treated water storage tank piping.
1415	Glacier begins cleaning up site for the day.
1500	All off site.
Subcontractor: Stusser Electric	
0650	Stusser Electric (Nick, Neil, Adam, Erin) on site. Quick JSB. Stusser will continue placing conduit and wiring for exterior system components.
1015	Stusser places heat exchanger on top of container at northwest corner.
1100	Stusser crew on break.
1120	Erin and Nick off site.
1140	All Stusser crew off site.
Deliveries / Pick-ups / Miscellaneous	

Field Issues / Impediments & Next Steps

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
N/A				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	8.0	0.0
Glacier	1	Project Manager	8.0	0.0
Stusser (HSJ)	4	Laborers	4.0	0.0

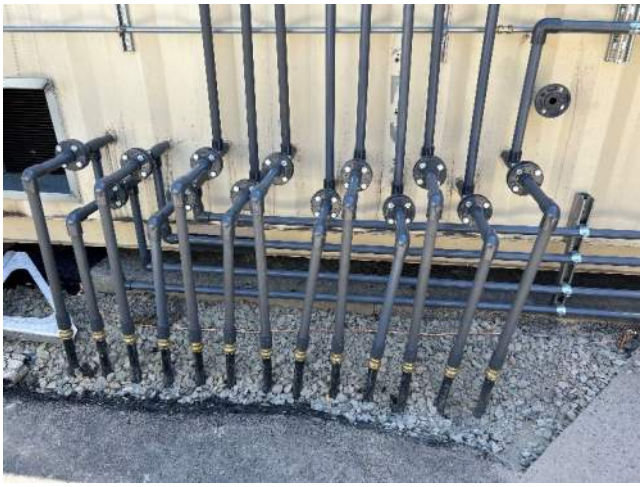
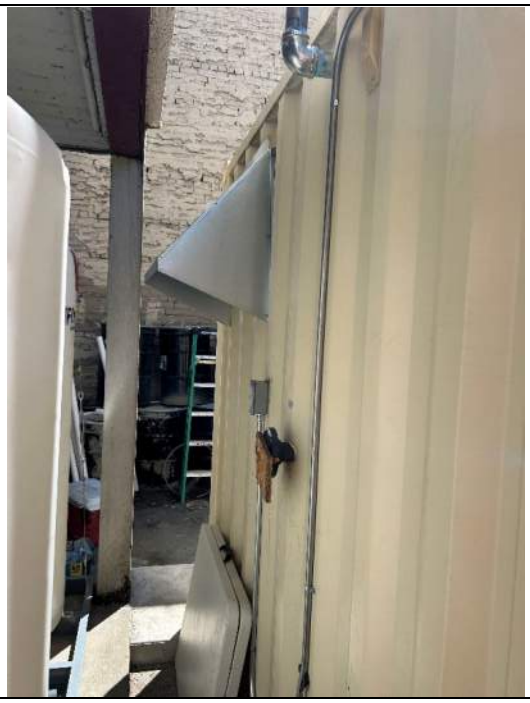
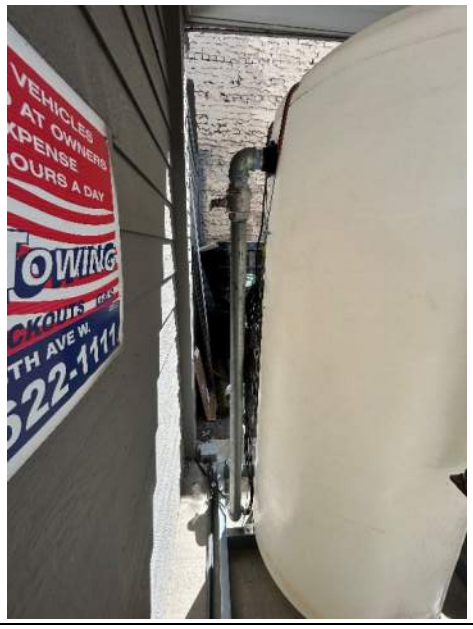
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
N/A		0.0	0.0

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Photos

	
Caption 1: Exterior pipe connections, Sch 80 PVC transition to downwell HDPE pipe.	Caption 2: Vent sound hood installed on east side of container.
	
Caption 3: Pipe connections completed on 300 gallon treated water storage tank.	Caption 4: Pipe connections completed and flow meter installed on 300 gallon treated water storage tank.

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/22/2024)

Philip Hooper, E.I.T. (7/22/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/22/2024
INSPECTOR'S NAME: CAYLA WHITESIDE
REPORT NUMBER: 37
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0645 KJ (Cayla) on site. Glacier (James) on site. 0700 Thayne (Glacier) on site. Waiting on materials - Todd picking them up. 0745 Thayne and James working on heat exchanger on top of Conex. PRM provided 6 feet of hosing to connect the outlet from the treatment container to the HEX. 0800 There is a filter of some kind in the treatment system that Thayne doesn't know what it is. It looks like the coalescer before the Vapor GAC units. 0815 Confirmed coalescer is after HEX and before Vapor GACs / cat ox with PRM Drawings. Glacier unsure if the coalescer needs to be returned with the cat ox or if it stays with the system. Confirmed with Thayne to plumb the coalescer before the cat ox and the vapor gac. Confirmed fog seal not required on asphalt trench. 1045 Glacier connecting piping for heat exchanger. 1050 Todd (Glacier) on site. Discussing piping for Vapor GAC and SSD wells. 1100 Glacier downloading piping materials from Todd's truck. 1115 Glacier (Todd, James) working on SSD well piping connections. Glacier (Thayne) working on liquid GAC piping connections. 1130 Glacier (James cutting down 2" PVC for SSD well piping connections.) 1215 Glacier finishes installing SSD piping connections. Discussion with Jin (property owner), Young-Do's father. Had questions on fencing, length of system operation. 1245 Glacier (Todd, James) begin piping connection for T-300. 1400 Glacier continues piping connection to T-300 up and over treatment shed. 1430 Glacier begins cleaning up. 1500 Glacier and KJ off site.
Subcontractor: Fence Specialists
0900 Fence Specialists (FS) (Eric and ?(will confirm name on 7/24)) on site. Marking out post locations. 0915 Confirmed with FS that the fence jog to the south side of the building can be removed and the fence can dead end into the building. Dummy post will be used to prevent access via the building ledge. 1000 FS begins jackhammering asphalt for fence posts. Excavated dirt being placed in Glacier's drums. Working on two northern fence posts. 1050 FS mixing grout for pipe post holes. 1100 FS placing grout in fence post holes. 1115 FS digging post hole by wall at southern end of site. 1130 FS making more grout for third fence post hole. 1140 FS finishing three fence post holes with grout to grade. 1200 FS begins jackhammering asphalt for two more fence post holes for gate posts on west side of fence. 1215 FS hand augering fence post holes.

Cayla Whiteside, P.E. (7/23/2024)

Ryan Hultgren, P.E. (7/23/2024)

1230 electrical wire found in fence post hole (2nd from south). Wire at approximately 30". Depth of hole about 32". 1300 Cayla (KJ) discussion with Ryan (KJ) about electrical wire in fence post. Shorter depth is acceptable as long ~4" of concrete below post. 1315 discussion with FS. Post will sit on top of wire. FS working to dig deeper around electrical wire before backfilling with concrete. 1330 FS adding cement to most recent 2 post holes. 1345 FS jackhammering asphalt for 3 more fence post holes. 1400 FS off site.
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Post Hole too shallow	7/22	Drawings	Discuss with Engineer.	Decide shallower depth is okay in this instance. Grout filled ~4" below bottom of post.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Cayla Whiteside, P.E. (7/23/2024)

Ryan Hultgren, P.E. (7/23/2024)

KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	8.0	0.0
Glacier	1	Project Manager	8.0	0.0
Fence Specialists	1	Laborers	5	0.0
Fence Specialists	1	Superintendent	5	0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Fence Specialists	Jackhammer	5	0.0

Cayla Whiteside, P.E. (7/23/2024)

Ryan Hultgren, P.E. (7/23/2024)

Photos

Caption 1: Fence posts on northern side of system.	Caption 2: Completed SSD well connections.
Caption 3: Completed liquid ring pump to heat exchanger connection with temperature rated hose.	Caption 4: Electrical wire found in post hole.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/23/2024)

Ryan Hultgren, P.E. (7/23/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/23/2024
INSPECTOR'S NAME: CAYLA WHITESIDE
REPORT NUMBER: 38
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0650 KJ (Cayla) on site. Glacier (Thayne, Todd, James) on site. 0700 Discussion of electric meter. Currently, meter will be 4" behind the fence and there will be difficulty reading or replacing. Options: 1) move to north side of pole. Unclear if electrical inspector would approve. 2) Add gate to fence right in front of meter for access. 0730 Discussion with Thayne about piping after HEX. Can it be 3"? Confirmed that the temperature rated hose provided by PRM is Forsaflex PH14-300. Temp rated for 190F. This hosing is located just before the LRP and after the LRP before the HEX. 0800 Cayla calls Jarod (KJ). Jarod confirms 3" carbon steel for 6 LF after the HEX is okay. Slight decrease in diameter won't have that much of an impact on dissipation or pressure because it's air flow. Jarod notes that we need to monitor temperature increase across the LRP during startup and understand if that temperature rated hose is not enough, considering a hot day. Cayla to note in OM&M plan. Glacier working on T-300 piping connection. 0830 Cayla asks Thayne if they're going to label all the well piping. He asks if it's in the scope. Cayla to check. 0900 Glacier completes T-300 piping connection. Begins cutting unistrut for piping supports. 0915 Glacier begins placing pipe supports for pipe running along wall of laundromat. Confirm spacing in the specs (max 6' for 4" pvc pipe, max 5' for 2" pvc pipe). Due to tank skids, spacing for 2" pvc may be < 5". 2" pipes to be supported with extensions from 4" pipe to meet the 5' max. 0930 Cayla discussion with Ryan regarding piping. Confirm that gate should be added in front of electrical panel. 0945 Cayla let's Thayne know about gate. Thayne to communicate to Fence Specialists. Conduct measurements of fence distance from treatment shed and piping. 1000 Thayne off site for supplies. Glacier (James, Todd) working on pipe supports. Measurements: Pipes stick out ~21" from treatment shed. SE corner of treatment shed is 17" from NW corner of southern building overhang column. CL of 6" SD is approximately 60" from west side of treatment building. 1045 Glacier sweeping. 1100 Todd back on site with supplies. Glacier drilling pipe supports into concrete sidewalk east of container. 1145 Glacier using hydraulic Jack to rotate vapor GAC units to final orientation for piping. 1245 Glacier finishes adjusting location of vapor GAC units. 1300 Glacier continues installing 4" PVC pipe for vapor GAC units.
Subcontractor: Stusser Electric
0650 Stusser Electric (Nick, Eli, ?) on site. 0700 Discussion of electric meter. Currently, meter will be 4" behind the fence and there will be difficulty reading or replacing. Options: 1) move to north side of pole. Unclear if electrical inspector would approve. 2) Add gate to fence right in front of meter for access. 0810 Stusser off site until electric meter location is resolved.
Deliveries / Pick-ups / Miscellaneous

Cayla Whiteside, P.E. (7/23/2024)

Ryan Hultgren, P.E. (7/23/2024)

1130 United Services (Drew on site to service porta-john.
1140 United Services off site.

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Electric meter location too close to fence	7/23	Drawings	Discuss with Engineer	Add gate in front of meter.
3" HEX outlet	7/23	Drawings	Discuss with Engineer	3" carbon steel pipe okay after HEX, then transition to 4" PVC. Carbon steel pipe connections to be threaded.
Temperature rated hose provided by PRM is Forsaflex PH14-300. Temperature rated for 190F	7/23	Drawings	Discuss with Engineer	Monitor temperature increase across the LRP during system startup and determine if the temperature rating on the hose is suitable for use.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls.

Cayla Whiteside, P.E. (7/23/2024)

Ryan Hultgren, P.E. (7/23/2024)

			Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	8.0	0.0
Glacier	1	Project Manager	8.0	0.0
Stusser Electric	3	Laborers	1.0	0.0

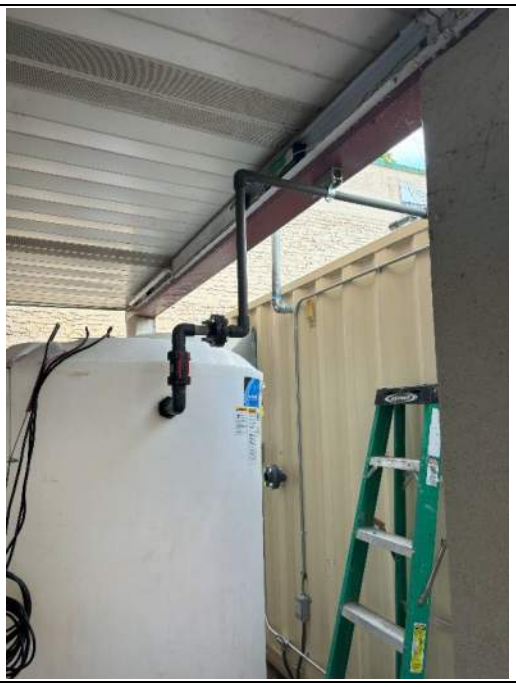
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Hydraulic Jack	8	0
Glacier	Generator	8	0
Glacier	Electric Saw	8	0

Cayla Whiteside, P.E. (7/23/2024)

Ryan Hultgren, P.E. (7/23/2024)

Photos

	
Caption 1: T-300 piping on west side of treatment shed running up and over treatment shed.	Caption 2: Completed T-300 piping connection.
Caption 3: Electric meter pole.	Caption 4: 4" PVC piping with vertical pipe supports.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/23/2024)

Ryan Hultgren, P.E. (7/23/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/24/2024
INSPECTOR'S NAME: CAYLA WHITESIDE
REPORT NUMBER: 39
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0645 KJ (Cayla) and Glacier (James, Todd) on site. 0700 Glacier opening up site, refueling generator. 0705 Thayne (Glacier) on site. 0730 Glacier begins cutting 2" pipe. 0800 Glacier installing 2" pipe to outlet of T-301 to connect to bag filter / liquid GAC units. 0900 Glacier completes connection to bag filter / liquid GAC units. 0930 Todd off site for supplies. James working on leveling pipe supports and pipe. 1000 Discussed upcoming scope with Thayne Thursday • Well pressure testing • Trenching for drain line to sanitary sewer • T-500 tank connection Friday • Exterior piping connections Next week • Monday: vapor pins • Vapor GAC piping • Draw down test 1015 Thayne and Cayla discuss vapor pin installation with Jin (Jay's Cleaners) and Mont's Market. Tentative locations as shown by snap below. Mont's Market owners will be on site today to discuss with KJ/Glacier. Jin prefers after noon for installation. 1030 Thayne labeling extraction well pipes on exterior and interior of treatment shed. 1100 Todd (Glacier) back on site. Thayne labeling SSD wells. 1120 Glacier working on 2" liquid GAC outlet piping for connection to treated water storage tanks T-400. 1145 Glacier completes connection between liquid GAC outlet and T-400. 1210 Glacier working on piping between treated water tank T-400 to mixing tank T-500. 1240 Thayne (Glacier) off site for the week. 1300 Glacier completes piping between T-400 and T-500. 1310 Todd asks how high the discharge stack needs to be. Drawings say 3 feet above roof. Confirmed 3 feet above roof of laundromat, not 3 feet above board fence. Todd asks if discharge pipe should be cut at 45 degree at top. To confirm with Jarod tomorrow. 1320 Glacier starting piping for connection to sanitary sewer. 1345 Glacier cleaning up. 1400 Glacier off site.
Subcontractor: Fence Specialists
0945 Fence specialists (FS) on site. Plan to install 4' gate in front of electric meter. 0950 FS begins jackhammering asphalt for fence post holes. 1015 FS excavating material from post holes. 1045 FS completes two fence post holes. Working on excavating two fence post holes.

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

110 FS mixing cement. 1130 FS placing cement in post holes with fence posts. 1200 FS finishes placing cement for fence post holes. 1205 FS bolting gate fence posts in sidewalk walkway on NE portion of fence. 1230 FS install corner fence post on NE side of fence near laundromat entrance. 1245 FS off site.
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
How discharge stack top should look	7/24	Drawings	Discuss with Engineer	Confirm with Jarod if PVC pipe should be cut at 45 deg angle at top of discharge stack

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn.

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

			Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	7.0	0.0
Glacier	1	Project Manager	6.0	0.0
Fence Specialists	2	Laborers	3.0	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Hydraulic Jack	0	8
Glacier	Generator	7	0
Glacier	Electric Saw	7	0

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

Photos

Caption 1: 2" PVC piping from T-301 to bag filter inlet.	Caption 2: 2" PVC piping from liquid GAC outlet to treated water storage tank T-400.

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

Caption 3: Fence posts with 4' gate for electric meter access.	Caption 4: Fence posts for gate near laundromat entrance.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/25/2024
INSPECTOR'S NAME: CAYLA WHITESIDE
REPORT NUMBER: 40
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0645 KJ (Cayla, Jarod) and Glacier (James, Todd) on site. 0700 Glacier opening up site. KJ (Ryan) on site. 0705 KJ confirms with Todd that discharge stack should have a tee at the top. Request for netting or mesh to cover the sides of the tees on the discharge stack and the mixing tank off gassing pipe so that birds don't make a nest in it. 0730 Glacier setting up for pressure testing. KJ walking system. Questions for PRM: • How does the replacement of the liquid GAC units work with PRM? • Is there a filter on the vacuum side of the blower? • In/out for liquid GACs backwards on lag two units? • How do you swap out the liquid GACs? Equipment? Weight? Questions for Glacier: • How are they planning to provide secondary containment for the tanks on the east side? • Install VI 300 on inlet to LRP? • Can we have a meeting with Jarod and Thayne to discuss vapor GAC set up? • Ask Glacier to survey or somehow record Vapor Pin (VP) locations? Questions for KJ to consider: • How do we want to deal with the lag liquid GAC units? Do we want to swap them into lead or swap both units? • T-400 operation: make sure water starts discharging to the sanitary sewer without triggering LAHH. • LRP PI-302 range - too high? Check on startup. • Need water for startup testing. • Baseline GW sampling round? • MW-4 why does OM&M specify no injection? Jarod recalls perhaps a leak concern or proximity to existing utility lines? 0845 Glacier drilling anchor holes into concrete footings. 0945 Glacier finishing drilling anchor holes into concrete footings. 1040 Glacier installing concrete anchors. 1100 KJ reviewing vapor pin locations. Discussion with Mont's market owner. They asked if there are any flyers or print outs KJ could provide since they get a lot of questions from customers. 1125 Olu Akeroro on site. KJ walks him around site and answers questions. 1130 Glacier completing pressure testing. 1200 Olu and Jarod off site. 1245 Glacier notes there is a leak in RW-10. Can't find the source. 1300 Ryan off site. 1315 Glacier still cannot find source of leak in RW-10. 1330 Glacier begins cleaning up site.

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

1350 Glacier and KJ off site.
Subcontractor: Fence Specialists
0850 Fence specialists on site. 0905 FS installing horizontal bars for fence and top caps. 1000 FS installing bottom fence wire. 1030 FS installing fencing with privacy slats to north section of fence. 1045 FS installing fencing with privacy slats on south section of fence. 1100 FS continues installing fencing with privacy slats. 1145 FS installing gate on north side of fence. 1245 FS competes adding fencing with slats and gates. 1300 FS adding metal hooks to secure bottom wire to fence. 1310 FS off site. To return tomorrow for final touches (dummy post, post caps, more hooks).
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
How discharge stack top should look	7/24	Drawings	Discuss with Engineer	Discharge stack should have a tee at the top. Use fencing/mesh to cover the sides of the tees to prevent birds nesting in them.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

Olu Akeroro	Washington Dept of Ecology	7/25/24, 11 am to 12 pm	Site visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	7.0	0.0
Glacier	0	Project Manager	0.0	0.0
Fence Specialists	2	Laborers	4.0	0.0

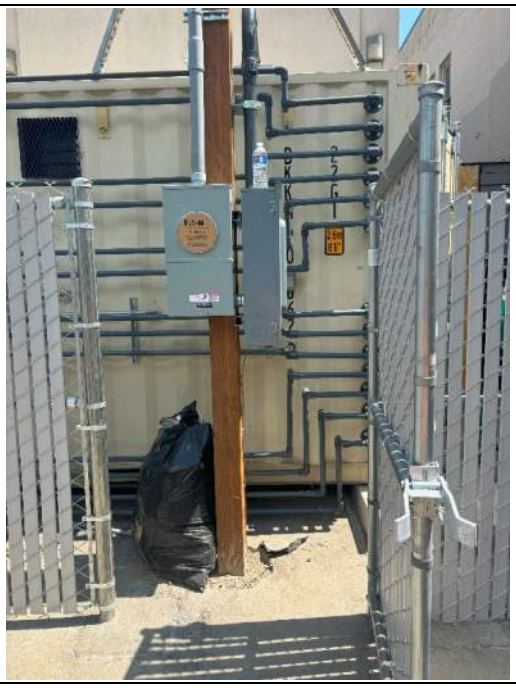
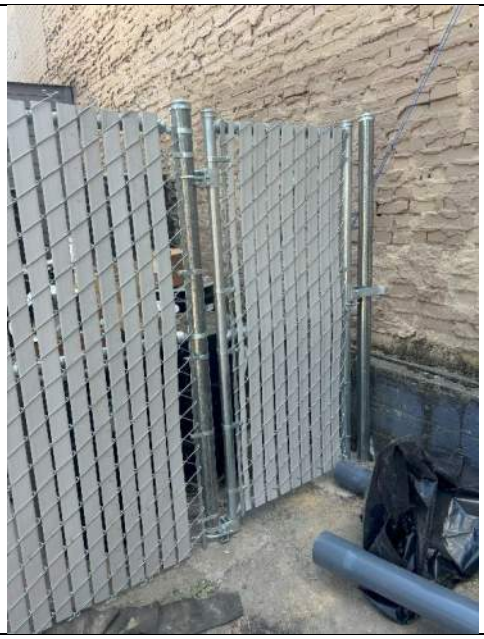
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Hydraulic Jack	0	8
Glacier	Generator	7	0
Glacier	Air Compressor	7	0

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

Photos

	
Caption 1: Pressure testing extraction well lines.	Caption 2: Completed fence gate to electrical meter.
	
Caption 3: No secondary containment below tanks outside treatment system.	Caption 4: South gate.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

Cayla Whiteside, P.E. (7/25/2024)

Ryan Hultgren, P.E. (7/25/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/26/2024
INSPECTOR'S NAME: CAYLA WHITESIDE
REPORT NUMBER: 41
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0630 KJ (Cayla) and Glacier (Todd) on site. 0645 Glacier (James) on site. 0700 Glacier begins opening up site. Glacier moves catalytic oxidizer to final location. KJ places locks for all 4 fence gates. Lock code is 0356. 0715 Glacier moving and staging drums for access to discharge to sanitary sewer line area. 0805 James off site to rent a saw and jackhammer. 0820 Todd resuming pressure testing on extraction wells. 0840 James back on site. 0900 Glacier marking out tench extents for discharge line to sanitary sewer. 0910 Todd says that leaking RW-10 was due to sticky 1" globe valve on individual well line. Opened and closed valve and re-tested and system is now pulling vacuum without loss. 0925 Glacier (James) begins saw cutting. Glacier (Todd) completes pressure testing. Results: all wells leaked and had to be retaped. Leaks were small. After this was completed, all wells passed. Pressure testing completed. KJ requests written confirmation of some kind of pressure testing results. 1015 Todd off site for fuel for saw cutter. James continues pressure testing extraction wells. 1055 Todd back on site. James resumes saw cutting. Todd working on air discharge stack piping. 1115 James completed saw cutting for trench. Todd installing unistrut pipe support in side of laundromat building for air discharge stack. 1125 Discussion with Young about parking. Wants to know when parking will be striped. Current parking situation is confusing customers and bad for business. KJ confirmed that Glacier is responsible for parking striping. Ryan will reach out to discuss final parking layout. 1130 Jeron and Noah (KJ) on site for site walk. 1145 Glacier setting discharge stack piping along side of building to roof. 1200 Glacier jackhammering sidewalk asphalt for discharge line to sanitary sewer. 1240 Jeron and Noah off site. 1245 Glacier stops jackhammering for the day. 1300 James off site. Todd begins cleaning up site. Todd notes it will be difficult to connect to catch basin because fencing is now in the way. May need to remove section of fence. Next week: • Carbon steel piping after HEX • Vapor GAC and cat ox piping • Discharge line 1330 KJ and Glacier off site.
Subcontractor: Fence Specialists
0830 Fence Specialists (Eric, Brian) on site.

Cayla Whiteside, P.E. (7/31/2024)

Ryan Hultgren, P.E. (7/31/2024)

0840 FS installing dummy post at wall. FS drilling hole for double fence center post hole. 0850 FS adding metal strips adjacent to fence posts. 0915 FS drilling holes to bolt latches to gate posts. Install center post for double gate. 0925 FS off site. 2 post caps are missing and they will drop by tomorrow to pop them on.
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
None				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Cayla Whiteside, P.E. (7/31/2024)

Ryan Hultgren, P.E. (7/31/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/26/2024
INSPECTOR'S NAME: CAYLA WHITESIDE
REPORT NUMBER: 41
CSID #5089

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	7.0	0.0
Glacier	0	Project Manager	0.0	0.0
Fence Specialists	2	Laborers	1.0	0.0

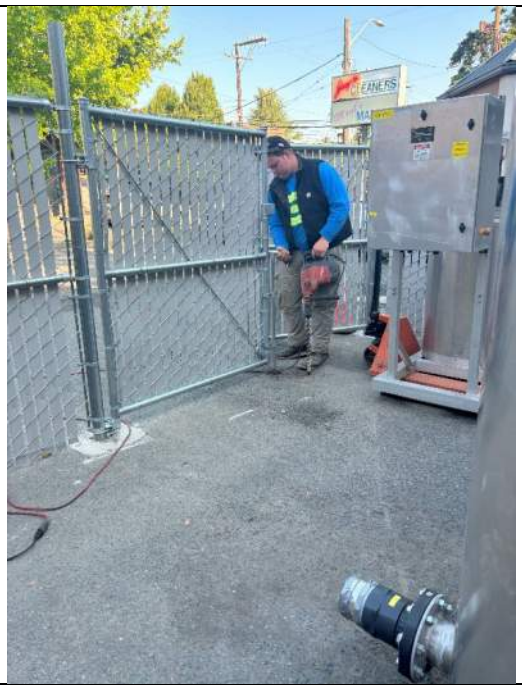
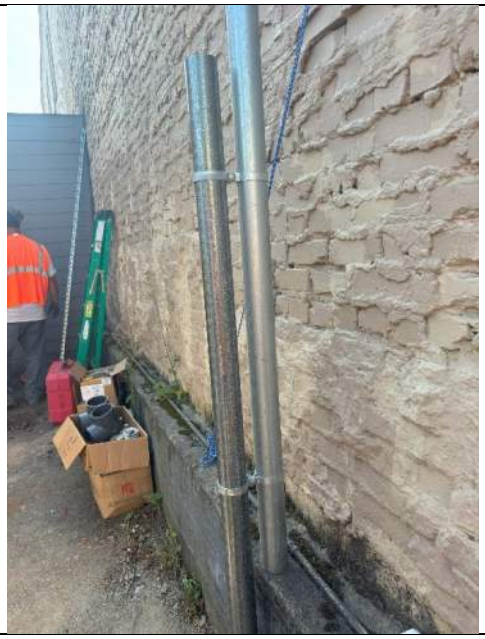
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Hydraulic Jack	0	7
Glacier	Generator	7	0
Glacier	Air Compressor	7	0
Glacier	Sawcutter	5	0
Glacier	Jackhammer	5	0

Cayla Whiteside, P.E. (7/31/2024)

Ryan Hultgren, P.E. (7/31/2024)

Photos

	
Caption 1: Double gate middle fence post hole being drilled.	Caption 2: Trench for sanitary sewer discharge line.
	
Caption 3: Air discharge stack.	Caption 4: South gate dummy post being installed.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/31/2024)

Ryan Hultgren, P.E. (7/31/2024)

Cayla Whiteside, P.E. (7/31/2024)

Ryan Hultgren, P.E. (7/31/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/29/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 42
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0700 KJ on site. 0830 Glacier on site (James) 0840 Glacier begins opening up fencing 0850 James digging in drain line trench 0900 Glacier (Todd) on site 1055 Glacier penetrates catch basin for drain line. Drain line will be shallow, 1-1.5 ft below ground surface with detectable warning tape laid above pipe due to shallow catch basin depth. 1145 Glacier begins emptying drummed material into James's truck to haul off site. 1240 James off site to dispose of excavated material, all drums on site now empty. 1300 Glacier begins laying drain pipe. 1335 James back on site, loads empty drums into the bed of his truck. 1345 James off site with empty drums. 1350 Todd patches hole in catch basin around drain pipe. 1420 Todd begins cleaning up, notes that Glacier may not arrive until 800 tomorrow morning. 1445 all off site
Subcontractor: Cascade Environmental Services
0910 Cascade on site 0920 all vapor pin locations measured out, discussed with store attendant and dry cleaner owner. 0935 Cascade set up to drill VP-1 0950 VP-1 installed 1005 VP-2 installed 1025 VP-3 installed, minor carpet damage shown to owner. He indicated that it wasn't a problem for him. 1035 VP-4 installed 1050 Cascade loads up empty drums to haul off site 1105 Cascade off site
Deliveries / Pick-ups / Miscellaneous
0740 mini excavator dropped off on site by rental company

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Cayla Whiteside

Cayla Whiteside, P.E. (7/30/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (7/30/2024)

None				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Cayla Whiteside

Cayla Whiteside, P.E. (7/30/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (7/30/2024)

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	7.0	0.0
Glacier	0	Project Manager	0.0	0.0

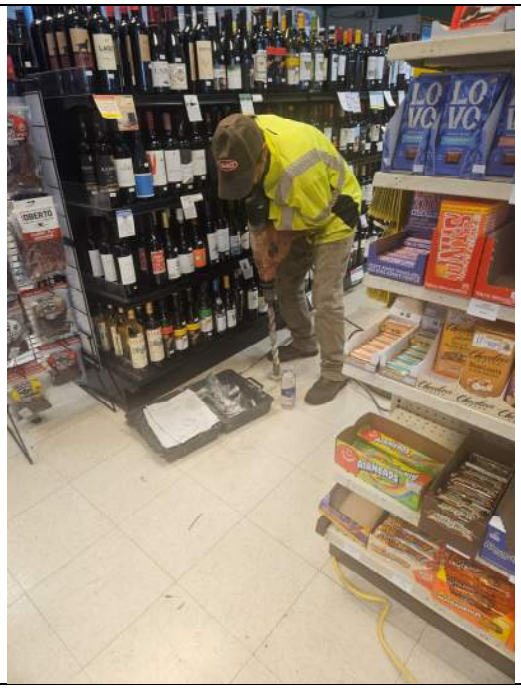
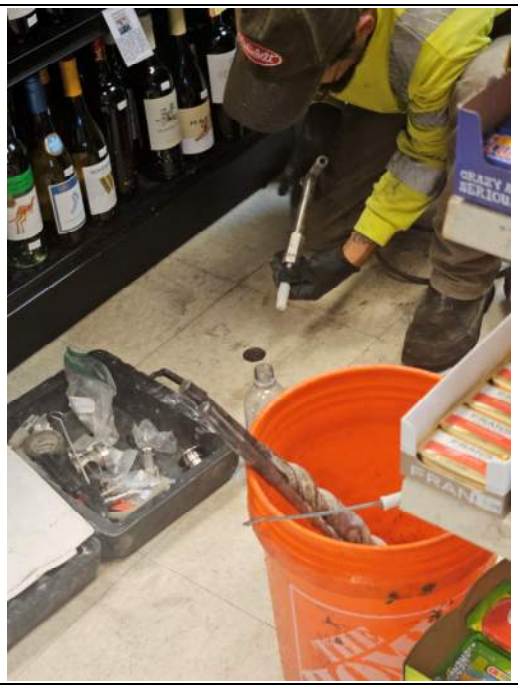
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	1.0	6.0
Glacier	Air Compressor	0.0	7.0
Glacier	Mini excavator	2.0	5.0

Cayla Whiteside, P.E. (7/30/2024)

Robert Ardissono, E.I.T. (7/30/2024)

Photos

	
Caption 1: VP-1 being drilled inside of Mont's market.	Caption 2: VP-1 being installed in Mont's Market.
Caption 3: Empty drums being hauled off site.	Caption 4: Drain Line outlet installed in catch basin

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (7/30/2024)

Robert Ardissono, E.I.T. (7/30/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/30/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 43
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0745 KJ on site, Glacier (Todd and Thayne) and JHS electricians already on site. 0835 Thayne off site. 0900 Glacier (James) on site with cement mixer, rock, and ready mix. 0910 Glacier sets up cement mixer. 0915 Glacier begins digging out surface rock and breaking up asphalt patch in SSD-2 trench. 0940 Glacier prepares to mix concrete. 1000 Glacier begins pouring concrete over SSD-2 trench 1050 Glacier begins backfilling the drain line trench, installs detectable warning tape. 1135 Glacier begins pouring concrete around base of pipe manifold 1300 Glacier finishes and dyes concrete around piping manifold, begins cleaning up. 1410 all off site.
Subcontractor: SHJ
0745 SHJ on site. 0800 SHJ heads off site to buy materials. 1030 SHJ back on site, begin working on control panel, placing conduit to connect to oxygen generator. 1330 SHJ finishes up for the day, heads off site.
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
None				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Cayla Whiteside

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (8/5/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/30/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 43
CSID #5089

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	7.0	0.0
Glacier	1	Project Manager	1.0	0.0
SHJ	2	Electricians	6.0	0.0

Cayla Whiteside

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (8/5/2024)

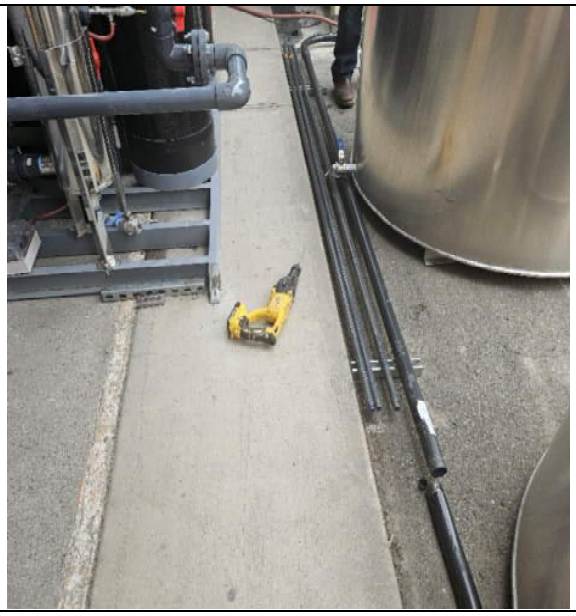
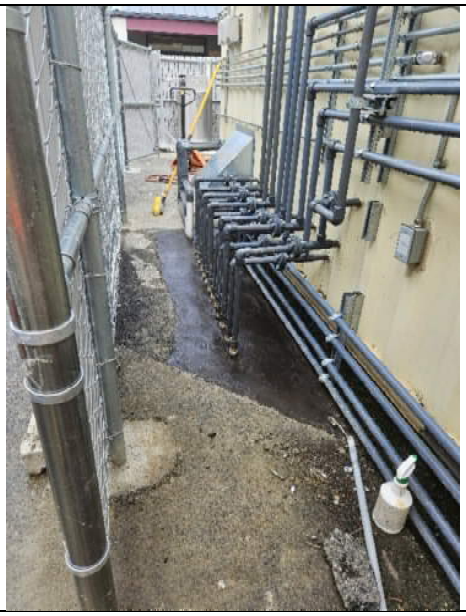
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	3.0	4.0
Glacier	Cement Mixer	3.0	4.0
Glacier	Mini excavator	0.0	7.0

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Photos

Caption 1: Concrete surface over SSD-2 Trench.	Caption 2: Conductible warning tape installed in drain line backfill.
	
Caption 3: Electrical conduit being installed by JHS.	Caption 4: Dyed and finished concrete around the base of the pipe manifold.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 07/31/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 44
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0650 KJ on site, Glacier on site setting up and JFW (welder) already working. 0720 James off site for supplies. 0825 Stephanie on site, safety talk and introduction. 0850 James back on site. 0900 Glacier begins mixing and pouring concrete over drain line trench. 1000 Glacier finishes and dyes concrete over drain line trench. 1040 Glacier cuts PVC pipes for manifold connections. 1145 Glacier starts cleaning up. 1235 Glacier off site. 1400 all off site.
Subcontractor: SHJ - electricians
0745 SHJ on site. 0800 SHJ off site to hardware store. 1030 SHJ back on site, begin working on conduit between control panel and oxidizer. 1100 SHJ off site 1240 SHJ back on site to finish connection to oxidizer. 1350 SHJ finished up with conduit to oxidizer, putting in wire order for tomorrow. City power inspection may also happen tomorrow. 1400 SHJ off site.
Subcontractor: JFW - welders
0650 JFW is welding on brackets at the 4 corners of the shipping container to connect it to its base. 0840 JFW finished up and off site
Deliveries / Pick-ups / Miscellaneous
0820 NC CAT Rentals on site to pick up mini excavator.

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
None				

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	6.0	0.0
JFW	2	laborer	2.0	0.0
SHJ	2	Electricians	6.0	0.0

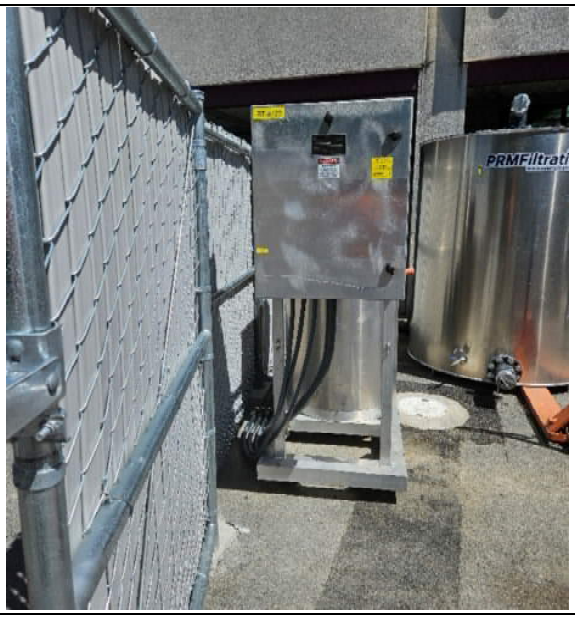
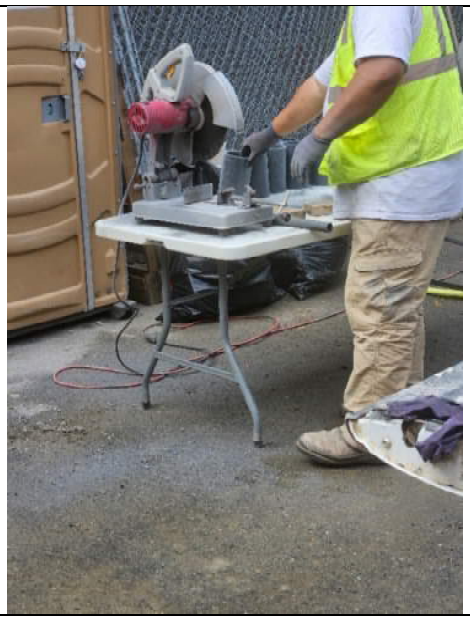
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	1.0	5.0
Glacier	Cement mixer	1.0	5.0
Glacier	Mini excavator	0.0	2.0
Glacier	Chop Saw	1.0	5.0
JFW	Welder	2.0	0.0

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Photos

Caption 1: Glacier finishing the concrete surface over the drain line.	Caption 2: Welded bracket connecting shipping container to footer.
	
Caption 3: Electrical conduit connected to oxidizer.	Caption 4: Glacier cutting pipe sections for manifold.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/01/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 45
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0645 KJ on site, Glacier (James) already on site. 0715 Ray on site with pipe rack and coalescer tank in F550 0730 Glacier (Todd) on site, begin unloading pipe rack and coalescer tank to install today. 0740 Glacier (Thayne) on site. 0745 Ray off site. 0810 Glacier sets up chop saw and prepares to cut pipe and build vapor GAC tank control manifold. 1035 Glacier finishes vapor GAC tank control manifold, starts working on mounting the coalescer tank. 1130 Glacier mounts coalescer tank and measures piping to connect it to the GAC vessel manifold. 1300 Glacier finishes connecting piping to coalescer tank, begin working on outlet connection for vapor GAC manifold. 1410 Glacier finishes outlet connection from vapor GAC manifold, ends work for the day, starts cleaning up. 1440 All off site
Subcontractor: SHJ
1000 City of Seattle electrical inspector on site with SHJ electrician. 1020 Electrical inspection passed, SHJ and inspector off site. 1335 Seattle City Light electrical inspector on site. 1340 Seattle City Light electrical inspector off site.
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
None				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Cayla Whiteside

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (8/5/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/01/2024
INSPECTOR'S NAME: ROBERT ARDISSONO
REPORT NUMBER: 45
CSID #5089

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	8.0	0.0
Glacier	1	Project Manager	8.0	0.0
SHJ	1	Electricians	0.5	0.0

Cayla Whiteside

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono

Robert Ardissono, E.I.T. (8/5/2024)

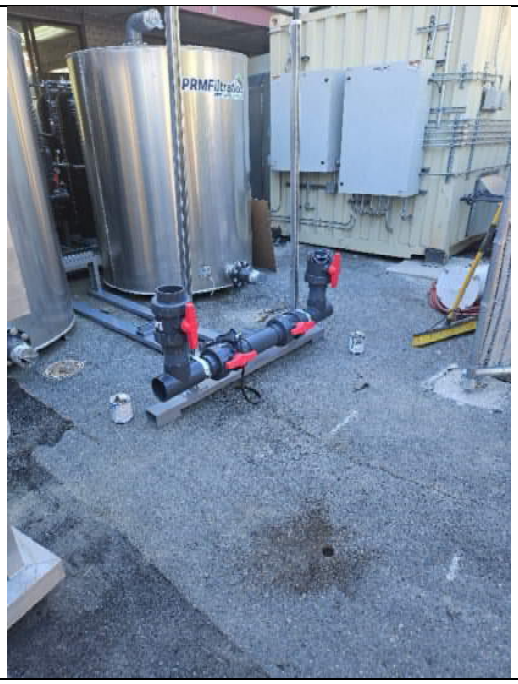
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	5.0	3.0
Glacier	Chop Saw	5.0	3.0

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Photos

	
Caption 1: Pipe Rack placed in front of vapor GAC tanks.	Caption 2: Vapor GAC manifold being constructed
Caption 3: Completed Vapor GAC manifold with coalescence tank connected between vapor GAC vessels.	Caption 4: Electrical inspection approval from the City of Seattle.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/5/2024)

Robert Ardissono, E.I.T. (8/5/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/02/2024
INSPECTOR'S NAME: STEPHANIE JONES
REPORT NUMBER: 46
CSID #5089

Construction Activities

Time	Description
Prime Contractor: Glacier	
	0645 Glacier (Thayne, James) on site. 0715 KJ (Stephanie) on site. Scope of work for today: outside plumbing. 0730 Glacier starts working on quick disconnects for heat exchanger on top of Conex. 0740 Todd arrives with more schedule 80 pipe. 0755 Todd leaves to get more supplies. 0800 James and Thayne work together on vapor piping to system on ground level, James uses a circular saw to cut and taper more piping. 0910 Todd returns to site with more piping supplies. 1035 Glacier takes lunch break. 1050 Glacier resumes with work. 1200 Glacier finishes piping between Falco 300 tank and vapor GAC frame. 1205 Glacier begins to install more piping to vapor GAC frame. 1240 Glacier moves back to roof of conex to install flexible hose and galvanized steel piping. 1300 Glacier uses deep cut band saw to cut metal for mount on roof of conex. 1330 Mounts installed on side of Jay's Cleaners building to hold schedule 80 piping. 1355 Glacier packing up. 1430 KJ and Glacier off site.
Subcontractor:	
None	
Deliveries / Pick-ups / Miscellaneous	
None	

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions

Cayla Whiteside, P.E. 08/05/2024

Stephanie Jones 08/05/2024

N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
None			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Commuters surrounding, be conscious of not just people working on site but those driving around Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Cayla Whiteside, P.E. 08/05/2024

Stephanie Jones 08/05/2024

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	8.0	0.0
Glacier	1	Project Managers	8.0	0.0

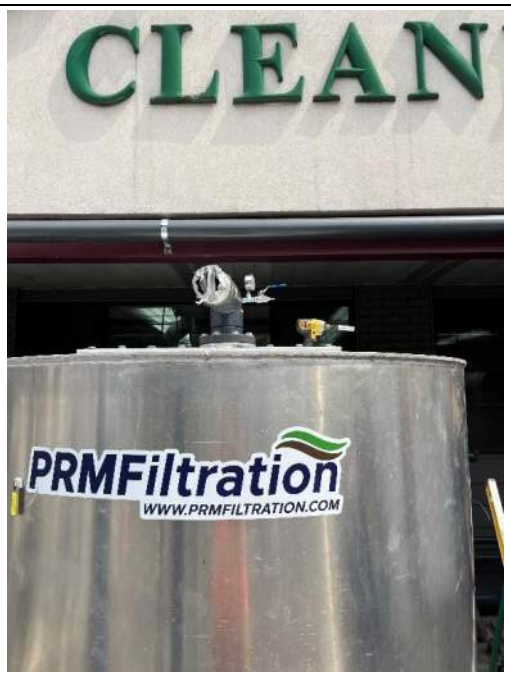
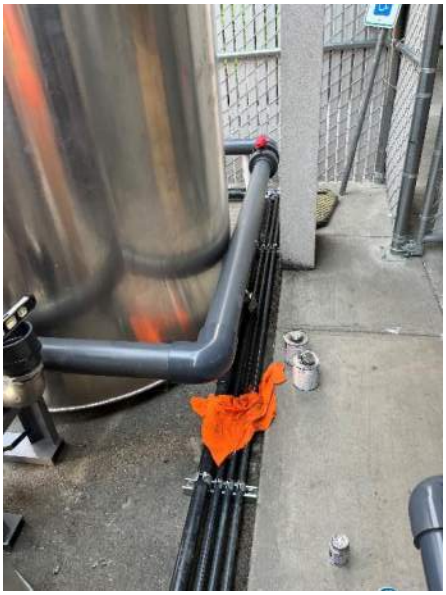
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	6.0	2.0
Glacier	Circular Saw	3.0	5.0
Glacier	Deep Cut Band Saw	3.0	5.0

Cayla Whiteside, P.E. 08/05/2024

Stephanie Jones 08/05/2024

Photos

	
Caption 1: Vapor GAC Schedule 80 Piping Manifold	Caption 2: Tape on top of inlet/outlet of GAC tank falling off
	
Caption 3: Todd mounting piping to Jay's Cleaners building	Caption 4: Piping around left vapor GAC tank

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. 08/05/2024

Stephanie Jones 08/05/2024

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/05/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 47
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0705 Ella (KJ) on site. James (Glacier) already on site, says that Thayne and Todd are picking up supplies and will be onsite shortly. 0750 Thayne on site, he says they will be continuing to connect piping to vapor GAC tanks today. 0755 Todd on site. Glacier unloading piping and preparing to work 0820 Glacier starts working on connecting 4" SCH 80 piping, gluing elbows at vapor GAC manifold facing street in preparation for adding hose connection to bottom of tanks. James using a circular saw to cut lengths of piping and taper ends. 0900 Glacier connecting/gluing 4" SCH 80 piping from roof of system to vapor GAC tanks. 1000 Thayne working on cutting and installing metal supports for ground level piping in NW corner of fenced area leading to catalytic oxidizer. 1115 Glacier finished connecting overhead piping from GAC to roof, finish installing support for ground-level piping in NW corner. 1300 Glacier working on cleaning/tidying up site. 1350 Thayne off site. Todd and James lock up site 1405 all off site.
Subcontractor: SHJ
1115 SHJ electricians on site to install wiring connections for catalytic oxidizer. Three employees. 1350 SHJ electricians finished, off site.
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
None				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair, E.I.T. (8/13/2024)

No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	7.0	0.0
Glacier	1	Project Manager	7.0	0.0
SHJ	3	Electricians	2.5	0.0

Cayla Whiteside

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair

Ella Clair, E.I.T. (8/13/2024)

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	5.0	2.0
Glacier	Chop Saw	4.0	3.0

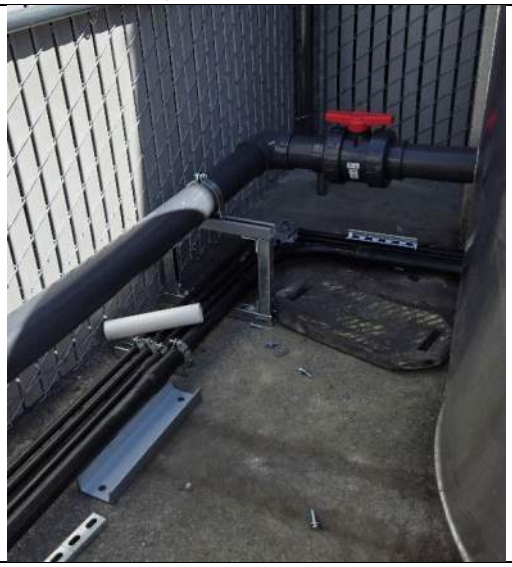
Cayla Whiteside, P.E. (8/13/2024)

Ella Clair, E.I.T. (8/13/2024)

Photos

Caption 1: Length of 4" diameter schedule 80 pipe being cut and tapered to prepare for connection to vapor GAC vessels/coalescer.

Caption 2: Completed connection between roof of system and vapor GAC vessels/coalescer tank.



Caption 3: Completed support for ground-level piping in NW corner of fenced area.

Caption 4: SHJ electricians installing wiring for catalytic oxidizer.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair, E.I.T. (8/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/06/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 48
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0715 Ella (KJ) on site. James (Glacier) already on site, he says that Todd is picking up supplies from the store and Thayne is building something in the shop, they will be on site later. James sweeping up site. 0745 Thayne on site. 0800 Todd on site. 0835 Fence rental company crew on site to pick up temporary construction fencing. 0900 Fence rental company crew off site. Todd and James digging out gravel in area around well MW-4 (exposing well casing) and preparing to install wellhead and monument. 0930 Glacier asks about size of hole needed to be drilled into pitless adaptors. KJ confirms 3/8". Todd and James work on using drill bit and power drill to make holes in pitless adaptors. 1023 Dave with Seattle city light (SCL) on site. Looking at electrical box at SE side of site, at light pole. Measures meter location relative to fence pole, says that the requirement is 18" of clearance between center of meter and fence post. Current distance is 15.75". Also, inspection sticker/meter needs to have an address that is different from store/shop address (due to existing meters there). Mentions that there may be an issue with meter being behind a locked gate, but that it may be OK if the meter can be read through the fence (i.e., if the fence slats are removed or a window cut). Inspector says that he will speak with electricians about these issues. 1040 SCL inspector off site. Glacier continues to work on pitless adaptors, putting together 1" piping that connects to adaptor and goes down well. Measured to be ~18ft (longer than minimum 13ft per drawings) but Glacier says will easily cut down following draw down testing which will happen later. 1150 KJ asks Thayne about work activities the rest of the week. They are still working on getting equipment for the drawdown testing, parts for the wells are arriving on Thursday so they will likely be installed Friday. Tomorrow will likely be spent continuing building pitless adaptors and connecting piping inserts for wells (whatever is not completed today). 1203 Thayne off site. Todd uses powered small rotary tool to cut down PVC casing of RW3. 1420 Glacier wrapping up for the day, installed 9 pitless adaptors and piping today, will finish the rest tomorrow. 1445 all off site.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous
0835 Temporary construction fencing picked up by rental company. 0900 Rental company off site with temporary construction fencing.

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
None				

Cayla Whiteside

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair

Ella Clair, E.I.T. (8/13/2024)

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
Dave	Seattle City Light	8/6/24 20 minutes	Inspecting electrical box with meter (SE area of the sight between the system container and fence). Measured distance between center of where the electric meter will be and the fence post, claims that the minimum clearance distance is 18" (measures only 15.75" currently). Mentions that the meter (and associated inspection sticker) will need to have their own address separate from the shop and dry-cleaners, and that the meter readers may have an issue with the meter being behind a locked fence. Thayne (Glacier) says that the fence slots can be removed or cut out so the meter can be visible through the fence. SCL says they will follow up with the electrician.

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Cayla Whiteside

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair

Ella Clair, E.I.T. (8/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/06/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 48
CSID #5089

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	7.5	0.0
Glacier	1	Project Manager	4.25	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	0.0	7.5
Glacier	Small circular rotary tool	0.5	7.0

Cayla Whiteside

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair

Ella Clair, E.I.T. (8/13/2024)

Photos

Caption 1: Glacier drilling hole in center of pitless adaptor with drill bit.	Caption 2: View of 3/8" diameter hole drilled in center of pitless adaptor.
Caption 3: Connected 1" PVC piping to pitless adaptor.	Caption 4: Glacier using a small circular rotary tool to cut down the PVC casing on well RW8 so that the well cap will fit with enough clearance for the well monument and lid to close properly.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair, E.I.T. (8/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/07/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 49
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0705 Ella (KJ) on site. James (Glacier) already on site. He is sweeping up the sidewalk area east of the system container in preparation for installing the secondary containment. 0800 Todd on site. Talk with James about cleaning up sidewalk so that they can apply sealant for secondary containment, will bring in vacuum tomorrow to get into hard to reach places like around Liquid GAC tanks. Todd unloads additional 1" PVC to continue work on pitless adaptors for remaining wells. 0925 Glacier finished installing pvc and pitless adaptors in wells. Head off site to Home Depot to pick up supplies. 1100 Glacier back on site. Begin constructing parts for connecting underground piping to RW6 well. 1250 finish gluing and connecting PVC connection on MW4 well. Glacier mentions that they will be replacing the nozzle with a quick connect later. Glacier cleaning up site, they say that they will start installing the secondary containment tomorrow. 1315 Glacier locking up site. Leave for the day.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
None				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair, E.I.T. (8/13/2024)

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	6.0	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair, E.I.T. (8/13/2024)

Photos

Caption 1: Glacier gluing and connecting PVC pieces for pitless adaptors.	Caption 2: Unfinished MW4 well.
Caption 3: Glacier working on connecting piping at MW4 well.	Caption 4: Finished MW4 well. Glacier noted that the barb on top of white PVC will be replaced with a quick disconnect fitting later.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair, E.I.T. (8/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/08/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 50
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0710 Ella (KJ) on site. Glacier (Todd and James) on site. Prepping to vacuum and clean up area of sidewalk for secondary containment east of system container. 0725 Glacier using shop vac to remove dirt and debris from concrete, also painting wood boards (4"x6"x16' pressure treated) bright yellow to avoid being a trip hazard once install. 0800 Thayne on site. 0830 Glacier working on taking out conduits against dry cleaner wall so they can install secondary containment wall, the plan is to re-install it on top of the wood beams of the secondary containment wall. 1045 Glacier drilling holes into painted beams for installing/bolting and constructing secondary containment. 1200 Glacier starts bringing beams over and constructing secondary containment in place. Bolt down beams down into concrete and flush against dry cleaners wall. Place black foam seal underneath seam on inside of beams. 1400 Glacier starts cleaning up for the day. 1430 Glacier locks up the site. All off site, Thayne mentions they will continue to build containment tomorrow. He will pick up the well pumping equipment tomorrow evening and they will conduct the pump tests on Monday or Tuesday next week.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
None				

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Cayla Whiteside

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair

Ella Clair, E.I.T. (8/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/08/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 50
CSID #5089

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborers	7.5	0.0
Glacier	1	Project Manager	6.5	0.0

Resources – Equipment

Cayla Whiteside

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair

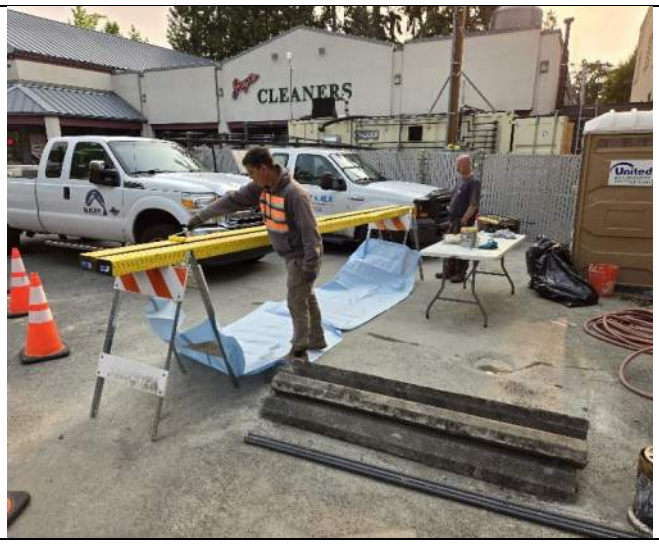
Ella Clair, E.I.T. (8/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/08/2024
INSPECTOR'S NAME: ELLA CLAIR
REPORT NUMBER: 50
CSID #5089

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	5.0	2.5

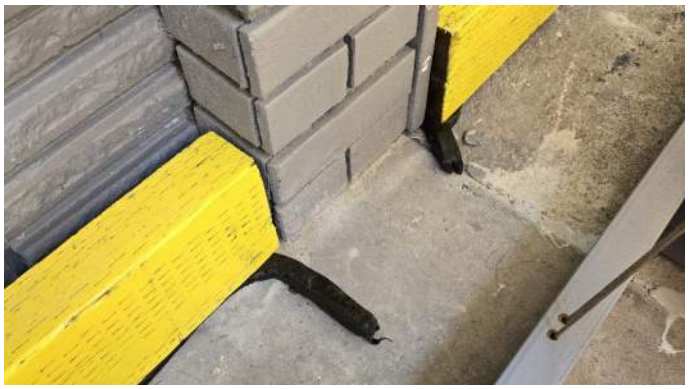
Photos



Caption 1: Glacier painting the walls of the secondary containment yellow.

Caption 2: Glacier cutting beams to specified length for the construction of secondary containment walls.

Caption 3: View of wall against dry cleaners, following the removal of the ground-level conduit and prior to installation of the secondary containment wall.



Caption 4: View of installed east walls of secondary containment, with black seal visible sticking out from underneath walls.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside

Cayla Whiteside, P.E. (8/13/2024)

Ella Clair

Ella Clair, E.I.T. (8/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/12/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 52
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0700 Mike with KJ and Thayne with Glacier onsite. 0730 Mike and Thayne discuss scope of work. 0800 Glacier gets set up on RW-8 for pump testing. 0900 Glacier finishes trouble shooting and surging the well. YSI and turbidity meter set up. 1 GPM achieved. 0930 After 3 rounds of parameters taken, 1GPM had too high of a flow rate to sustain. Significant drawdown. Reduced flow to 0.5 GPM to attempt to get parameters. 1000 Glacier sets up on SW-1. Draw down was higher than anticipated, waiting for well to recharge before test commences. 1125 Glacier set up on SW-1. Test commences. 1145 Fault detected reading on pump control. Thayne opens pump to work on fixing unknown issue. 1200 Pump issue persists. Electrical burning smell is coming through the pump and rattling sound observed. A new pump is required. 1215 Glacier cleans up the site and prepares for overnight storage. 1245 Mike and Thayne offsite. Thayne is bringing a new pump, a bailer, and a few other supplies for tomorrow's activities.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Pump	8/12/2024		A drop in pumping abilities was observed during the second well pump test/parameter collection. Burning smell observed.	A new pump is to be rented this afternoon/ evening. A bailer is being brought tomorrow for clearing out sediment prior to surging the well with pump.
Flow Meter	8/12/2024		Determining accurate flow rates below 0.75 G/M was difficult due to the nature of the pump controller's sensitivity.	KJ and Glacier decided to calculate flow rates by measuring the time it took to fill a water bottle and converting that value to gallons/minute.

Rejected Work

Cayla Whiteside

Cayla Whiteside, P.E. (8/13/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (8/13/2024)

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
8/12/24	Well Drawdown (RW-8, SW-1)	Glacier (Thayne)		Circle K - Well Parameters & Pump Test.ods

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Cayla Whiteside, P.E. (8/13/2024)

Michael McIntosh, G.I.T. (8/13/2024)

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	6.0	0.0

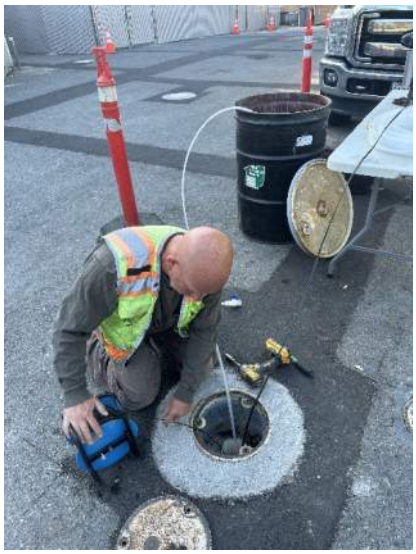
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	0	0

Cayla Whiteside, P.E. (8/13/2024)

Michael McIntosh, G.I.T. (8/13/2024)

Photos

Caption 1: Pump control used by Glacier for pump testing today.	Caption 2: Flow meter used during today's pump tests. Had difficulty sensing sub 0.75 GPM.
	
Caption 3: Thayne with Glacier taking a depth to water measurement at RW-8.	Caption 4: View of groundwater parameters and pump test working station.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/13/2024)

Michael McIntosh, G.I.T. (8/13/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/13/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 53
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0700 KJ and Glacier onsite. 0730 Glacier begins setting up on SW-1. Needs to redo pump test. 0745 Glacier bails out SW-1 prior to pump test. 0821 First round pump test complete. Waiting for well recharge. 0830 Thayne begins bailing out after from SW-2 while SW-1 recharges. 0950 Beginning second round of pump tests at SW-1. 10:25 Pump testing complete. Glacier begins setting up at SW-2. Thayne placing injector pipe into SW-1. 1130 Glacier sets up at SW-3. 1220 Issue with pump at SW-3. Pump fixed, turbidity compromised for last round of pump test. Pump appears to work fine if starting vertically. If starting at an angle, pump appears to develop air pocket that doesn't allow for full pumping abilities. 1245 Lunch break started 1300 Lunch over. Setting up on RW-10. 1425 Pump test at RW-10 completed. Wrapping up site for overnight storage. 1500 Everyone offsite.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Pump	8/13/2024		The pump suffers pressure loss when starting at a non-vertical angle.	This is a non-issue for the vertical wells, but for the slanted wells the contractor made sure to keep the pump vertical as much as possible during the initial flow rate measurements.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions

Cayla Whiteside

Cayla Whiteside, P.E. (8/15/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (8/15/2024)

N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
8/12/24	Well Drawdown (SW-1, SW-2, SW-3, RW-10)	Glacier (Thayne)		Circle K - Well Parameters & Pump Test.ods

Scheduled Operations

Item	Description
N/A	

Cayla Whiteside, P.E. (8/15/2024)

Michael McIntosh, G.I.T. (8/15/2024)

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	6.0	0.0

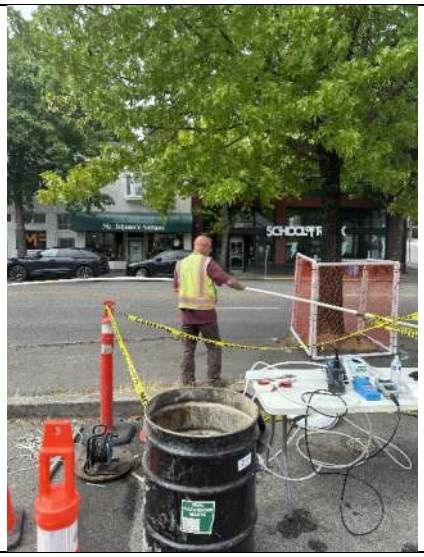
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	0	0

Photos

Cayla Whiteside, P.E. (8/15/2024)

Michael McIntosh, G.I.T. (8/15/2024)

Caption 1: SW-1 tubing set up for pump test.	Caption 2: HEX heat exchanger connected to flexible pipe on top of container.
	
Caption 3: Thayne with Glacier preparing to move gear over to SW-2.	Caption 4: Pump test set up for SW-2.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/15/2024)

Michael McIntosh, G.I.T. (8/15/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/15/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 54
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0700 KJ and Glacier onsite. 0715 setting up at RW-9 for pump testing. 0810 Pump testing complete for RW-9. Moving setup to RW-7. 0845 Thayne cuts injection pipe for RW-9 to 13 ft BGS. Pump test completed at 0905. 0910 Glacier sets up at RW-4 for pump testing. 0955 End of pump test for RW-4. Glacier sets up at RW-5. 1000 Fernando with ERRG onsite to inspect current system setup on 1100 Glacier set up on RW-6. Pump test was completed at 1140. 1145 Glacier sets up on MW-4. Debris present in MW-4 around 14 feet BGS. Pump test was completed at 1240. 1245 Glacier sets up on RW-8. Pump test was completed at 1340. 1310 Spencer with ERRG onsite to inspect system. 1345 Glacier sets up on RW-2 for final pump test. 1430 Final pump test complete. Glacier begins to prepare site for overnight storage. 1500 KJ and Glacier offsite.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Cayla Whiteside, P.E. (8/20/2024)

Michael McIntosh, G.I.T. (08/20/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/15/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 54
CSID #5089

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
8/12/24	Well Drawdown (SW-1, SW-2, SW-3, RW-10)	Glacier (Thayne)		Circle K - Pump Test Data.xlsx

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Project Manager	6.0	0.0

Resources – Equipment

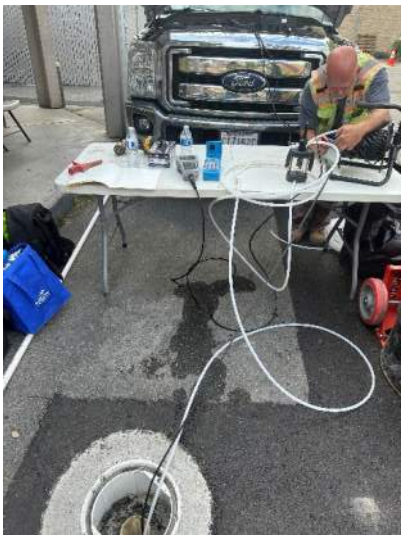
Contractor	Make / Model	Hours In-Use	Hours Standby

Cayla Whiteside, P.E. (8/20/2024)

Michael McIntosh, G.I.T. (08/20/2024)

Glacier	Generator	0	0

Photos

Caption 1: Pump test set up.	Caption 2: Glacier performing pump test on RW-5.
	
Caption 3: Pump test for RW-9.	Caption 4: Glacier setting up pump depth for pump test.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/20/2024)

Michael McIntosh, G.I.T. (08/20/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/19/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 55
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0700 KJ and Glacier (Todd and James) onsite. Discussing scope of work for today. 0715 Glacier begins getting prepared for work. The first task is mounting electrical boxes/lines along the outside wall of the dry cleaners. Sidewalk panels were marked on Friday (8/16) for upcoming replacement by SDOT and Glacier. 0830 Glacier running float connection wiring along NW side of remediation shed to HEX fan on roof of shed. 0930 Todd with Glacier offsite to purchase supplies. 1050 Todd returns with filler and sealant. James was combining and organizing supplies onsite during this time. 1120 Glacier installing well cap for RW-10 and injection pipe. 1230 Todd with Glacier continues to trim injection pipes and install well caps and injection pipe caps. 1330 Glacier formulates plan for tomorrow's work. 1400 Glacier cleans up the site. Prepares for overnight storage. 1430 Everyone offsite.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Cayla Whiteside, P.E. (8/21/2024)

Michael McIntosh, G.I.T. (08/21/2024)

N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborer	8.0	0.0

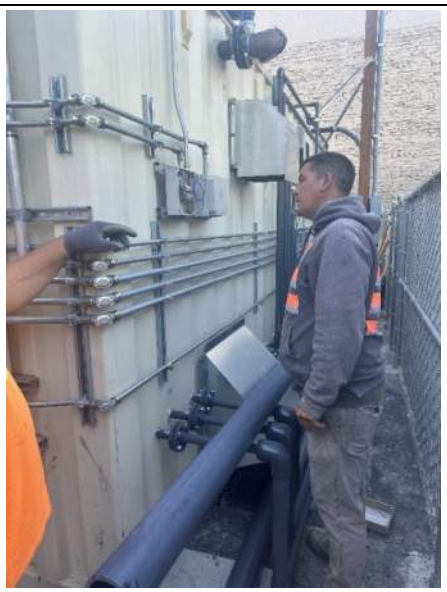
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	0	0

Photos

Cayla Whiteside, P.E. (8/21/2024)

Michael McIntosh, G.I.T. (08/21/2024)

	
Caption 1: SW-1 well cap and injection pipe cap.	Caption 2: Glacier working on conduit connection to HEX.
Caption 3: Todd with Glacier installing cap for injection pipe.	Caption 4: Dimensions marked by COT for sidewalk panel replacement.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/21/2024)

Michael McIntosh, G.I.T. (08/21/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/20/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 56
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0700 Glacier (Todd and James) onsite. 0710 Mike with KJ onsite. 0715 Glacier begins moving electrical boxes behind the remediation shed. 0800 James with Glacier clearing out MW-4 excavation to begin pouring monument. 0830 Glacier cleaning out bentonite around bases of slanted wells, prior to concrete pouring. 0845 Todd with Glacier installing well caps and injection pipe caps on slanted wells. 0930 Glacier repacks material around base of MW-4 well cover. Creating a compacted base for concrete pouring. 1000 Glacier placing concrete at base of MW-4. Begins pouring concrete monument for MW-4 after. 1100 Glacier cutting 4-inch PVC for pipe fittings to tanks. 1230 Glacier installing upright PVC section along southern end of dry cleaners. Installing metal brackets for support. 1400 Glacier tightening nozzles onto activated carbon devices behind the containers. 1430 Glacier measuring PVC pipe length for connecting pieces towards large containers. 1500 Everyone offsite.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Cayla Whiteside, P.E. (8/21/2024)

Michael McIntosh, G.I.T. (08/21/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/20/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 56
CSID #5089

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary
KJ / Glacier	Site Safety		Small area with high foot traffic, use spotters. Slips, trips, and falls. Proper PPE always worn. Drinking water.

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes

Scheduled Operations

Item	Description
N/A	

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	2	Laborer	8.0	0.0

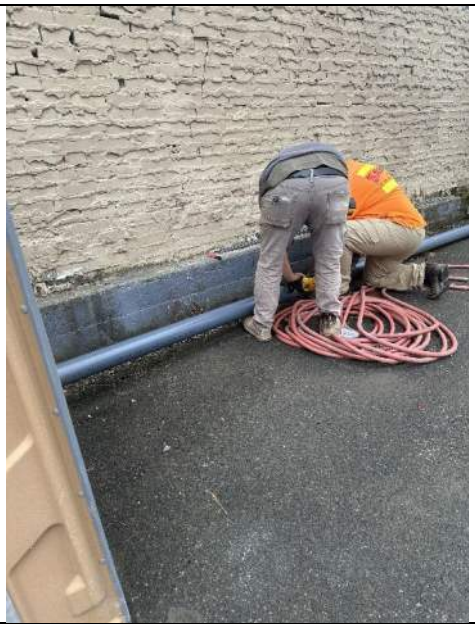
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	0	0

Photos

Cayla Whiteside, P.E. (8/21/2024)

Michael McIntosh, G.I.T. (08/21/2024)

Caption 1: Glacier installing metal brackets for PVC upright section.	Caption 2: Glacier preparing to place concrete at base of MW-4.
	
Caption 3: Glacier cutting PVC pipe for upright installation.	Caption 4: Glacier preparing to place concrete around MW-4.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/21/2024)

Michael McIntosh, G.I.T. (08/21/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 08/29/2024
INSPECTOR'S NAME: MICHAEL MCINTOSH
REPORT NUMBER: 57
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0900 Mike with KJ onsite. 0945 Fernando with ERRG onsite. No bottle set brought, has list of bottles that will be used. 0950 Thayne (Glacier) and Spencer (ERRG) onsite. 1000 Thayne said electrical might be scheduled for within the next two weeks. Will confirm. Brittany (King County Industrial Wastewater) onsite. 1005 Inspection of remediation system. 1015 ERRG walking through sampling procedure and supplies used. Brittany notes may neeed to upgrade flow meters to be able to report daily flow amounts instead of having them come out daily. 1035 King County inspector offsite. 1045 Thayne with Glacier goes over potentially replacing flow meter for one that updates daily. 1100 Everyone offsite.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome
Flow meter at discharge to sanitary sewer does not record daily flow rates, only instantaneous rate and total flow	8/30/24	KCIW WDA Permit	N/A	KJ requested via email and KCIW approved via email calculating an average daily discharge volume based on weekly (or monthly) measurements in lieu of recording this data daily and/or having a meter capable of doing so.

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Cayla Whiteside, P.E. (8/30/2024)

Michael McIntosh, G.I.T. (08/30/2024)

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
Brittany	King County	08/29/2024 10:00 – 10:30	To inspect the pretreatment system.

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
King County / KJ / ERRG / Glacier	Pretreatment Inspection			A spill kit is needed on site. Flow meter does not record daily volume. ERRG may request to sample midpoint of GACs monthly instead of weekly.

Scheduled Operations

Item	Description
N/A	

Cayla Whiteside

Cayla Whiteside, P.E. (8/30/2024)

Michael McIntosh

Michael McIntosh, G.I.T. (08/30/2024)

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	1.0	0.0

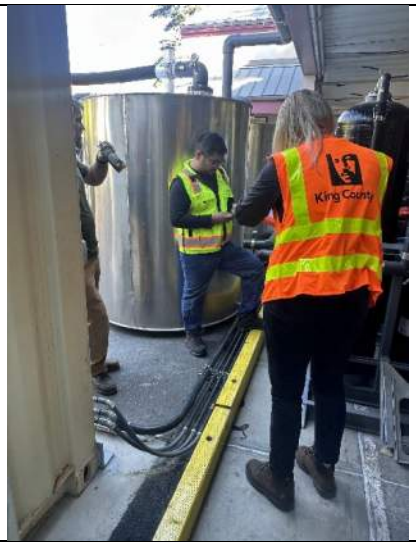
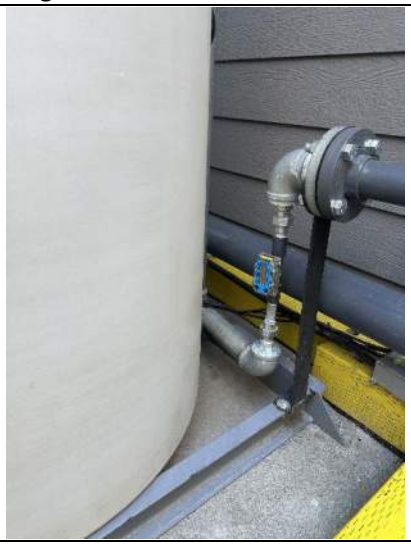
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Generator	0	0

Cayla Whiteside, P.E. (8/30/2024)

Michael McIntosh, G.I.T. (08/30/2024)

Photos

Caption 1: Corrected valve orientation on second pair of GACs.	Caption 2: King County rep inspecting flow meter near sewer discharge.
	
Caption 3: Inspector noting sample location between GACs and ERRG explaining process.	Caption 4: Flow meter in question that doesn't record daily flow rates.

**All photos have been uploaded to SharePoint.*

Cayla Whiteside, P.E. (8/30/2024)

Michael McIntosh, G.I.T. (08/30/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 10/29/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 58
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0700
Justin w/ PRM
Thayne w/Glacier
Neil w/SHJ Electric

- Requested pipe pressure test records
- Glacier filling T-301 tank for pressure testing
- Float connection for T-301 & T-400 has water and visible rust. Justin said they were outdoor rated but didn't know to what standard.
- Incorrect rotation on P-400
- P-400 and P-401 mis-wired
- PRM bled air through liquid GACs.
- Bumped exhaust fan, gravity louvers opened.
- Observable heat coming from heater at one point, ie working
- Decibel measuring 70 at sidewalk in between traffic. Need to measure early in morning or night.
- Testing CatOx. Checking that system comes up to temperature and VCV valve closes. Looking at signals back and forth. Valve closed and air pulled through air dilution valve of MS tank that was manually opened. Usually will be closed and would open vac relief. Will make excessive noise when that occurs.

1100

- Sparky Neil offsite for the day
- Liquid GAC: P-400 discharge pressure at 28psig. PI-400 = 28psig, PI-401=27.5, PI-405=27.5psig
- Justin testing T-400 floats. Some mis-wired
- Testing MS T-300 float by filling with water and P-300 operation.
- Leak at MS T-300 site glass hose clamp. Justin tightened by hand. Leak appears to have stopped.
- Extraction and injection auto valves not interlocked. Instructed Justin these need to be programmed so cannot both be open at same time from HMI screen. He said that was possible and would look into it.

1325

- Thayne running through checklists

1430

- Thayne offsite to get equipment

1500

- Vac relief valve engaged at ~25"HG. Gauge registered less than 25 Hg slightly upstream. Relief may be less than 27 or 28".

1530

- Tested tank float switches for correct operation and system shutdowns

1600 – offsite

Ryan Hultgren, P.E. (10/30/2024)

Jarod Fisher, P.E. (10/30/2024)

PUNCH LIST ITEMS:

- Add caulking to secondary containment, specifically NE corner
- Add label to PIT 401 box
- Insulation and heat tracing
    - See 40 4 100-3.04 and as built requirements 3.07.
- Provide pipe pressure test records
- Paint outdoor carbon steel fittings that are rusting, per 33 14 16.13-2.03
- Replace rusted components in junction box for T-301 and T-400
- Need moisture seals in electrical boxes per 26 05 33-3.01Q
- Confirm rating of electrical junction boxes from "Saipwell". Conduit should come in from side or bottom. See moisture seals. NEMA 3r Required per specs 26 05 00.
- Falco VCV electrical junction box missing screw
- Replace F400 AA batteries. Provide new batteries for all flowmeters prior to handing off operation.
    - Provide spare batteries for all flow meters
- Leak at LG-402 inlet hose piping
- General housekeeping: screws, broken drills, junction boxes missing secure screws (PIT-401).
- PG's P-403, 404, 406 are 0-50 psig and should be 0-5 psig per 40 63 10. During testing, PI-403 & PI-406 measured ~16 psig. If reducing range, take to 30 psig minimum. PI-404 at 0. Should be replaced to 0-5 psig. All pressure gauges are 2.5" vs. 4.5" per 33 14 16.13-2.08K.
- Oil after cooler rubbing and making excessive noise. Needs bracing back to wall to mitigate or other options.
- PG's 501 to 534 all 0-30 psig and should be 0-15 psig. Need to confirm during testing before changing. 0-30 psig may be acceptable.
- PI-534 missing label
- PI-500 not labeled and 0-100 vs 0-50 psig
- Label all level switches on all tanks: at junction boxes, cables, and locations entering tank.
- Rotate PI-400 to be readable
- Leaking on liq gac LG-403 outlet. Hose too short for cam and groove locks.
- PI-400 mislabeled, should be PI-405 per PRM DWG P&ID-4.
- Need to label unlabeled PG at P-400 as PI-400 per PRM DWG.
- Fix MS T-300 site glass hose leak. May have been addressed but not pressure tested.
- No tags meet general mech work spec requirements. Provide nameplates per 11 00 00 – 2.10.
- Need to label well Banks for quick reference
- Need to test sound with and without HEX operating.
- Label pipes on outside after insulation per specs.
- 4" PVC valve handles are not lockable per 33 14 16.13. As such, provide valve MFG's locking hardware per section 33 14 16.13-2.08A.3.

Subcontractor: SJH Electrical, PRM

Deliveries / Pick-ups / Miscellaneous

Ryan Hultgren, P.E. (10/30/2024)

Jarod Fisher, P.E. (10/30/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 10/29/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 58
CSID #5089

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
N/A		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
Justin ?	PRM	10/29 0700 – 1600	Startup

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
				See Glacier test records

Ryan Hultgren, P.E. (10/30/2024)

Jarod Fisher, P.E. (10/30/2024)

Scheduled Operations

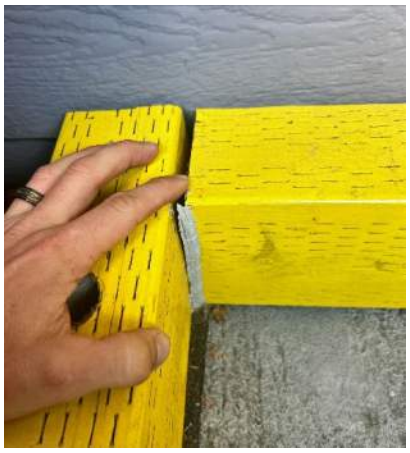
Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	7	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Photos

Caption 1: Moisture in electrical box	Caption 2: Rusted components in Jbox for T-301 and T-400 float connection (see bottom right corner of box)
	
Caption 3: Need to add caulking to secondary containment, specifically NE corner	Caption 4: CatOx discharge stack during operation

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (10/30/2024)

Jarod Fisher, P.E. (10/30/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 10/30/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 59
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0700
Justin w/ PRM
Thayne w/Glacier
Neil w/SHJ Electric

- Preliminary decibel test at 0645. Background appears to be approx 70 dBa. HEX adds most noise when standing at fence to ~75 dBa. Drops off to 70 at sidewalk west.

0900

- Addressing liq gac leaks. Looking for replacement gaskets. Trying to remove hose stress by situating lower on barbed fittings.
- Installing exterior leak sensor and running conduit.

1100

- Addressed leaks at liquid gac flts. Removed cam fittings and added teflon tape.

1200

- MS T-300 1.918 gal/in.
- Site tube is 13" from pump off to pump on.
- Pump P-300 run time was 1.33 min
- Est gpm=18.8 @ 10 psig.
- ERRG Dillon, Spencer, Fernando onsite. PRM running through operation.
- Interlocked extraction and injection valves on PLC but bank names don't match. Instructed PRM and Glacier this is confusing and bank names need to match.
- PRM instructed DO generator runs when P500 runs and recommended turning off if not using for first 6-12 months in phase 1. Discussed P-401 needs to be in off mode on HMI during phase 1 and valve open if directing flow to sanitary sewer.

1400

- HH float in T-401 confirmed higher than over flow to SS. However, drainage is too slow compared to P-400 and will eventually trigger HH. Additionally, gravity flow through 1/2" appears to be too slow to register on flowmeter. 29 gallons registered on flowmeter when liquid elevation was 1-3" above outlet then stopped registering when just above outlet.
- Glacier started hydrostatic test.

1430

- Preliminary injection testing indicated 0-30 psig gauges may be too large and should have 0-15 psig gauges.
- Siphoning occurring from T-500. Will program PLC to close valves when P-500 is not operating. Alternatively, could have vac relief or Adjustable spring check valve. Need to amend O&M to allow for recirc to T-401 until you've opened the valve on HMI.

Ryan Hultgren, P.E. (10/31/2024)

Jarod Fisher, P.E. (10/30/2024)

- Leaks occurring through 3/8" test ports plugs.
- Lost 1/2# on hydro test. Leak at hose cam-lock in between GACs. PRM attempting to fix. Need to re-test.

1600

- Offsite.

PUNCH LIST ITEMS:

- 4" spears valves do not have lockable handles. Need to provide MFG locks per 331416.13-2.08A.3.
- Need lock for FALCO panel
- Need label for new temp xmtr jbox
- Need to relabel banks so bank names match on HMI and match bank names in extraction and injection rooms.
- Need to confirm high high float water in T-400 is above outflow to sanitary sewer. - Confirmed.
  - Need to upsize F-500 to 1-inch or larger.
- Need lock for back equip container door.
- Program injection valves to close when P-500 is not running.

Subcontractor: SJH Electrical, PRM, ERRG

Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
N/A		

Ryan Hultgren, P.E. (10/31/2024)

Jarod Fisher, P.E. (10/30/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 10/30/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 59
CSID #5089

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
Justin ?	PRM	10/29 0700 – 1600	Startup

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
				See Glacier test records

Scheduled Operations

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	7	0.0

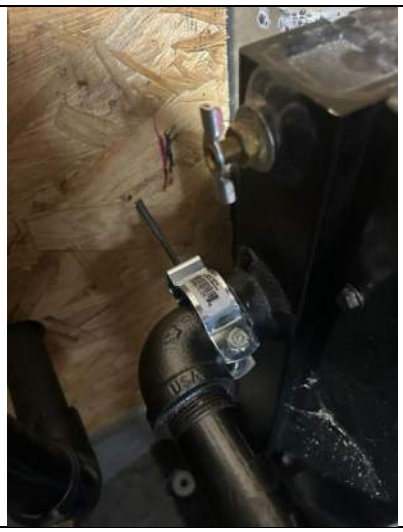
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Ryan Hultgren, P.E. (10/31/2024)

Jarod Fisher, P.E. (10/30/2024)

Photos

Caption 1: Installing exterior leak sensor.	Caption 2: New HEX T-stat jbox.
	
Caption 3: Valves need locks from MFG.	Caption 4: Oil cooler and oil piping w/new bracket to hold fan cage back from touching blower (too much noise previously).

Ryan Hultgren, P.E. (10/31/2024)

Jarod Fisher, P.E. (10/30/2024)

Caption 5: T-401 HH float allows flow out overflow to SS. However, ½" constriction for flowmeter is too small flowrate.	Caption 6: Injection PI's too large when injecting in more than one bank. Recommend 0-15 psig per Project Manual.

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (10/31/2024)

Jarod Fisher, P.E. (10/30/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 10/31/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 60
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0700
Thayne w/Glacier
PRM offsite.

- Starting system. Usually takes 15-20 minutes for air to heat up and CatOx valve close.
- Hydrostatic Pressure test failed overnight. New hose and clamps ordered.

0830

- VMP and SSD testing
- Baseline pressure sampling prior to extraction.

1100

- VCV valve may require air dilution on MS T-300 shut to initially come up to temperature/pressure and open valve. System was running for 2+ hours and could not get vacuum to wells.
- 2nd HH pressure alarm shut down system again. Bumped to 5psig setpoint. VCV closed again. Air only thru VCV dilution. Glacier emailed PRM to determine if a higher discharge pressure setpoint would be an issue for CatOx/other. Waiting for response.

1200

- After system HH pressure reset, took approx. 20 min for VCV to open and air dilution to close. Vac 210 upstream of MS T-300 at ~ 13.5 Hg. VT 300 reading 15" Hg.
  - Water bouncing in T-300 site glass at bottom.
  - VT-300 at 15.5 Hg. FT-302 at 141 scfm.
- SSD's were closed. Opened SSD's to get baseline pressure readings with everything open.
  - VT-300 at 8" Hg. FT-302 at 213 SCFM.
- Getting positive pressure readings at regular wells. SSDs at 4.9, 4.9, and 3.9" WC.
  - Closed SSD gates until reading 1" Hg. VI-300 at 17.3"Hg. FT-302 at 124.5 SCFM.
  - Noted HMI extraction banks reading backwards. Green means closed. Need to fix.
  - Found that some individual gate valves were still closed. Opened all and water now collecting in site tube of MS T-300.
- Must be leak in RW-9 injection piping as flowmeter was spinning under vacuum. Closed downstream valve.
- Took 8 min to fill MT-300 but not all valves were open.
- All valves open except SSD's. Manifold vacuums to well at ~12.5" to 14" Hg.
- VCV dilution began to open and dropped vacuum to wells. CatOx internal temp jumped above 1000 degrees.

1300

- P-300 2nd run against 10"Hg. 1.5 minute run time.
- With SSD's closed. CatOx dilution opens in discrete bumps while valve closes slightly to reduce concentrations.
- VCV valve operation is maintaining VI-300 at 10.7" Hg. CatOx temp at 1075. Exit at 950.
- 3rd transfer pump after 13 minutes.

Ryan Hultgren, P.E. (11/1/2024)

Jarod Fisher, P.E. (10/30/2024)

- Closing valve red ball isolation valve still has 1" WC vacuum. 4 gas not measuring. Need to close main well bank isolation valve to eliminate vacuum and get more accurate readings from individual well leg on manifold. Individual well leg isolation valve should also be closed to get accurate reading.

1400

- With SSD's closed. System seems to be running at VT-300 at 11" Hg. VCV dilution is partially open.
- Glacier measured 4 P-300 cycles since noon and estimates the system is recovering approx 2 gpm with all valves open but that also includes various adjustments to SSD's over that duration.

1500

- Glacier offsite.

1630

- PID and 4 gas collected at manifold.
- SSD wells closed. Well manifold pressures between 11" to 12".

1700

- Offsite

PUNCH LIST ITEMS:

- Need to reprogram HMI so extraction and injection wells are green when open and red when closed.
- Extraction well pneumatic valves have yellow indicators that show whether the valve is open or closed. Need similar indicators installed on the injection well valves.
- Fix electrical jacketing to injection well valves.
- Install leak sensor for interior bioremediation room.

Subcontractor:

Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
N/A		

Ryan Hultgren, P.E. (11/1/2024)

Jarod Fisher, P.E. (10/30/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 10/31/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 60
CSID #5089

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
				See Glacier test records See KJ test records

Scheduled Operations

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	8	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Ryan Hultgren, P.E. (11/1/2024)

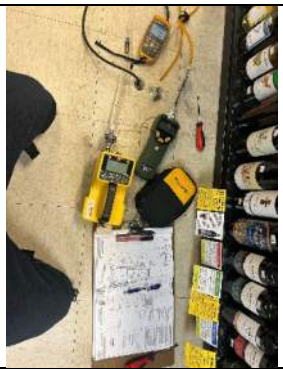
Jarod Fisher, P.E. (10/30/2024)

Photos

Caption 1: Example loose electrical jacketing to injection valve.	Caption 2: Example baseline 4 gas readings at manifold.
Caption 3: T-300 site glass showing consistent water connection. Each 1" ~ 2 gal. ~13" between floats = 26 gal. Higher water collection at initial startup then tapers off. Still need more testing to average collection rate.	Caption 4: VCV affects system operating vacuums and flows to wells. With all valves open, vapor concentrations become too high, CatOx temps too high, and VCV air dilution opens while valve closes until temps drop. This will likely be mitigated by including SSD's.

Ryan Hultgren, P.E. (11/1/2024)

Jarod Fisher, P.E. (10/30/2024)

	
Caption 5: Baseline pressure testing at VP-1.	

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (11/1/2024)

Jarod Fisher, P.E. (10/30/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 11/01/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 61
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0630
Thayne w/Glacier onsite

- System startup. HIgh discharge pressure triggered shut down. Setpoint increased to 6 psig. Valves and SSD valves partially open.
- Still waiting for PRM setpoint response.

0800

- Waiting for system to get back up to pressure. Needed to close SSD's more. May need smaller vac gauges for readability.
- Tested and confirmed T-400 HH flt shuts down P-400 when water is 6.5-7" above outlet. Approx 4-inches from spillover.

0900

- Testing SSD valve position that allows CatOx to not overheat but also provides adequate vacuum at VPs
- SSD valves positioned to 17, 18, and 17" WC. Results in ~ 6" HG at individual well manifolds. Maintains CatOx temps at T1 = 638, T2 = 788, and T3 = 837.
- VP1= -0.21" WC, VP=-0.133, VP3=0.00, VP4=-0.018" WC
- Due to no reading at VP3, increased vac at SSD2 to 5" Hg. VP3 still not reading while VP1 jumped to -0.335" and VP2=-0.225" WC, and VP4=-0.021. SSD 1 and 3 dropped to 14" WC and manifold vacs to 4.5" Hg. Seems to indicate VP3 is not reading and may need to be reinstalled.
- Increased to 8" Hg at SSD 2 and still no response at VP3. Pushed small rod through in case VP3 was clogged. VP3 was loose and came out. Pushed rod through hole and did not appear to hit concrete refusal but continued to dirt. Recommend trying to seal around VP3 or relocate VP3 to another location.
- Reset SSD's to 16"/16"/20" to increase VP4 to min 0.1". Manifold well readings 6" Hg.
- VP4=-0.017. Increased SSD 3 to 5" Hg. Closed other SSDs. Pressure dropped to zero. Closing SSD 3 and opening SSD 1 jumped vac up to -0.02. SSD1 at 5" Hg. VP1=-0.178.
- **Confirmed all SSDs inside bldg were mislabeled. Relabeling and restarting testing. Notes above are not correct with which SSD's were in operation.**
- Relabeled and reset all SSD to 20" WC. Confirmed SSD1 correct label via VP1&2 readings by turning SSD valves open/closed. Reduced all SSD's to 15" WC.
- VP1=-0.205", VP2=-0.137", VP3=-0.003, VP4=-0.022.
- Closing SSD 1&3 and increasing SSD 2=5" Hg resulted in VP3=-0.006", VP4=-0.008".
- SSD 3 set to 5"Hg. VP4=-0.033". VP1 = -0.002".

1100

- Reset SSDs to 15"WC. Well manifolds 6-6.5"Hg.
- Starting single well tests.
- MW4 = 6" Hg at manifold. RW-6 and RW-2 well vacs much higher than MW4. Need to close globe valves to get reading. Still had high vacuum and flows thru other RW6 and RW2 on the same bank. Realized flow/vacuum was connecting to other wells on the extraction bank through the injection piping. Closed manual isolation valves on all injection piping to allow for single extraction valve adjustment.

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

12:30

- Could not accurately measure flow rate in 1" pipe. Est flow by temporarily closing air dilution, which increased vac to 12.5" Hg and read flow from FT-302. However, flow is still coming from SSDs and FT-302 is not indicative of flow through single valve. Reviewing change in overall flow rate at various vacuums allows for some correlation of flow to vacuum.

1324

- Tried to close SSD's to get single well flow. Vacuum relief valve opened.
- On individual well testing, helps to start with higher vac test first to remove the first slug of water from submerged pipe, then transition to smaller vacs. This may equate to larger gph rates for higher vacs.

15:00

- RW-6 gauge would not read 6" Hg down from 12.5" Hg when closing gate valve. Had to open sample port. May be due to slug of water keeping vacuum on well but not pulling through. Flow rate will include air through sample port and SSD wells.
- Water does not seem to be coming through into site glass at this vacuum.

15:45

- RW-6 appears water locked at less than 12.5 Hg. May pull water less than 12.5" but doesn't appear to at 6".
- Flow out of storage tank T-400 to the sanitary sewer is too slow, possibly constricted by the ½" flow totalizer. P-400 from T-301 fills T-400 too fast and HH float is triggered. May need to replace the ½" flow meter with larger diameter totalizer.
  - Totalizer also does not appear to be registering flow / total gallons.

16:30

- Offsite

Subcontractor:

Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Required Today? Y/N	TC Activities	Notes
N/A		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
				See Glacier test records See KJ test records

Scheduled Operations

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	8	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Photos

Caption 1: Step testing pressures to identify potential radius of influence (ROI).	Caption 2: ROI testing of adjacent well

Caption 5: Baseline pressure testing at VP-1.	

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 11/04/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 62
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.
0700 Thayne w/ glacier Justin w/ KJ JHA • Continuing press/flow/ROI testing. • RW-10 had no water flow at 13" hg. Temp increased vac to 21" hg at 0815. At 0830, est 1.92 Gph 0900 • Electrician onsite for heat trace. Installing self regulating heat trace on 1" pipe. Notified Glacier that specs indicate spare line to be installed on piping. • Glacier dumped 3 cups water from oil coalescer. Need to direct liquid from drain back to MS T-300 to test if positive pressure can push through tube while negative pressure pulls. Moisture will have second round in MS to fall out of suspension. • Hi vac sw-2 in annular space during operation but couldn't read thru tubing to drop pipe. 10:00 • Spec 404100-3.01A calls for 3 watt/ft on 1" piping but self regulating heat trace being installed varies up to 8 watt/ft pending temperature. 12:00 • Glacier removed 14 (16) oz cups by 12:17 from coalescer. • RW8 fluctuating vac between 50-130" at wellhead, likely due to water infiltration and removal. 1400 • 1 test j-plug broke. 1700 • Set liq gacs on pressure test at 30 psi • Offsite PUNCH LIST • Wet floor blower room. Vent near MLS near floor may need more sealing on outside. • Add tube to coalescer back to inlet side of mls to remove water. Route along blower discharge piping until side of blower room. Add tee to VI 210 gauge to inlet to T-300. • Provide spare test j-plugs. Repair broken plug.
Subcontractor:
Deliveries / Pick-ups / Miscellaneous

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 11/04/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 62
CSID #5089

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
N/A		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
				See Glacier test records See KJ test records

Scheduled Operations

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 11/04/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 62
CSID #5089

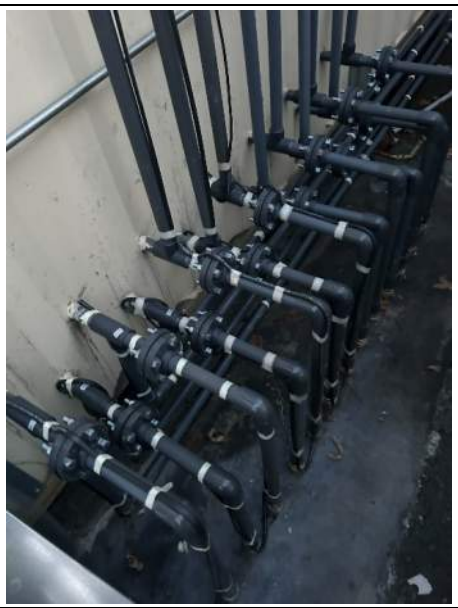
Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	10	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Photos

	
Caption 1: Installing heat trace on 1" piping.	Caption 2: Notified Glacier that aluminum tape is required for installing heat trace per specs.

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Caption 3: HMI Status screen. CatOx operating temperatures.	Captain 4: Self-regulating heat trace

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Daily Inspection Construction Report
DATE: 11/05/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 63
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0700
Alan and Thayne w/ Glacier onsite
SJH electric onsite
303E cat excavator onsite

- Glacier preparing for sidewalk renovations
- Had to fix small leak on liq gac. Back on pressure at 0730.
- System started at 0755. VCV valve closed, air dilution opening. T1=503, T2=545, T3=452
- Setting all valves 100% open on extraction. Manual valves still closed on injection side to allow for individual operation if needed.

0800

- 0810 VCV MOSTLY open. Approx 15-20 min startup to get to temp. T1=619, T2=638, T3=532.
- 0815 T2=742. Well manifold all around 5.5-6" Hg. MW4 at 4.5" Hg. Temporarily closing SSD's to bump vac for water removal and monitoring vac response and CatOx temp increase. T2=744 and appears stable before closing SSD's.
- Closed SSD's at 0820. Well manifold around 10" Hg, MW4 at 9" Hg. At 0832, T2=884.
- VCV Setpoints:
  - T1 @ 330c or 626f,
  - T2 @ 600c or 1112f,
  - T3 @ 580c or 1075f.
  - Also, VCV opening is limited if T3/T2 rise is >15c/minute or 59f/minute.
- 0843: Well manifolds appear to be holding between 9-10" Hg, MW4 at 8.5". T3=923, T2=907, T1=668.
- 0845 gph test: 10min, 7.125", 82 gph
- PID at discharge after coalescer = 795-800ppm stable after ~5-8 min, peak at 984 at initial connection.
- Temps still okay, VCV not closing, but near setpoints. T1=718, T2=974, T3=959.

0900

- VP measurements. System still at higher vac setting, SSD's closed. Operating duration ~45 min.
  - VP1=-0.016, VP2=-0.009, VP3=-0, VP4=could not access.
- Blower room background ppm at .7-1.0ppm.
- Background ppm under CatOx discharge stack at 0.4ppm. Attempting to position at sample port 0.3-1.7 ppm. Could not fill Tedlar bag.
- 0920 T2=1050, T3=1033,
- Found leak at blower discharge flange up to 400 – 500 ppm.
- At 0935, temps started to trigger VCV closed. Opened SSD's to dilute and cool.

0945

- Set SSD's to 14-15" WC.
- Glacier tightened flange and tested with PID.
- Well manifold at 4-5" Hg, MW4=2.5" Hg. Overall, down from testing last week.

1000

- GPH testing: 15 min, 2.25", 17.3 gph.

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

- 10:21 VP Measurements: vP4:-0.009, VP3=varies each connection from pos 0.004 to -0.002. Each connection fairly stable., VP1=-0.065, VP2=-0.047
- 10:30 realized need to check wells and make sure tubes have all been reconnected. May increase overall vac. Tubes on 4 wells were not connected, 2 wells did not have the J-plugs in.
- Manifold vac now up to 5-5.5" Hg after reconnecting tubing and j-plugs.
- Previous continued testing after only fixing ~1/2 of well connections: 15 min, 2.5", 19.2 gph.
- Glacier discharge PID 260 ppm, KJ PID went out of calibration and was not reading correctly (read 5,000 ppm. Performing zero air calibration did not fix issue).

1200

- KJ mtg from 11-12.
- System shutdown due to HH floats and cascaded back to T-300. Transferred some water to allow restart of system but VCV valve is still opening at almost 13:00, I.e., ~45min to 1 hour.
- Pumping from T-400 via hose to SS. Approx~800 gallons.
- HH float on T-400 is alarming before overflow. Glacier adjusting.

13:00

- Thayne offsite
- HH floats in storage tanks may restart VCV valve regardless of MS T-300 not in HH condition.
- 13:30 VCV fully open. Manifold at 7.5" Hg-10" Hg. SSD's at 15" WC.
- GPH test: 6 min, 3.75", 72 gph
- Second gph test: 10 min, 6.875", 79 gph

14:00

- Alan and helper offsite.
- Discharge PID at 620 ppm
- More vacuum showing at manifold with all wells open and SSD's positioned the same as before. Expecting to see 6" Hg. Still at 8.5-10". Wells more variable on vac readings.
- CatOx temp readings appear stable at 653, 834, 860.
- VP measurements: VP1=-0.061", VP2=-0.046", VP3=0, -0.017"

1430

- Manifold vac dropped to 7.5" Hg without adjustments.
- PID = 430 ppm
- GPH: 10 min, 4.5", 52 gph
- SSD's still at 14-15" WC
- VP1=-0.067", VP2=-0.046

15:00

- Adjusting SSD's to try and increase VOC concentrations and SSD at VPs 1&2.
    - Closed SSD's 2&3. Increased SSD 1 = 20" WC
    - Manifold vacs at 10-11.5" Hg.
    - PID=905ppm
    - Flow rate=155 scfm
    - Temps slowly climbing: 626, 830, 785
    - VP4=-0.006", VP3=0, VP=-0.081, VP2=-0.057
    - GPH: 10 min, 11.75", 135 gph.
- Closing SSD 1&3, opening SSD 2 to 20" WC: VP1=-0.034", VP2=-0.02", VP3=-0.003", VP4=-0.005"
    - PID=967ppm.

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

- CatOx Temps at 719, 1017, 971. And climbing. Need to reduce VOC's.

15:30

- Adjusting all SSD's open. Increasing vac, closing bank B2 to keep concentrations high. Based on temp readings, aim for concentrations below 900 ppm.
    - Adjusting all SSD's to 30" WC dropped well manifold to 4-4.5" Hg.
    - PID=207ppm
    - VP1=-0.097, VP2=-0.07", VP3=-0.004, VP4=-0.023"
- Closing Bank 2
    - Well manifold at 4-5" Hg. SSD's at ~38".
    - CatOx start temps at 15:50 = 660, 715, 806 and dropping.
    - PID = 177 ppm
    - RW-10 PID = 32-41 ppm
    - SW2 PID = 70-138 ppm. Failed due to pump flow after closing iso valve.
    - RW-5 PID = 115 ppm

16:20

- Discharge PID = 169
- Temps = 626, 682, 682.
- Closing wells SW1, SW3, and RW3 (low VOC wells).
    - Readjusted SSD's back to ~38".
    - CatOx temps: 626, 692, 696.
    - Discharge PID = 234 ppm.
    - VP1=-0.09", VP2=-0.066", VP3=-0.005", VP4=-0.027"
    - 16:35 temps: 626, 693, 711
- Closing SSD's 1&3:
    - Well manifold between 13-15" hg.
    - SSD2 at 70" WC
    - Discharge PID = 1315 ppm
    - CatOx dilution opened.
- 16:41
    - Opened SSD's 1&3 to open VCV.
    - Closed SSD's 1&3 to 20" WC. SSD2 at 40" WC.
    - Manifold at 9-10.5" Hg
    - Discharge PID = 725-730 ppm.
    - Temps at 628, 813, 873. Slow climb.
    - VP1=-0.068", VP2=-0.051", VP3=-0.005", VP4=-0.021"
    - Discharge PID = 740 ppm.
    - Temps: 640, 822, 872 and slowly climbing.

1700

- Stopping for evening with settings as-is. Will continue same operation tomorrow to compare readings and until temps stabilize.

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

PUNCH LIST

- Leak on discharge flange. PID hit between 400-800 ppm. Could notice smell in blower room but attributed to lower oil heating up/new equipment startup.
- Under higher vac of 10-12" hg, seems to be leaks at SSD manifold piping. Need soapy water to evaluate.
- Appears to be minor flooding at CB where we pumped filtered clean water. Need to check CB for blockages.

Subcontractor: SJH electrical

Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
N/A		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
				See Glacier test records See KJ test records

Scheduled Operations

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	3	Foreman, laborer	6-7	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Cat / 303E	7	

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Photos

Caption 1: CatOx temps in red	Caption 2: Flooding at SS CB after discharging ~800 gallons clean water
Caption 3: Excavating to replace concrete sidewalk	Captain 4: Found leak on blower discharge piping at flange. 400-800 ppm measured.

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Caption 4: CatOX discharge PID sample location.	Caption 5: CatOx setpoint temperatures.
Caption 6: Glacier added barb fitting to coalescer valved drain and vinyl tubing back to MLS, adding tee fitting and barb, to test drainage from coalescer back to MLS inlet.	

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (11/05/2024)

Jarod Fisher, P.E. (11/05/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 11/06/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 64
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0700
Alan, Thayne, helper onsite

- System started 0705. ~15 min for VCV to open.
- 0736
  - Pre-CatOx PID = 547 ppm
    - CatOx discharge PID = 11 ppm
    - Well manifold = 7.5-11" Hg. Most around 10" Hg. Following wells already closed:
      - RW-3
      - SW-3
      - Bank2: RW5, SW2, RW10
    - GPH: 3", 10 min, 34.5 gph
    - Temps: 626, 765, 815
    - SSD's: 20, 40, 20" WC
    - VP's (1-4): -0.05, -0.037, -0.003, -0.016" WC

0900
- System measurements:
  - Pre-CatOx PID = 522 ppm
  - CatOx discharge PID = 1.6 ppm
  - Well manifold = 7-11" Hg. Most around 10" Hg. Following wells already closed:
    - RW-3
    - SW-3
    - Bank2: RW5, SW2, RW10
  - GPH: 3.5", 10 min, 40.3 gph
  - Temps: 632, 753, 820
  - SSD's: 20, 40, 20" WC
  - VP's (1-4): -0.05, -0.035, -0.003, -0.016" WC
  - Coalescer fluid collected: (0.41"gal/in) 2.75", 1.1 gal, ~0.56 gph
- System appears stable.

0930
- System Measurements
  - Adjusting to increase VOC concentrations. Targeting 700 ppm.
  - Closing SSD 2 to 20" WC and testing pre-CatOx ppm. Re-adjusted SSD 1&3 to 20".
    - Pre CatOx PID = 850 ppm. Proceeding to duration operation.
  - Pre-CatOx PID = 925 ppm
  - CatOx discharge PID = 11 ppm
  - Well manifold = 8.5-11" Hg. Most around 11" Hg. Following wells already closed:
    - RW-3
    - SW-3
    - Bank2: RW5, SW2, RW10

Ryan Hultgren, P.E. (11/06/2024)

Jarod Fisher, P.E. (11/06/2024)

- GPH: aborted
- Temps: 635, 876, 885
- SSD's: 20, 20, 20" WC
- VP's (1-4): aborted due to VCV reset.
- Coalescer fluid collected: NA - recirc tubing added. NM.

- Glacier installed tubing from coalescer. Opening and closing valves does not appear to cause noticeable pressure changes to system. Observed water moving through tubing to inlet side of MS. Appears to work well. Need to reroute along 4" discharge piping for freeze protection and seal penetration through wall.
- Temp 1" analog Neptune totalizer installed. P400 pumping into T400. Leak on totalizer. Manually stopped P400.
    - Switched with different temporary totalizer 1" Neptune totalizer.
    - Worked well, kept up with P-400 on. Level marked on Tank T-400, approx even with top of bulkhead fitting, ~0.75" above top of outlet ID.
    - Tested T-400 HH by pinching outlet valve. HH triggered at Tank Horiz seam, ~ 3.25" above outlet.
        - However, HH float would not clear b/c outlet elevation does not allow float to drop far enough.
        - Raised another 6" until alarm condition would clear. New HH location is too high.

10:00

- System adjustment testing aborted due to VCV reset with T400 HH alarm condition. 10:35 and waiting for VCV to open.

11:00

- Concrete poured for sidewalks.
- VCV open. Restarting system testing.
- System Measurements:
    - Pre-CatOx PID = 928 ppm
    - CatOx discharge PID = 0 ppm
    - Well manifold = 8.5-11" Hg. Most around 11" Hg. Following wells already closed:
        - RW-3
        - SW-3
        - Bank2: RW5, SW2, RW10
    - GPH: 7.125", 10 min, 82 gph
    - Temps: 686, 950, 950
    - SSD's: 20, 20, 20" WC
    - VP's (1-4): -0.074, -0.053, -0.002, -0.016" WC
- 11:48
    - CatOx trigger temps close.
    - Pre CatOx PID = 909 ppm
    - Temps: 794, 1073, 1046
        - Temps at VCV closing air dilution bumping open/close: 802, 1082, 1056

- Manifold pressures ~ holding while VCV air dilution bump operation.
- Continuing operation to see how CatOx reacts when right on the line.
    - System continues to operate ~ stable and periodically begins to adjust VCV valve position and air dilution approx every couple of minutes to reduce concentrations. Manifold vacuums fluctuate ~4" Hg, i.e., from 11" Hg down to 7" Hg, then back up.
        - Bump cycle ~1.5 min on, ~1.5 min off.

12:00

- Hand operation of P400 with T-301 not too full was ~15 gpm. Will test again at fuller T-301.
- Adjusting SSD2 to 30" to reduce PPM concentrations:
    - Pre-CatOx PID = 550 ppm
- Adjusting SSD2 to 25":
    - Pre-CatOx PID = 583 ppm
- Adjusting SSD2 back to 20"
    - Pre-CatOx PID = 616 ppm

1300

- Tank testing
    - P-400 on by HL float: 28 psig, 15 gpm
    - Filled to above previous hold level on T-400 and continued to climb until T-301 was out of water.
    - Transferred water from T500 into T301 to repeat test for full P400 cycle when water lvl in T400 at overflow level.
    - Closed overflow valve until liquid level was at previous hold level. Even with P400 still pumping, overflow appears to be keeping up. Measured ~12 gpm with water level at ~top of outlet pipe, 1/2" below "hold level w/pump on"
        - For testing, closed outlet valve to increase head to old HH LVL and measure: 13.5 gpm discharge.

1530

- HMI SVE and Injection Manifold label and logic testing
- Injection
    - Bank 1 green = open but is actually bank 3 in remediation room". Need to relabel as bank 3.
        - Extraction bank 3 opens. No color.
- Extraction
    - Bank 3 extraction green = closed.
        - Bank 3 in remediation room is closed. But shows as closing Bank 1 on injection HMI. No color Bank 1 injection.
- Injection
    - Bank 2 green = open.
        - Extraction bank 2 opens. No color on HMI. Confirmed Banks labeled correctly.
- Extraction
    - Bank 2 green = closed.
        - Cycling does not open Bank 2. If bank 2 injection is open, it will close when bank 2 extraction is closed.

- Opening bank 2 extraction does not change bank 2 injection position, if closed.
- Injection
  - Bank 3 = green open. Actually tied to bank 1 in injection room.
    - If Bank 1 extraction room is closed = green color, and Bank 3 is opened, then bank 1 extraction opens.
    - Bank 1 extraction no color = open.
- Extraction
  - Changing B3E no color to green closes B1E in extraction room and closes B1Inj room. HMI shows as B3 and no color.
- Injection
  - HMI B4 = B4 in injection room and green = open.
    - Is tied to B4E. Setting B4Inj from no color to green opens B4E. B4E on HMI shows as no color but is open.
- Extraction
  - Changing B4E from no color (open) to green (closed), changes B4Inj from open (green) to closed.
  - Opening B4E, does nothing to bank 4 injection.

16:30

- Offsite

PUNCH LIST

- LEAK AT BLOWER DISCHARGE
  - First union, 500+ PPM.
  - Need to pressure test blower discharge piping
- Need to change T-400 HH float type to rod.
- Get 1" pulse meter. Run pulse back to PLC and add for discharge gallons totalizer. Log with time.
- VCV resets when resetting alarm conditions. See if PLC can be programmed not to reset VCV for alarm conditions that do not shut down the system.
- Need to cut vents on vapor phase gac PGs

Subcontractor: Concrete subcontractor.

Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Ryan Hultgren, P.E. (11/06/2024)

Jarod Fisher, P.E. (11/06/2024)

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
N/A		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
				See Glacier test records See KJ test records

Scheduled Operations

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	3	Foreman, laborer	6-7	0.0

Ryan Hultgren, P.E. (11/06/2024)

Jarod Fisher, P.E. (11/06/2024)

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
Glacier	Cat / 303E	7	

Photos

Caption 1: Temporary 1" flow totalizer with estimated outlet between 12 and 13.5 gpm

Caption 2: Flooding at SS CB after discharging ~350 gallons clean water

Caption 3: First HH level and typical hold elevation during P400 pumping into T400 while discharging to CB.

Captain 4: New HH level position after float adjusted up to allow vertical space for HH level to drop down and reset after volume has gravity drained out.

Ryan Hultgren, P.E. (11/06/2024)

Jarod Fisher, P.E. (11/06/2024)

Caption 4: 15 GPM from P400 through relatively clean liquid GAC units to storage tank T400.	Caption 5: Concrete poured repairing sidewalks.
Caption 6: Second leak at blower discharge union with PID +500 ppm.	

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (11/06/2024)

Jarod Fisher, P.E. (11/06/2024)

Daily Inspection Construction Report
DATE: 12/16/2024
INSPECTOR'S NAME: JAROD FISHER
REPORT NUMBER: 65
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0830
KJ onsite
Thayne and helper already onsite

- Glacier pulling drop pipes. No PID onsite to measure
- KJ reviewing completed punchlist items.
    - HMI interlocks and green indications appear to be corrected. Need to correct injection bank labels on 1&3.

1150
- PID onsite. System started in SVE only mode

1221
- VCV open, dilution closed.
- SSD's set to 20" WC. RW-10 closed
- VI-210 = ~8" Hg. VI-300=9.7"Hg. Manifold gauges = 6 to 7.5" Hg.
- FT-302 = 195 scfm
- PID = 180 ppm.

1237
- PID = 165 ppm.
- Transfer pump kicked on. ~ 20 gal, ~ 1.25 gpm

1240
- Ssd's closed all the way.
- VI-210 = 10.5"hg, vi-300=12.7"hg.
- Manifold gauges = 10" hg.
- FT-302= 167 scfm. Discharge pressure ~ 3 psig
    - Discharge temp ~155F
- PID = 406 ppm

1245
- PID = 419 ppm
- VI-210 = 12" hg, vi-300=13.9hg, ft-302=158 scfm.
- T2=779f

1253
- Trsfr pump cycle on~23 gal per cycle = ~ 1.4gpm.

1305
- Trx pump on~ 2.3 gpm
- PID=369ppm.

1308
- Closed well bank 2 to increase concentrations.
- Manifold gauges at 14- 15"hg.
    - Bouncing vac gauge needles in the following wells may indicate water recovery:
        - Rw4
        - Rw7

Jarod Fisher, P.E. (12/16/24)

Ryan Hultgren, P.E. (12/16/2024)

- Rw8
- Rw3

- Trx pump cycle on, ~ 4.6gpm
- PID=511 ppm

1318

- Trx pump on ~ 4.6 gpm
- PID = 550 ppm

1320

- Adjusted vacuum at RW4,7,&8 to 3.5-5" hg to reduce GW recovery rate.
- Other wells at ~15"hg.
- Ft-302=117 scfm
  - Press=1.9 psig
  - Temp=158F
- 2.2 gpm
- PID = 415 ppm

1346

- Adjusted all wells to ~5" hg.
- FT-302=80scfm
- PID=450 ppm

1400

- PID=400
- Water appears to have stopped.

1405

- Opening valves 1x1 to try and determine which are contributing gw
  - Mw4 largest contributor
  - RW3 significant
  - Sw3 somewhat
  - RW8 seems significant
  - Rw4 somewhat
  - Rw7 significant

1440

- With only mw4 closed, 2 gpm
- With rws 3,4,7,8 turned down to 5" = 1.4gpm
  - Ft-302=105 scfm
  - PID=350 ppm

1452

- Reopened wells 100% except bank 2
  - PID=500 ppm
  - 120 scfm
  - 3.8 gpm

1455

- Reopened bank 2 except rw10
  - PID=365 ppm
  - Ft-302=160 scfm at 3.9 psig & 156f

Jarod Fisher, P.E. (12/16/24)

Ryan Hultgren, P.E. (12/16/2024)

- 1.4 gpm

1500

- Closed b2, closed rw 3,4,7,8 to under 5" hg
- 1.6 gpm
- Ft-302 103scfm at 2 psig

1515

- Closing all wells to 5", bank 2 closed, mw4 closed
- 0.1 gpm, 75 scfm, 1.2 psig
- 450 ppm

1530

- Adjusting to 10", bank 2 and mw4 closed
- Ft-302=114scfm, 2.4psig
- PID=480ppm
- 0.76gpm

Subcontractor:

Deliveries / Pick-ups / Miscellaneous

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
N/A		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit

Jarod Fisher, P.E. (12/16/24)

Ryan Hultgren, P.E. (12/16/2024)

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
				See Glacier test records

Scheduled Operations

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	7	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Jarod Fisher, P.E. (12/16/24)

Ryan Hultgren, P.E. (12/16/2024)

Kennedy Jenks

Daily Inspection Construction Report
DATE: 02/28/2025
INSPECTOR'S NAME: RYAN HULTGREN
REPORT NUMBER: 66
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0730
Thayne (Glacier), Ryan (KJ) onsite; discuss plans for day.
0800
Noah Butzine (KJ) onsite.

- System currently operating in multiphase extraction (MPE) mode, extracting from the 13 extraction-injection wells (EIWs) and 3 subslab depressurization (SSD) wells.
- Begin review of Punch List items (2/24/2025 version). Items still in progress or new:
  - 3) Insulation and heat tracing – liquid GAC and water storage tanks still need insulation. Glacier's proposed solution from removable insulation is to use insulated foam tarps (similar to Insulated Tarps - 6 x 25 - Concrete Curing | Tarps Now). Discussed suggestion to use Velcro tape along top of tanks to hold the tarps in place while using 3 wide straps to secure top, middle, and bottom in place.
  - 5) Glacier to provide pressure testing records.
  - 16) Pressure gauges PI-403, PI-404, and PI-406 are currently 0-50 psig but should be 0-5 psig.
    - PI-403 reading 5 psig (2/28/25) – pressure measured between front (western) lead and lag liquid GAC vessels (back pair not in use, PI-406 = 0 psig). Previously read 16 psig in November. Keep 0-50 psig gauge for PI-403 and PI-406.
    - Add "PI-406" label to PI-406 pressure gauge.
    - PI-404 reading < 5 psig (2/28/25). Replace with 0-5 psig gauge per specs.
  - 18) During testing at approximately 1 gpm (design injection flowrate), no pressure reading on the 0-30 psig gauges. Also tested at 3 to 5 gpm (above the target injection flow rate) and pressure readings were in the 2 to 5 psi range. Replace with 0-5 psig range back-mounted pressure gauge (13 gauges).
    - PRM Model: 0-150"WC Pressure Gauge 2.5" 304 Stainless Steel, Back Mount. Part No. PGCNBTY630454B150WC. (150"WC approx. 5.4 psi)
  - 27) No tags meet general mech work spec requirements. Provide nameplates per 11 00 00 -2.10. Glacier indicates that these tags are on order.
  - 29) Need to check sound with and without HEX operating.
    - Standing just off western side of property, noise levels approximately 78 decibels when traffic is heavy. Similar reading 5-10 feet east of the property line in the parking lot area.
  - 30) Label pipes on outside after insulation per specs.
    - Glacier to research available options. Discussed using yellow colored arrows to indicate air, with an "AIR" label on or adjacent to the arrow, and blue-colored arrows to indicate water, with a "WATER" label on or adjacent to the arrow.
  - 37) Need to upsize F-500 to 1-inch or larger. Installation of new flowmeter (PRM 1-1/4 Inch Multi-Jet Brass Totalizing Water Meter with Pulse Output/ISR & Programming) has been completed by Glacier. PRM to program addition to PLC.
  - 41) and 44) Check that selecting Well Bank 1 at the PLC opens/closes valves on injection side for Well Bank 1, but it's mislabeled on the PLC as Well Bank 3. And vice versa for Well Bank 3 – opens/closes valves on injection side for Well Bank 3 but the PLC says Well Bank 1 (in example

Ryan Hultgren, P.E. (02/28/2025)

Cayla Whiteside, P.E.

below, green highlight shows what is 'active' on the PLC screen – Bank 3 appears active for both extraction and injection due to labeling issues). PRM needs to update the PLC.

Extraction Solenoids	Injection Solenoids	
Bank 1	Bank 3	Mismatched Bank 1 and Bank 3
Bank 2	Bank 2	
Bank 3	Bank 1	
Bank 4	Bank 4	

- Inspect new drainage installation from treated water storage tank T-400 to former remediation well piping in southeast corner of property. See pictures. Noted that property owners have many empty chemical containers stored in the southeast corner of the property.
- Parking striping per C-06 Site Plan Parking Areas was completed on 2/27/2025.

1030
Thayne, Ryan, and Noah offsite.

PUNCH LIST

- Glacier to Install insulation on liquid GAC and water storage tanks. Glacier proposed to use Insulated Tarps - 6 x 25 - Concrete Curing | Tarps Now, or similar.
- Verify receipt of pressure testing records from Glacier.
- Change pressure gauge PI-404 to bottom mount 0-5 psig. Gauges PI-403 and PI-406 can remain as installed (0-50 psig).
- Replace injection line pressure gauges PI-501 to PI-503, PI-511 to PI-513, PI-521 to PI-523, and PI-531 to PI-534 with 0-5 psig range back-mounted pressure gauge (13 gauges).
- Need an update on whether electrical inspection at start-up and one week after operation begins has been recorded/completed by Glacier electrician. Record on the mandatory PRM electrical inspection form.
- Add flow direction arrows for Air (e.g., yellow) and Water (e.g., blue) and labels (Air or Water). Add arrow/label approximately every 10 feet or once per major pipe run.
- Add indicator light on heat trace. Glacier to discuss with their electrician.
- Injection Bank 4 leak at stem of globe valve.
- Water observed leaking from PI-500 connection.
- Water leak at overhead pipe connection downstream from the rotometer on the injection line.
- PRM fix PLC screen for Banks 1 and 3 injection/extraction.

Subcontractor: None.

Deliveries / Pick-ups / Miscellaneous

Ryan Hultgren, P.E. (02/28/2025)

Cayla Whiteside, P.E.

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
2/28/2025	Tested injecting water into each well on all 4 banks at approximately 1 gpm.	Ryan Hultgren (KJ)	Able to achieve 1 gpm injection at each well and record pressure.	Based on low pressure readings (< 5 psig at 1 gpm), 0-30 psig pressure gauges to be

Ryan Hultgren, P.E. (02/28/2025)

Cayla Whiteside, P.E.

				replaced with 0-5 psig, back-mounted gauges.

Scheduled Operations

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	3	0.0

Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby

Photos

Caption 1: New discharge piping from treated water storage tank T-400. New flowmeter visible at tank outlet.

Caption 2: New discharge piping, looking east.

Ryan Hultgren, P.E. (02/28/2025)

Cayla Whiteside, P.E.

Caption 3: New flowmeter from tank T-400.	Captain 4: Discharge piping running south of property building. First picture looking west, second picture looking east to discharge point.
Caption 5: Debris in SE corner of site buildings.	Caption 6: Debris in SE corner of site buildings.
Caption 7: Parking lot striping, looking north.	Caption 8: PLC Bank # label issues.

Ryan Hultgren, P.E. (02/28/2025)

Cayla Whiteside, P.E.

Caption 8: Injection Bank 4 leak at stem of globe valve (green handle, bottom pipeline).	Caption 10: Water leak at overhead pipe connection downstream from the rotometer on the injection line.

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (02/28/2025)

Cayla Whiteside, P.E.

Daily Inspection Construction Report
DATE: 04/07/2025
INSPECTOR'S NAME: RYAN HULTGREN
REPORT NUMBER: 67
CSID #5089

Description
Prime Contractor: Glacier Environmental Services, Inc.

0725
Thayne (Glacier), Ryan (KJ) onsite; discuss plans for day. Final Punch List Walk Through.

- System currently operating in multiphase extraction (MPE) mode, extracting from the 3 extraction-injection wells (EIWs) and 3 subslab depressurization (SSD) wells.
- Begin review of Final Punch List items – includes updates made by Glacier on 4/4/2025. Items still in progress or new:
  - 3) Glacier has installed insulation on the liquid GAC and water storage tanks.
  - 4) Glacier's Draft as-builts were included in draft CCR on 3/20/25.
  - 5) Glacier provided pressure testing records in their Draft CCR.
  - 16) Pressure gauges PI-404 has been replaced with a 0-5 psig gauge.
  - 18) Glacier has replaced injection line pressure gauges PI-501 to PI-503, PI-511 to PI-513, PI-521 to PI-523, and PI-531 to PI-534 with 0-5 psig range back-mounted pressure gauge (13 gauges).
    - PRM Model: 0-150"WC Pressure Gauge 2.5" 304 Stainless Steel, Back Mount. Part No. PGCNBTY630454B150WC. (150"WC approx. 5.4 psi)
  - 20) PI-500 needs label still – labels expected to be received by 4/10/2025.
  - 27) No tags meet general mech work spec requirements. Provide nameplates per 11 00 00 -2.10. Glacier indicates that these tags are on order.
  - 30) Label pipes on outside after insulation per specs. Labels/stickers expected by 4/10/2025.
    - Had previously discussed using yellow colored arrows to indicate air, with an "AIR" label on or adjacent to the arrow, and blue-colored arrows to indicate water, with a "WATER" label on or adjacent to the arrow.
  - 45) Check that selecting Well Bank 1 at the PLC opens/closes valves on injection side for Well Bank 1, but it's mislabeled on the PLC as Well Bank 3. PRM has fixed PLC screen for Banks 1 and 3 injection/extraction to correctly show the operating banks.
  - 58) Complete electrical inspection at startup and one week after operation begins. Record on mandatory PRM electrical inspection form – information provided in Glacier's revised CCR.
  - 59) Indicator lights have been added in two (2) locations for heat trace.
  - 60) Injection Bank 4 leak at stem of globe valve has been fixed.
  - 61) PI-500 connection water leak has been fixed.
  - 62) Water leak at overhead pipe connection downstream from the rotometer on the injection line has been fixed.
  - 63) ERRG and Glacier still working on getting the remote access to the PLC to work.

0745
Olu Akeroro w/ Ecology onsite.
0812
Thayne and Ryan walk Olu through operation of the system.

Ryan Hultgren, P.E. (04/07/2025)

Cayla Whiteside, P.E.

CONFIRM REMAINING PUNCH LIST ITEMS

- 20) PI-500 needs label still – labels expected to be received by 4/10/2025.
- 27) No tags meet general mech work spec requirements. Provide nameplates per 11 00 00 -2.10. Glacier indicates that these tags are on order.
- 30) Label pipes on outside after insulation per specs. Labels/stickers expected by 4/10/2025. Had previously discussed using yellow-colored arrows to indicate air, with an "AIR" label on or adjacent to the arrow, and blue-colored arrows to indicate water, with a "WATER" label on or adjacent to the arrow.
- 63) ERRG and Glacier still working on getting remote access to the PLC to work.

0930
Thayne, Ryan, Olu offsite.

Subcontractor: None.

Deliveries / Pick-ups / Miscellaneous

None

Field Issues / Impediments & Next Steps

Issue	Date Identified	Relevant Contract References	Contractor's Actions	Resolution / Outcome

Rejected Work

Description	Date & Time Identified	Relevant Contract References	Contractor's Actions
N/A			

Traffic Control

Required Today? Y/N	TC Activities	Notes
No		

Visitors to Site

Name	Organization	Date & Time Period On-site	Reason for Visit
N/A			

Ryan Hultgren, P.E. (04/07/2025)

Cayla Whiteside, P.E.

Conversations / Discussions / Meetings

Participants	Topic	Relevant Contract References	Summary

Safety Issues

Item	Description	Resolution / Outcome
N/A		

Tests / Special Inspections

Date and Time	Test Performed	Tester	Results	Notes
N/A				

Scheduled Operations

Resources – Labor

Contractor	No. of Workers	Trade Classification	Hours Worked	Hours Standby
Glacier	1	Foreman	2	0.0

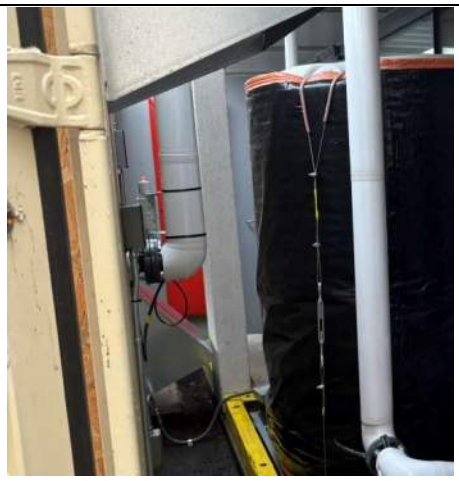
Resources – Equipment

Contractor	Make / Model	Hours In-Use	Hours Standby
N/A			

Photos

Ryan Hultgren, P.E. (04/07/2025)

Cayla Whiteside, P.E.

Caption 1: Insulation of treated water tank T-400 (front) and untreated water water tank T-301 (behind).	Caption 2: Insulation on liquid GAC tanks.
	
Caption 3: New pressure gauges on injection well banks (0-150 "WC / 0-5 psig).	Caption 4: Heat trace indicator light on east side of remediation system building.

Ryan Hultgren, P.E. (04/07/2025)

Cayla Whiteside, P.E.

Caption 5: Heat trace indicator light on east side of system building (on EIW piping).	

**All photos have been uploaded to SharePoint.*

Ryan Hultgren, P.E. (04/07/2025)

Cayla Whiteside, P.E.

Appendix I

Soil Vapor Extraction (SVE) Operation Technical Memorandum

12 December 2024

Memorandum

To: Dale Myers, Washington State Department of Ecology

From: Ryan Hultgren, Kennedy Jenks

Subject: Circle K 1461 – Soil Vapor Extraction (SVE) Operation
K/J 2196008*00

This memorandum has been prepared by Kennedy/Jenks Consultants, Inc. (Kennedy Jenks) for and on behalf of the Washington State Department of Ecology to present procedures for temporary operation of the Circle K 1461 (site) treatment system in soil vapor extraction (SVE) mode. These procedures have been modified from Section 4.2.1 of the Final Draft Operations and Maintenance Manual Environmental Remediation System Circle K 1461, Seattle, Washington (Kennedy Jenks 2024) (O&M Manual). The site is located at 2350 24th Avenue East in Seattle, King County, Washington. This site is listed on the Washington State Department of Ecology (Ecology) Site Information System and Hazardous Sites List as Circle K 1461, under cleanup site ID 5086 and facility/site ID 2322.

Phase 1 (Modified) – Temporary Soil Vapor Extraction (SVE)

Soil from the surface to the depth of the exposed saturated zone will be remedied by the extraction of vapor from the unsaturated soils. The vapor will be treated with a catalytic oxidizer (CatOx) until extraction vapor concentrations are reduced to 500 parts per million (ppm); when this concentration is reached, the catalytic oxidizer will be removed, and GAC will be employed for air treatment. Treated air will be discharged through an exhaust pipe. The use of the catalytic oxidizer is estimated to last from 1 to 3 months. GAC will be employed until groundwater concentrations stabilize and approach asymptotic levels, approximately 6 to 12 months, after which Phase 2 will commence (provided treated water discharge piping is completed).

Preliminary startup operations (in multiphase extraction (MPE) mode) indicated that vapor VOC concentrations were below 500 ppm (using a photoionization detector (PID) calibrated with isobutylene) when operating the system with all wells open 100%, including the subslab depressurization wells (SSDs). Closing SSDs completely resulted in inlet concentrations above 950 ppm, which caused the vacuum control valve (VCV) of the CatOx to close and VCV air dilution to open, thus dropping the vacuum to the extraction wells. A relatively steady state operation is preferred; therefore, an inlet vapor concentration of 700 to 800 ppm should be targeted.

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The following provides example system startup and adjustments:

1. Remove stingers (drop pipes) from the extraction / injection remediation wells (RW-2 through RW-10, MW-4, SW-1, SW-2, and SW-3). Close valve to well RW-10 at the extraction manifold, as it is screened below the water table (25 to 30 ft bgs).

2. Set Extraction Well Banks 1 – 4 to green on HMI screen.

3. Set valves to all wells (except RW-10) to 100% open on Manifold B.

4. Confirm manual air dilution valve at moisture separator is closed.

5. Start the blower. The VCV will close and VCV air dilution will open 100%. The VCV will begin to slowly open as TO-400 heats up to setpoint temperatures and VCV air dilution will begin to close. This process takes approximately 15 minutes.

6. Adjust SSD gate valves closed until vacuum is approximately 20-inches water column (WC) or less at Manifold A. The vacuum on each individual well at Manifold B is expected to be between 5 and 10-inches mercury (Hg).

7. Allow system to operate until TO-400 temperatures stabilize. Temperatures around 700-750°F indicate diluted soil vapor and temperatures of 950-1,000°F indicate excessive concentrations that may continue to climb and cause VCV to close and loss of vacuum at wells. Measure VOC concentrations at the coalescing filter to achieve target concentration.

8. Adjust extraction rates from SSD wells by opening the valves to reduce inlet concentrations or closing the valves to increase concentrations. Certain SSD and extraction/injection remediation wells have less measured PID concentrations and may be closed completely to increase vacuum and flow rates from other wells and, potentially, PID concentrations.

9. As shown in the attached Table 1, the baseline PID measurements from the wells in Well Bank 2 were the lowest, ranging from 5.0 ppm (SW-2) to 22.7 ppm (RW-5). If the inlet PID at the CatOx is less than the 700-800 ppm optimum range, extraction from Well Bank 2 can be discontinued by closing the valve to this Well Bank.

10. Balance the extraction rates for each well screen in each Well Bank by closing the dilution valve (if open) and adjusting the individual valves at the piping manifolds.

11. Record measurements (as applicable) on the Phase 1 MPE / SVE field form.

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Sampling requirements for Public Works Construction Contractor
To meet PSCAA substantial requirements, vapor concentrations of total petroleum hydrocarbons (TPH) as hexane or its equivalent can be measured using a PID (and the applicable response factors), including one of the following instruments (or similar):

- MiniRAE 2000 or 3000, Photoionization detector
- RAE Model 8000, Photoionization detector

PID measurements shall be taken at the inlet to and exhaust from the CatOx unit. Other parameters to record are shown on the attached field form.

[The Public Works O&M Contractor will also measure TPH/BTEX concentrations at each of the vapor pins and the SSD wells with low-detection PIDs (ppbRAE 3000 or equal) in accordance with the O&M Manual].

Table: Emission Limits to meet PSCAA Substantial Requirements

Cat Ox or GAC (at >99% control efficiency)	
Inlet flow (scfm)	Maximum Inlet PID (ppm)
50	8,000
100	4,000
150	2,500
200	2,000
250	1,600
300	1,300

Maximum inlet PID readings for controlled emissions of benzene, toluene, ethylbenzene, and total xylenes to be below WAC 173-460-150 De Minimis and Small Quantity Emission Rate (SQER) limits. Based on control efficiencies of 99% or higher for a catalytic oxidizer or two granular activated carbon (GAC) vessels in series.

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Memorandum

Dale Myers
12 December 2024
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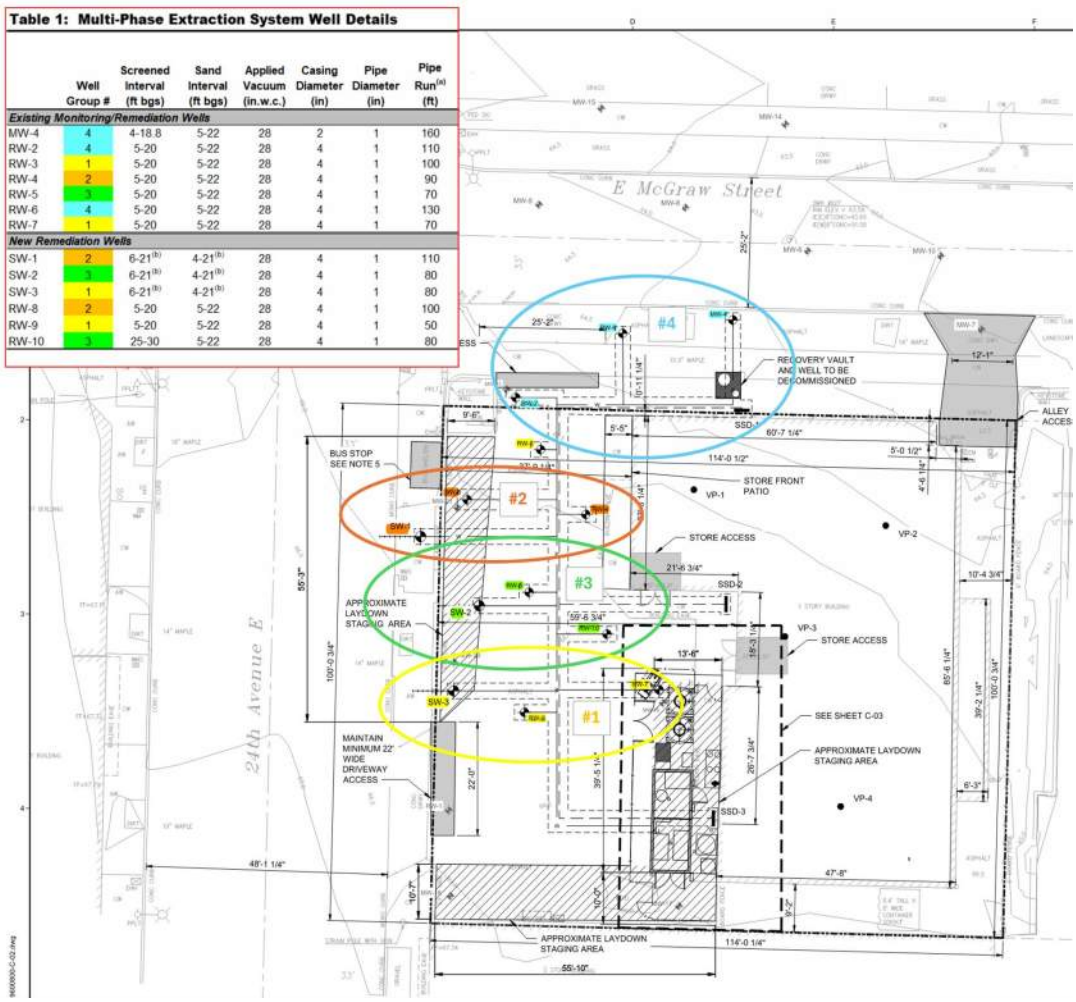
Figure: Well Banks and Well Details Table and Well Location Plan View

Table 1: Multi-Phase Extraction System Well Details

	Well Group #	Screened Interval (ft bgs)	Sand Interval (ft bgs)	Applied Vacuum (in.w.c.)	Casing Diameter (in)	Pipe Diameter (in)	Pipe Run[a] (ft)
Existing Monitoring/Remediation Wells							
MW-4	4	4-18.8	5-22	28	2	1	160
RW-2	4	5-20	5-22	28	4	1	110
RW-3	1	5-20	5-22	28	4	1	100
RW-4	2	5-20	5-22	28	4	1	90
RW-5	3	5-20	5-22	28	4	1	70
RW-6	4	5-20	5-22	28	4	1	130
RW-7	1	5-20	5-22	28	4	1	70
New Remediation Wells							
SW-1	2	6-21[b]	4-21[b]	28	4	1	110
SW-2	3	6-21[b]	4-21[b]	28	4	1	80
SW-3	1	6-21[b]	4-21[b]	28	4	1	80
RW-8	2	5-20	5-22	28	4	1	100
RW-9	1	5-20	5-22	28	4	1	50
RW-10	3	25-30	5-22	28	4	1	80



References:

Kennedy/Jenks Consultants, Inc. 2024. Final Draft Operations and Maintenance Manual Environmental Remediation System Circle K 1461 Seattle, Washington. Prepared by Kennedy/Jenks Consultants, Inc. for Washington State Department of Ecology. 22 November 2024.

Enclosure(s) (2)

Table 1	Multi-phase Extraction Well Details
Field Form	System Monitoring Form Circle K – Phase 1: Multi-Phase Extraction (MPE) / Soil Vapor Extraction (SVE)

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Table 1 - Multi-Phase Extraction Well Details
Circle K 1461 Treatment System

Kennedy Jenks

Well	Bank	Screened Interval (ft bgs)	Sand Interval (ft bgs)	Applied Vacuum (in.w.c.)	Casing Diameter (in)	Pipe Run[a] (ft)	Baseline Measurements 10/31/2024 Vacuum / Pressure (in WC)	VOCs (PPM)	O2 %	CO2 %	Notes
MW-4	1	4-18.8	5-22	28.0	2.0	160.0	-3.0	584.0	7.6	14.8	
RW-6	1	5-20	5-22	28.0	4.0	130.0	-0.003	743.0	7.1	16.7	
RW-2	1	5-20	5-22	28.0	4.0	110.0	-0.003	758.0	7.4	15.1	
RW-10	2	25-30	5-22	28.0	4.0	80.0	-0.89	18.8	20.7	0.3	Well screened below water table.
RW-5	2	5-20	5-22	28.0	4.0	70.0	-0.003	22.7	20.7	0.3	
SW-2	2	6-21[b]	4-21[b]	28.0	4.0	80.0	-0.003	5.0	20.1	1.0	
SW-1	3	6-21[b]	4-21[b]	28.0	4.0	110.0	-0.023	65.0	16.0	4.0	
RW-8	3	5-20	5-22	28.0	4.0	100.0	+0.006	227.0	16.9	2.8	
RW-4	3	5-20	5-22	28.0	4.0	90.0	+0.013	247.5	15.8	2.5	
RW-7	4	5-20	5-22	28.0	4.0	70.0	-0.003	890.0	9.7	5.0	
SW-3	4	6-21[b]	4-21[b]	28.0	4.0	80.0	-0.037	87.7	20.7	0.2	
RW-3	4	5-20	5-22	28.0	4.0	100.0	+0.006	42.0	20.7	0.2	
RW-9	4	5-20	5-22	28.0	4.0	50.0	-0.033	395.0	19.3	1.1	
VP-1	NA	NA	NA	NA	NA	NA	+0.011	0.0	16.0	5.4	
VP-2	NA	NA	NA	NA	NA	NA	+0.006	0.0	19.1	1.2	
VP-3	NA	NA	NA	NA	NA	NA	+0.005	0.0	20.8	0.0	
VP-4	NA	NA	NA	NA	NA	NA	0.0	5.0	19.9	0.5	

Note and Abbreviations:

(a) Pipe run approximated from Construction Drawings. Pipe run lengths will be updated after system installation is complete.

(b) Depth expressed as measured depth within well casing. Well drilled at 30 degree angle.

ft bgs = feet below ground surface.

in.w.c. = vacuum or pressure in inches water column.

in = inches

- Pressures measured at wellheads.
- VOCs, O2, and CO2 measured at manifold. System operated for approximately 30 minutes with all valves open 100% except SSDs. Individual wells isolated from vacuum by closing valves while system was still running to allow for sampling.

SYSTEM MONITORING FORM
CIRCLE K - PHASE 1: MULTI-PHASE EXTRACTION (MPE) / SOIL VAPOR EXTRACTION (SVE)

Name & Company:

Date/time of data collection:

Weather:

System On on Arrival? (circle): yes no

System Hours:

Phase 1: MPE / SVE, all wells in extraction mode.

Barometric pressure (psi):	Barometric Pressure source:
Ambient Temperature (°F):	Ambient Temperature source:
Noise (dBA): If above 60 dBA, notify KJ personnel	Noise measurement source:

Moisture Separator Drained? (circle) Yes No

Approximate volume (gal):

Catalytic Oxidizer Installed? (circle) Yes No

Effluent Vapor VOC Conc (ppm):

PID Calibration Performed? (circle) Yes No

PID Calibration	Zero Gas	Span Gas
Calibration Value (ppm):		
Instrument Reading (ppm):		

Active Alarm Conditions (circle, note affected equipment):

1. No Alarm
2. High Water Level Tank(s):
3. Low Water Level Tank(s):
4. High Pressure Equipment:
5. Low Pressure Equipment:
6. System Shutdown Equipment:
7. Temperature Equipment:
8. Other:

Wells - Injection/Extraction (At Manifold)

Well ID	Pres/Vac (in Hg)	Flow (cfm)	PID (ppm)	Valve (O/C, fraction)
RW-2				
RW-3				
RW-4				
RW-5				
RW-6				
RW-7				
RW-8				
RW-9				
RW-10				
SW-1				
SW-2				
SW-3				
MW-4				
Well ID	Pres/Vac (in Hg)	Flow (cfm)	PID (ppm)	Valve (O/C, fraction)
SSD-1				
SSD-2				
SSD-3				
VP-1				
VP-2				
VP-3				
VP-4				

Treatment System

Location	ID	Temp (°F)	Pres/Vac (psi)	Flow (cfm/gpm)	PID (ppm)
Before MS	VI 210				
After MS	PI 310				
Before Blower	VI 300				
After Blower	PI/FI 302				
At Heat Exchanger	TT-302				
Before Vapor GAC	PI 411				
Vapor GAC Midpoint**	PI 412				
After Vapor GAC**	PI 410				
After Pump P-400	PI 400				
Before Bag Filter	PI-405				
After Bag Filter**	FI 400/PI 401				
Midpoint Liquid GAC 1**	PI 403				
After Liquid GAC 1	FE-404				
Midpoint Liquid GAC 2**	PI 406				
After Liquid GAC 2	FE-407				
After Liquid GAC**	PI-404				
Catalytic Oxidizer Temperatures (°F)		T1 Entrance:	T2 Exit:	T3 Interior:	
Catalytic Oxidizer PID (ppm)		Pre:	Post:		
Catalytic Oxidizer Flow Rate (scfm)		Pre:	Post:		
Water Discharge Flow Totalizer		Date	Time	Total Flow (gal)	
	FT 500				
	FT 500				

** Location for collection of air or water sample for laboratory analysis.

Comments/Maintenance Activities:

Permit Discharge Limits (see permits):

Air: 200 scfm Water: 3 gpm / 4500 gpd

If exceeded, notify Kennedy Jenks personnel.

Notes: psi = pounds/square inch; cfm = cubic feet per minute; ppm = parts per million; gal = gallons; MS = vapor liquid separator; GAC = granular activated carbon; O/C= open/closed