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ENGINEERING DESIGN REPORT

Excavation Areas, 1, 2, 6, and 7;
Asphalt/Concrete Cover; and
Institutional Controls

8801 EAST MARGINAL WAY S., TUKWILA, WASHINGTON
AGREED ORDER NO: 6069

Submitted To: PACCAR Inc

Subject: ENGINEERING DESIGN REPORT, EXCAVATION AREAS, 1, 2, 6, AND 7;
ASPHALT/CONCRETE COVER; AND INSTITUTIONAL CONTROLS, 8801
EAST MARGINAL WAY S., TUKWILA, WASHINGTON
AGREED ORDER NO: 6069

Shannon & Wilson prepared this report and participated in this project as a consultant to PACCAR Inc. This submittal presents the Engineering Design Report for targeted excavation at Areas 1, 2, 6, and 7; asphalt/concrete cover for areas to the east of the west wall of the proposed new warehouse; and implementation of institutional controls at 8801 East Marginal Way S., Tukwila, Washington. This report was prepared by the undersigned.

This report is one of multiple documents that fulfills the Final Engineering Design Report requirements discussed in Task 2C of Agreed Order No. 6069.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON



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EXECUTIVE SUMMARY

The property located at 8801 East Marginal Way South in Tukwila, Washington (8801 property) occupies 24.30 acres on the east bank of the Lower Duwamish Waterway (LDW) as shown in Figure 1. Contaminated soil and groundwater are present at the 8801 property due to historical sources on and off the 8801 property. Previous reports provide details of site characterization, selection of cleanup standards, and selection of remedial actions.

This Engineering Design Report (EDR) provides the specifications necessary to implement a subset of the selected interim remedial actions described in the Final Feasibility Study, Final Interim Action Work Plan, and the Addendum to the Feasibility Study and Interim Action Work Plan (Addendum). The Final IAWP and the Addendum together constitute the Interim Action Work Plan (IAWP) for the 8801 property.

This EDR is intended to address contaminated soil on the eastern portion of the 8801 property that contains chemicals of concern (COCs) exceeding the remediation levels (RLs). The remedial actions discussed in this EDR include targeted excavation at Areas 1, 2, 6, and 7 (Figure 2); placement of an asphalt/concrete cover over most of the eastern two-thirds of the 8801 property; and implementation of institutional controls. These remedial actions include the following components:

- Soil will be excavated from Areas 1, 2, 6, and 7 and disposed of at an off-site facility permitted to receive such waste. Approximately 1,270 tons of non-hazardous soil will be excavated from up to 9 feet below ground surface (bgs). The excavations will be backfilled using clean imported fill meeting criteria described in the Compliance Monitoring Plan (CMP).
- An asphalt/concrete cover will be installed over the eastern two-thirds of the 8801 property where soil contains COCs at concentrations exceeding the cleanup levels (CULs). The asphalt/concrete cover will consist of the foundation of the proposed new warehouse, and for areas outside the footprint of the warehouse, an impervious surface consisting of asphalt and/or concrete, which will be sloped to direct runoff to storm sewers. These features will limit infiltration, which will prevent contamination from leaching from unsaturated soil to groundwater and then migrating to surface water.
- The western 100 feet of the 8801 property is designated as a river buffer by the City of Tukwila's Shoreline Master Program and is subject to landscaping requirements. Remedial actions in the river buffer are described in a separate EDR.
- Institutional controls will be implemented across the eastern portion of the 8801 property, consisting of inspection and maintenance requirements for the asphalt/concrete cover, limitations on activities that could disturb or expose

contaminated soil beneath the asphalt/concrete cover, compliance with an Operations and Maintenance Plan if contaminated soil beneath the asphalt/concrete cover will be exposed or handled, and limitations on the use of groundwater. The institutional controls will be incorporated into an environmental covenant, which will be executed by CenterPoint 8801 Marginal LLC (CenterPoint) and recorded against the title to the 8801 property.

- Compliance monitoring for the remedial actions described in this EDR is discussed in the CMP.

Other remedial actions to be completed on the eastern portion of the 8801 property are discussed in separate EDRs, and include installation of a sub-slab depressurization system underneath a portion of the proposed new warehouse, removal of caulking between concrete paving joints in a select area, and injection of an enhanced reductive dichlorination solution into groundwater.

The preceding summary is provided for introductory use only. We recommend a thorough reading of the complete report.

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ACRONYMS

AO	Agreed Order
bgs	below ground surface
CenterPoint	CenterPoint 8801 Marginal LLC
CMP	Compliance Monitoring Plan
COC	chemical of concern
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
CULs	cleanup levels
Ecology	Washington State Department of Ecology
EDR	Engineering Design Report
GPS	global positioning system
HSP	Health and Safety Plan
IAWP	Interim Action Work Plan
LDW	Lower Duwamish Waterway
mg/m ³	milligrams per cubic meter
MSL	mean sea level
MTCA	Model Toxics Control Act
POC	point of compliance
RCW	Revised Code of Washington
RL	remediation level
SAP	Sampling and Analysis Plan
SEPA	State Environmental Policy Act
TCE	trichloroethylene
UECA	Uniform Environmental Covenant Act
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

1 INTRODUCTION

The upland portion of the property located at 8801 East Marginal Way South in Tukwila, Washington (8801 property) (Figure 1) and the adjoining sediments in the Lower Duwamish Waterway (LDW) together constitute the 8801 site. The 8801 site is subject to two separate Agreed Orders (AOs): AO No. 6069, which applies to the 8801 property, and AO No. 3599, which applies to the adjoining LDW sediments. This report is one of multiple documents that fulfills the Final Engineering Design Report requirements discussed in Task 2C of AO No. 6069.

This EDR provides the specifications necessary to implement a subset of the remedial actions that were selected for the 8801 property in the Final Feasibility Study, Final Interim Action Work Plan, and the Addendum to the Feasibility Study and Interim Action Work Plan (Shannon & Wilson, 2020a, 2020b, and 2020c). The Final Interim Action Work Plan and the Addendum together constitute the Interim Action Work Plan (IAWP) for the 8801 property. This subset of remedial actions includes targeted excavation at Areas 1, 2, 6, and 7 (Figure 2); placement of an asphalt/concrete cover over much of the 8801 property; and implementation of institutional controls. Compliance monitoring for the remedial actions that are described in this EDR are discussed in the Compliance Monitoring Plan (CMP) (Shannon & Wilson, 2021). The Sampling and Analysis Plan (SAP) is an appendix of the CMP.

2 SITE DESCRIPTION

This section presents an overview of the 8801 property's location, history, geology, and hydrogeology. Additional information is provided in the Final Feasibility Study and Final Interim Action Work Plan.

2.1 Physical Description and Use

The 8801 property occupies 24.30 acres on the east bank of the LDW and is relatively flat, with a ground surface elevation of approximately 20 feet above mean sea level (MSL).

The property owner (CenterPoint 8801 Marginal LLC) plans to redevelop the 8801 property by constructing an approximately 414,400-square-foot warehouse for industrial use and trailer storage on the property. The redevelopment plans include demolition of the existing buildings except part of the smaller building on the west end of the 8801 property that

houses the aboveground infrastructure for the existing air sparge and soil vapor extraction system. The floor of the proposed new warehouse will be constructed approximately 4 feet above existing grade to allow direct truck loading. Substantial fill will be imported and placed under the warehouse to accommodate this height. The footprint of the warehouse is shown in Appendix A. The redevelopment is slated to commence in 2021.

2.2 Geology

The 8801 property is currently paved. Fill material underlies paved surfaces and is up to 10 feet thick in some locations. Fill material includes gravelly structural fill beneath buildings and paved areas, poorly graded sand to silty sand fill deposits, and gravelly backfill materials in excavations. Fill material at the 8801 property is underlain by a layer of fine-grained material, including silt, sandy silt, and silty sand that extends to a depth of 5 to 15 feet below ground surface (bgs). A poorly graded sand layer, which typically contains less than 10% silt, is generally present beneath the fine-grained layer beginning at 10 to 15 feet bgs, although at some locations it is present immediately beneath the pavement surface or the fill material. A layer of fine-grained materials, consisting mainly of silt and silty sand, is typically present beneath the poorly graded sandy layer at depths of approximately 30 to 50 feet bgs. This fine-grained silty material acts as a confining layer to groundwater flow on the western portion of the 8801 property. The lower, fine-grained layer is typically underlain by poorly graded sand to the maximum depth explored at the 8801 property (60 feet bgs).

2.3 Hydrogeology

Results of groundwater monitoring at the 8801 property indicate that the shallow aquifer is typically 8 to 10 feet bgs. The hydraulic gradient in the shallow aquifer is generally toward the west. Groundwater velocity is estimated to be 40 feet per year.

3 CLEANUP STANDARDS AND REMEDIATION LEVELS (RLs)

Cleanup standards consist of cleanup levels (CULs) and points of compliance (POCs) where the CULs must be attained. A remediation level (RL) consists of a concentration of a COC above which a cleanup action component will be required as part of a cleanup action. The CULs and RLs described in this section apply to the remedial actions described in this EDR and other remedial actions described in the IAWP.

3.1 Soil Cleanup Levels (CULs)

The CULs for soil are provided in the IAWP. The starting point for establishing the CULs was the Washington State Department of Ecology (Ecology) preliminary CULs, which are based on various exposure pathways, including soil partitioning to groundwater and entering surface water, and are protective of sediment, surface water, and consumption of fish. The CULs are based on applicable state and federal or relevant and appropriate requirements. The values were then adjusted for practical quantitation limits achievable by analytical laboratories and for natural background concentrations of COCs, as appropriate.

3.2 Soil Remediation Levels (RLs)

The RLs for soil are provided in Exhibit 3-1. The RLs have been developed in accordance with Washington Administrative Code (WAC) 173-340-355 and take into consideration the expectations for cleanup alternatives in WAC 713-340-370. The IAWP discusses the selection procedures for RLs.

Exhibit 3-1: Soil Remediation Levels

Analyte	Remediation Level (milligrams per kilogram)
Arsenic	14.6
Gasoline-range hydrocarbons	250*
Tetrachloroethene	5
Total cPAHs toxicity equivalency quotient (TEQ)	0.6
Trichloroethylene	5
Vinyl chloride	5

NOTES:

* = cleanup level; cPAHs = carcinogenic polycyclic aromatic hydrocarbons

The RLs will be used to delineate the limits of the remedial excavations. Due to the stringent value required to ensure that soil is protective of the leaching pathway, the removal of the soil with COCs exceeding RLs will result in significant mass reduction of COCs.

Soil in an area of the 8801 property that will be located under the proposed new warehouse (Area 7, Figure 2) contains elevated concentrations of gasoline-range hydrocarbons. To ensure protection for indoor air, a CUL of 250 milligrams per kilogram was selected for gasoline-range hydrocarbons in soil that will remain beneath the warehouse in accordance with Ecology guidance (Ecology, 2016).

3.3 Points of Compliance (POCs) for Soil Cleanup Levels (CULs) and Remediation Levels (RLs)

Soil POCs are discussed below because the four excavations addressed in this EDR are mostly above the groundwater table.

- The POC demonstrating compliance for pathways protective of human health, namely potential direct contact, inhalation, or ingestion of impacted soil, shall be established in the soil throughout the 8801 property from the ground surface to 15 feet bgs (Washington Administrative Code [WAC] 173-340-740(6)(d)).
- The POC demonstrating protection of groundwater shall be established in soil throughout the 8801 property (WAC 173-340-740(6)(b)).
- The POC demonstrating compliance for pathways protective of human health and the environment by migration of chemicals from soil to air shall be established in the soil from the ground surface to the top of the uppermost saturated zone throughout the 8801 property (i.e., the Vadose zone) (WAC 173-340-740(6)(c)).

4 REMEDY OVERVIEW

The remedial actions described in this EDR consist of targeted excavation at Areas 1, 2, 6, and 7; placement of an asphalt/concrete cover over much of the eastern two-thirds of the 8801 property; and implementation of institutional controls. These remedies protect human health and the environment, employ reliable and proven technologies, and can be completed relatively quickly. The remedial actions include the following components:

- Soil will be excavated from Areas 1, 2, 6, and 7 and disposed of at an off-site facility permitted to receive such waste. The excavations will be infilled with clean imported fill meeting criteria described in the CMP. Soil COCs being targeted in each area are as follows:
 - Area 1 primarily removal of trichloroethylene with some commingled tetrachloroethene and vinyl chloride also removed
 - Area 2 removal of cPAHs
 - Area 6 removal of arsenic
 - Area 7 removal of gasoline-range hydrocarbons
- An asphalt/concrete cover will be installed in areas to the east of the western wall of the proposed new warehouse where soil exceeds the CULs. The cover will consist of the foundation of the warehouse, and for areas outside the footprint of the warehouse, an impervious surface consisting of asphalt and/or concrete, which will be sloped to direct runoff to storm sewers. Details of the asphalt/concrete cover are shown in Appendix A.

- The asphalt/concrete cover will serve as engineered controls to limit human exposure to underlying contaminated soils and to limit infiltration of stormwater, which will prevent contamination from leaching from unsaturated soil to groundwater and then migrating to surface water.
- Institutional controls will be implemented across the eastern portion of the 8801 property, consisting of inspection and maintenance requirements for the asphalt/concrete cover, limitations on activities that could disturb or expose contamination soil beneath the asphalt/concrete cover, compliance with an Operations and Maintenance Plan if contaminated soil beneath the asphalt/concrete cover will be exposed or handled, and limitations on the use of groundwater. The institutional controls will be incorporated into an environmental covenant, which will be executed by CenterPoint and recorded against the title to the 8801 property.
- Compliance monitoring for the remedial actions described in this EDR is discussed in the CMP.

Other remedial actions to be completed on the eastern portion of the 8801 property are discussed in separate EDRs, and include installation of a sub-slab depressurization system underneath a portion of the proposed new warehouse, removal of caulking between concrete paving joints in a select area, and injection of an enhanced reductive dechlorination solution into groundwater.

The remedial actions described in this EDR are anticipated to require several months and are scheduled to commence in 2021.

5 DESIGN AND IMPLEMENTATION

The purpose of this section is to provide a detailed description of the engineering design that will be implemented during the remedial actions.

5.1 Objective

The objective of the remedial actions described in this EDR is to remove pathways for contamination to impact potential receptors. The remedial actions fulfill this objective by several methods: eliminating high concentrations of contaminants by removing them from the 8801 property, installing an asphalt/concrete cover to prevent exposure to and migration of contamination, and implementing institutional controls to inspect and maintain the asphalt/concrete cover and to limit uses of the 8801 property that could expose contaminated soils or extract contaminated groundwater.

5.2 Potentially Applicable or Relevant and Appropriate Requirements

The activities described in this EDR consist of remedial actions that will occur under the terms of an AO entered into with Ecology. As such, this remedial action is exempt from the procedural requirements of chapters 70A.94, 70A.95, 70A.105, 77.55, 90.48, and 90.58 Revised Code of Washington (RCW), and the procedural requirements of any laws requiring or authorizing local government permits or approvals. This remedial action must nonetheless comply with the substantive provisions of state and local laws and regulations.

Potentially applicable or potentially relevant and appropriate requirements that might apply to these remedial actions include:

- The State Environmental Policy Act (SEPA) as authorized by RCW 43.21C and WAC 197-11. A SEPA checklist for the IAWP, which includes the remedial actions described in this report, has been completed.
- Occupational Safety and Health Act and Washington Industrial Safety and Health Act regulations (29 Code of Federal Regulations 1910.120; WAC 296-843). Details to address this are provided in the Health and Safety Plan (HSP) attached to the CMP.
- Washington Industrial Safety and Health Act, Chapter 49.17 RCW, Safety Standards for Construction Work (WAC 296-155). Details to address this are provided in the HSP attached to the CMP.
- Underground Utilities, RCW 19.122.010, General Protection Requirements (WAC 296-155-655).
- City of Tukwila zoning, building, and construction regulations (e.g. grading, stormwater, and shoreline requirements).
- Requirements for decommissioning of groundwater monitoring wells (WAC 173-160). A licensed driller will submit a notice of intent to Ecology's Water Resources Program prior to decommissioning the monitoring wells as detailed in the CMP.
- Resource Conservation and Recovery Act (RCRA) regulations for waste generation, hauling, and disposal (WAC 173-303; WAC 173-350).
- Solid Waste Management Chapter 43.21 RCW, Minimum Functional Standards for Solid Waste Handling (WAC 173-304) for waste handling.

5.3 Pre-Mobilization Coordination

Pre-mobilization coordination activities will include, but are not limited to, the following:

- Addressing any overlapping health and safety issues with the project team.
- Communicating the project schedule with the project team.

- Notifying Ecology about the anticipated field schedule at least five working days prior to the scheduled start of the remedial actions.
- Performing a utility locate prior to each excavation activity.
- Communicating with the laboratory about the laboratory requirements included in the SAP.
- Communicating with the off-site waste disposal facility regarding the acceptance of the solid waste generated at the 8801 property.
- Coordinating with the appropriate wastewater facility regarding acceptance of any stormwater or groundwater discharged to that facility.

5.4 Site Preparation

The following tasks will be completed prior to commencing the remedial excavations:

- Groundwater monitoring well MW-46A will be decommissioned since it is within Area 1. The procedures for decommissioning of wells are described in the CMP.
- Existing asphalt and concrete pavements will be removed from the surface of the excavation areas.
- The existing building on the 8801 property, that encloses Area 7, will be demolished prior to excavation at Area 7.

5.5 Targeted Excavation of Soil

The purpose of this section is to provide a detailed description of the targeted excavations that will be implemented as remedial actions.

5.5.1 Excavations

The initial boundary of each excavation will be determined using a global positioning system (GPS) receiver. To the extent practicable, each excavation will be cut vertically to minimize the removal of non-impacted media. The soil in each excavation will be excavated in an iterative manner, as necessary. Locations of the excavations are provided in Figures 2 and 3. Cross-sections of excavations are provided in Figures 4 and 5.

Due to the depth, the excavations may need preventive measures (e.g., sloping or shoring) per Occupational Safety and Health Act regulations. However, the methodology employed for the excavations will be selected by the contractor subject to the objectives of the excavation being met. If the contractor chooses to use shoring, then a design stamped by an engineer will be provided for review by Shannon & Wilson in advance of installation, unless a shore box is utilized. Dewatering methodologies will also be selected by the contractor.

Any excavation water removed will be treated to meet discharge requirements under conditions of discharge permits (either stormwater or to the sanitary sewer).

5.5.2 Pre-Excavation Base Sampling for Area 7

One of the excavations (Area 7) on the eastern portion of the 8801 property is proposed to extend below the groundwater table. The initially targeted excavation depth for Area 7 was 10 feet bgs. In February 2021, a boring was placed in the center of Area 7 where the maximum excavation depth would be achieved (boring A7-1 is shown in Figure 4). Soil samples were collected at three depths at 9, 10, and 11 feet bgs and analyzed for gasoline-range hydrocarbons. In accordance with agreement from Ecology, the sample collected from the target depth (10 feet bgs) was analyzed first. Because no gasoline-range hydrocarbons were detected in the 10 feet sample at concentrations above the CUL, the shallower sample (9 feet bgs) was analyzed and there was no need to analyze the deeper sample (11 feet bgs). Because no gasoline-range hydrocarbons were detected in the 9 feet sample at concentrations above the CUL, this sample is being used at the confirmation sample for the base of the excavation. The laboratory data from these samples was validated in accordance with the quality control measures detailed in the CMP. The distribution of the gasoline-range hydrocarbons in Area 7 is shown in the cross section on Figure 4.

5.5.3 Excavation Specifics

The approximate surface area and depth of each excavation are provided in Exhibit 5-1.

Exhibit 5-1: Excavation Areas Summary

Excavation Area Designation	Primary Chemicals of Concern (COCs)	Approximate Depth ¹ (feet bgs)	Approximate Surface Area of Soil to be Excavated ¹ (square feet)	Estimated Waste Disposal Classification	
				Non-Haz (tons)	Hazardous (tons)
1	Trichloroethylene	4	5,700	1,167	0
2	Total cPAHs TEQ	2.5	660	95	0
6	Arsenic	6	200	67	0
7	Gasoline-Range Hydrocarbons	9	200	100	0

NOTE:

1 This table assumes excavation sidewalls are cut vertically and excavations will not be expanded beyond initial estimates. Excavations may be required to be sloped which would increase the surface area and tonnage. Excavations may be expanded if confirmation samples indicate that contamination exceeding RLs remains in excavations sidewalls or bottoms.

Further details of the excavations are presented below:

- **Area 1 - Northern Property Boundary:** This excavation is designed to address trichloroethylene (TCE) in unsaturated soil that is considered a potential source of contamination to groundwater. Based on existing data, the excavation is expected to extend to a depth of approximately 4 feet bgs. Based on the presumed size of the excavation, approximately 1,167 tons of soil will be removed from the excavation and disposed of as non-hazardous waste at a Subtitle D landfill. Samples will be collected from the sidewalls and base of the excavation and analyzed for TCE.
- **Area 2 – H4 and Vicinity:** This excavation is designed to address carcinogenic polycyclic aromatic hydrocarbons (cPAHs) in shallow soil (1.5 feet bgs) in the unsaturated zone. This excavation is expected to extend to a depth of approximately 2.5 feet bgs. Based on the presumed size of the excavation, approximately 95 tons of soil will be removed from the excavation and disposed of as non-hazardous waste at a Subtitle D landfill. Samples will be collected from the sidewalls and base of the excavation and analyzed for cPAHs.
- **Area 6 - SFA-S15-3:** This excavation is designed to address arsenic in unsaturated soil at one sample location. The excavation is expected to extend to a depth of approximately 6 feet bgs. Based on the presumed size of the excavation, approximately 67 tons of soil will be removed from the excavation and disposed of as non-hazardous waste at a Subtitle D landfill. Samples will be collected from the sidewalls and base of the excavation and analyzed for arsenic.
- **Area 7 - FWW-1:** This excavation is designed to address gasoline-range hydrocarbons in shallow soil at one sample location. The excavation is expected to extend to a depth of approximately 9 feet bgs. Shoring and dewatering may be used at this location given the excavation extends to a depth that may be below the water table. Based on the presumed size of the excavation, approximately 100 tons of soil will be removed from the excavation and disposed of as non-hazardous waste at a Subtitle D landfill. Samples will be collected from the sidewalls of the excavation and analyzed for gasoline-range hydrocarbons. As previously discussed, a confirmation base sample was collected in February 2021.

5.5.4 Confirmation Sampling

Once each excavation area is excavated to initial dimensions, confirmation samples will be collected in accordance with the SAP (appendix in the CMP). Confirmation samples will be collected to confirm that the soil remaining in place complies with appropriate RLs. In general, confirmation samples will be collected from excavation sidewalls and bottoms (except in Area 7 where the base sample has already been collected), with a minimum of one sample collected from each sidewall and base. Each excavation will have a unique analytical suite dependent upon the primary COCs previously documented in the area.

If confirmation sample results indicate that the excavation is not in compliance with RLs, then the excavation will be expanded until compliance is achieved as indicated by sample results. A GPS receiver will be used to determine the final excavation boundaries and confirmation sample locations.

5.5.5 Backfilling

The excavations will be backfilled using clean imported fill meeting criteria described in the CMP. The backfill will be compacted consistent with requirements in the Washington State Department of Transportation's (WSDOT's) Standard Specifications for Road, Bridge, and Municipal Construction (WSDOT, 2019). The excavation areas will be overlain by pavement or the foundation of the proposed new warehouse that will be incorporated into the design of the asphalt/concrete cover. See Appendix A for the proposed drainage and grading plan.

5.5.6 Disposal

Excavated soil will be characterized and disposed of at an off-site facility permitted to receive such wastes. Most likely the disposal facility will be Waste Management's facility in Oregon.

5.6 Asphalt/Concrete Cover

As shown in Appendix A, an asphalt/concrete cover will be installed in areas to the east of the western wall of the proposed new warehouse where soil exceeds the CULs. The cover will consist of the foundation of the warehouse, and for areas outside the footprint of the warehouse, an impervious surface consisting of asphalt and/or concrete, which will be sloped to direct runoff to storm sewers. The asphalt/concrete cover will limit human exposure to underlying contaminated soils and will limit infiltration of stormwater, which will prevent contamination from leaching from unsaturated soil to groundwater and then migrating to surface water.

5.7 Construction Procedures and Control

This section describes the construction procedures and controls that will be implemented, as necessary, in conjunction with the remedial actions described in previous sections.

5.7.1 Site Control

A perimeter fence will be placed around the 8801 property to limit public access. The contractor will control fencing access points during construction.

5.7.2 Site Stockpile Management and Procedures

Soil with concentrations of COCs above the RLs will be direct-loaded into dump trucks, to the extent practicable, for off-site disposal. If appropriate, contaminated soil will be stockpiled on the 8801 property before loading for disposal. The following steps shall be taken if stockpiling:

- The stockpile will be placed on an impervious surface (e.g., concrete, asphalt, or a polyethylene liner with a thickness of at least 10 mils).
- When a stockpile is left overnight or not in use, it will be covered to prevent dust escape, odor emissions, and rainfall contact. The cover shall consist of a polyethylene liner (at least 6 mils thick), which will be secured with ropes and sandbags.
- A berm shall be installed around the stockpiled soil to prevent runoff from leaving the area and stormwater from entering the stockpile from other areas.
- Stockpiles shall not be placed near drains, watercourses, or other stormwater features.

5.7.3 Dust Control and Monitoring

Best management practices for dust control (e.g., misting/watering of dry soil) will be implemented to suppress dust during construction activities and eliminate visible dust. Misting/watering will not be conducted for stockpiles of potentially contaminated material to minimize contaminant transport to stormwater. Designated construction entrances and wheel washes will be used to prevent contaminated dirt from leaving the 8801 property.

Airborne dust monitoring will be conducted during soil excavation activities. Real-time monitoring will be conducted each workday for the duration of the workday at one reasonable maximum exposure sample location (e.g., next to heavy-equipment operators). Each workday may have a different monitoring location depending on the nature of work being conducted that day. A calibrated dust monitor will be used to measure the amount of respirable dust (i.e., particulates less than 10 microns in diameter) in the air. The respirable dust measurements will be logged throughout the day. The field meter will be configured to collect measurements approximately every minute and to emit an alarm if a concentration exceeds the 8801 property's Airborne Dust Action Level of 5 milligrams per cubic meter (mg/m³). The Airborne Dust Action Level is the permissible exposure limit for the respirable fraction of nuisance dust of 5 mg/m³ per WAC 296-841-20025.

5.7.4 Groundwater Dewatering and Stormwater Control

Because one of the planned excavations (Area 7) will extend below the typical depth to groundwater at the 8801 property, it is expected that some groundwater will need to be removed from this excavation using a pump in order to complete excavation activities. Any

groundwater that is removed from this excavation or others will be temporarily stored in a large portable tank, pre-treated for suspended solids, and disposed per the contractors permit requirements.

Generation of stormwater during the remedial actions is not expected; however, the excavations will be protected to prevent drainage of stormwater into them. Any stormwater that ponds in an open excavation will be handled in the same manner as groundwater removed from Area 7.

5.7.5 Spill Control

The contractors will use best management practices to prevent spills of oil, fuel, and other products containing hazardous substances, and will have spill kits available at the 8801 property to respond to spills. Any release to the environment will be remedied to Ecology's satisfaction by the contractor responsible for the spill.

5.8 Institutional Controls

Institutional controls will be implemented on the eastern portion of the 8801 property using an environmental covenant developed in accordance with WAC 173-340-440 and Ecology's Toxics Cleanup Program Procedure 440A. Specifically, the environmental covenant will:

- Restrict activities that could disturb or expose contaminated soil beneath the asphalt/concrete cover, including, excavation, grading, digging, drilling, or piling.
- Require regular inspections and, if necessary, repairs of the asphalt/concrete cover, in accordance with an Operations and Maintenance Plan. The Operations and Maintenance Plan will also describe the procedures that must be followed if contaminated soil beneath the asphalt/concrete cover will be exposed, handled, excavated, or removed.
- Prohibit installation of a water-supply well within the 8801 property.
- Prohibit extraction of groundwater within the 8801 property for any purpose other than temporary construction dewatering, investigation, monitoring, or remediation.
- Require that groundwater extracted for any purpose within the 8801 property be considered potentially contaminated and any discharge of this water be conducted in accordance with state and federal law.
- Require that the potential for vapor intrusion be evaluated prior to the design or construction of any new enclosed structures on the 8801 property.

The environmental covenant will be based on Ecology's template for environmental covenants. Once signed, the environmental covenant will be recorded in King County in

accordance with the Uniform Environmental Covenants Act (UECA) requirements of RCW 64.70.080(1). A copy of the recorded environmental covenant will also be distributed to each person signing the covenant, each person holding a recorded interest in the 8801 property, each person in possession of the 8801 property at the time the covenant is executed, the City of Tukwila, and Ecology per UECA requirements in RCW 64.70.070(1).

The environmental covenant and the Operations and Maintenance Plan will be prepared once the remedial actions are complete.

5.9 Remedial Action Completion Report

After the remedial actions described in this EDR are completed, a Remedial Action Completion Report documenting the remedial actions will be produced in accordance with WAC 173-340. The Remedial Action Completion Report may also document remedial actions described in other EDRs.

6 COMPLIANCE MONITORING

This section discusses the compliance monitoring that will be undertaken to demonstrate compliance with MTCA. The CMP with additional detail for performance and compliance monitoring has been submitted separately (Shannon & Wilson, 2021).

Three types of compliance monitoring are identified for interim or remedial actions performed under MTCA (WAC 173-340-410): Protection, Performance, and Compliance Monitoring. The definition of each is presented below (WAC 173-340-410 [1]) with project-specific action to be undertaken:

- Protection Monitoring – To confirm that human health and the environment are adequately protected during construction and the operation and maintenance period of an interim action or remedial action as described in the HSP. Protection monitoring for remedial actions described in this EDR will include:
 - Personal and perimeter air sampling.
 - Implementation of best management practices as discussed in the existing Stormwater Pollution Prevention Plan for the 8801 property.
 - Implementation of a temporary erosion and sedimentation control plan.
- Performance Monitoring – To confirm that the remedial action has attained cleanup standards and other performance standards, such as construction quality control measurements or monitoring necessary to demonstrate compliance with a permit or, where a permit exemption applies, the substantive requirements of other laws. Performance monitoring for remedial actions described in this EDR will include:

- Waste characterization for off-site treatment or disposal.
- Archaeological observation during subsurface work.
- Soil sampling of excavation sidewalls and bottoms.
- Groundwater sampling from groundwater monitoring wells located downgradient of the remediated areas.
- Characterization of imported fill material.
- Confirmation Monitoring – To confirm the long-term effectiveness of the cleanup action once cleanup standards and other performance standards have been attained. Confirmation monitoring for remedial actions described in this EDR will include:
 - Groundwater sampling from groundwater monitoring wells located along the western boundary of the 8801 property to determine if CULs have been achieved. The locations of the proposed confirmation wells and selected analyses are provided in the CMP.

7 LIMITATIONS

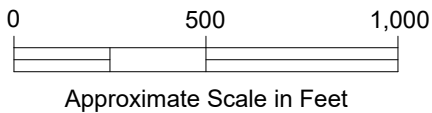
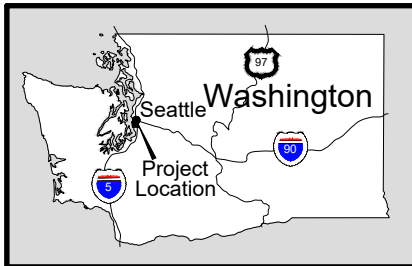
Shannon & Wilson has reviewed historical records and conducted subsurface explorations of the 8801 site. We have examined and relied on documents referenced in the report and made assumptions for the design and operation of equipment. We have not conducted an independent examination of all facts contained in referenced materials and statements. We have assumed that these documents are genuine, and that the information provided in these documents and statements is true and accurate. We have no knowledge or indication to the contrary unless otherwise stated in the body of this report.

The data presented in this report are based on limited research and sampling at the 8801 site; other areas of contamination that were not identified during investigations could be present at the 8801 site. Conditions referenced in this report may change over time.

8 REFERENCES

Shannon & Wilson, 2020a, Final feasibility study, 8801 East Marginal Way S, Tukwila, Wash.: Report prepared by Shannon & Wilson, Inc., Seattle, Wash., 21-1-12567-021, for PACCAR Inc, Bellevue, Wash., July 27, available <https://apps.ecology.wa.gov/gsp/DocViewer.ashx?did=93568>.

- Shannon & Wilson, 2020b, Final interim action work plan, 8801 East Marginal Way S, Tukwila, Wash.: Report prepared by Shannon & Wilson, Inc., Seattle, Wash., 21-1-12567-021, for PACCAR Inc, Bellevue, Wash., July 27, available <https://apps.ecology.wa.gov/gsp/DocViewer.ashx?did=93570>.
- Shannon & Wilson, 2021, Compliance monitoring plan, 8801 East Marginal Way S., Tukwila, Wash.: Report prepared by Shannon & Wilson, Seattle, Wash., 21-1-12567-024, for PACCAR Inc, Bellevue, Wash., March 15.
- Washington State Department of Ecology (Ecology), 2016, Attachment B: Recommended vertical separation distances between contamination and building basement floor, foundation, or crawlspace surface, to updated process for initially assessing the potential for petroleum vapor intrusion, implementation memo no. 14: Olympia, Wash., Washington State Department of Ecology, Publication no. 16-09-046, March 31, available: <https://fortress.wa.gov/ecy/publications/SummaryPages/1609046.html>
- Washington State Department of Transportation (WSDOT), 2019, Standard specifications for road, bridge, and municipal construction, 2020: Olympia, Wash., Washington State Department of Transportation, Publication no. M 41-10, September 1, available: <https://www.wsdot.wa.gov/publications/manuals/fulltext/M41-10/SS.pdf>

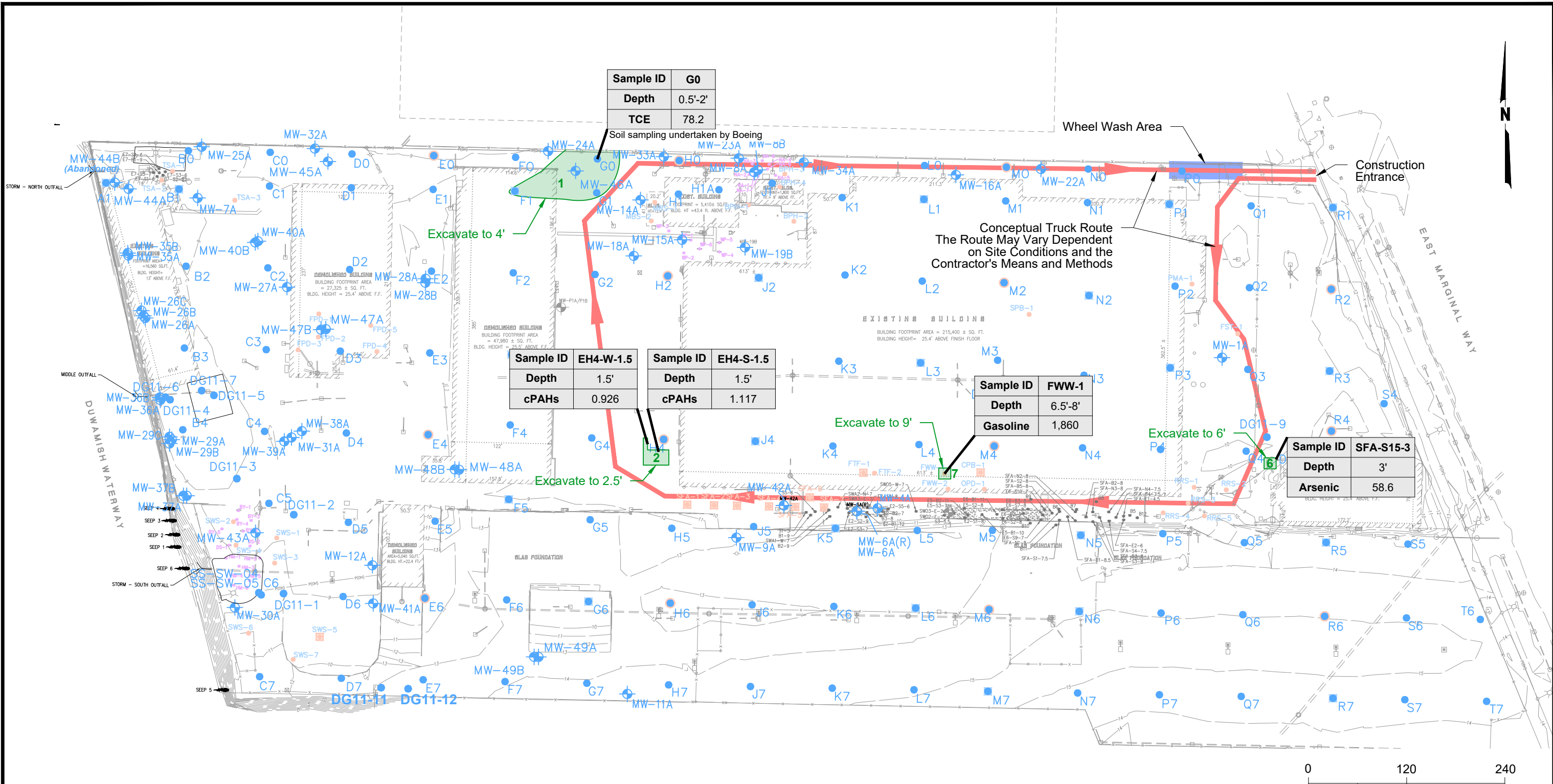


Engineering Design Report
Excavation in Areas 1, 2, 6, and 7;
Asphalt/Concrete Cover; and Institutional Controls

VICINITY MAP

July 2021

21-1-12567-024



Sample ID	G0
Depth	0.5'-2'
TCE	78.2

Soil sampling undertaken by Boeing

Sample ID	EH4-W-1.5
Depth	1.5'
cPAHs	0.926

Sample ID	EH4-S-1.5
Depth	1.5'
cPAHs	1.117

Sample ID	FWW-1
Depth	6.5'-8'
Gasoline	1,860

Sample ID	SFA-S15-3
Depth	3'
Arsenic	58.6

- LEGEND**
- 1 Proposed Estimated Excavation Extents with Area Number Designation
 - Soil Sample
 - MW-36B Groundwater Monitoring Well
 - Fenceline
 - Feet

- ABBREVIATIONS**
- cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons
 - TCE = Trichloroethylene
 - TEQ = Total Equivalency Quotient

- NOTES**
- Exploration locations are approximate.
 - Base map and historic exploration points are from Kennedy-Jenks Figures 2 and 3, 046001.00/Report/Po4SK003.
 - Concentrations are expressed in milligrams per kilograms (mg/kg).
 - Established project specific remediation level (mg/kg):

Arsenic	14.6
Gasoline-Range Hydrocarbons	250
Total cPAHs TEQ	0.6
TCE	5

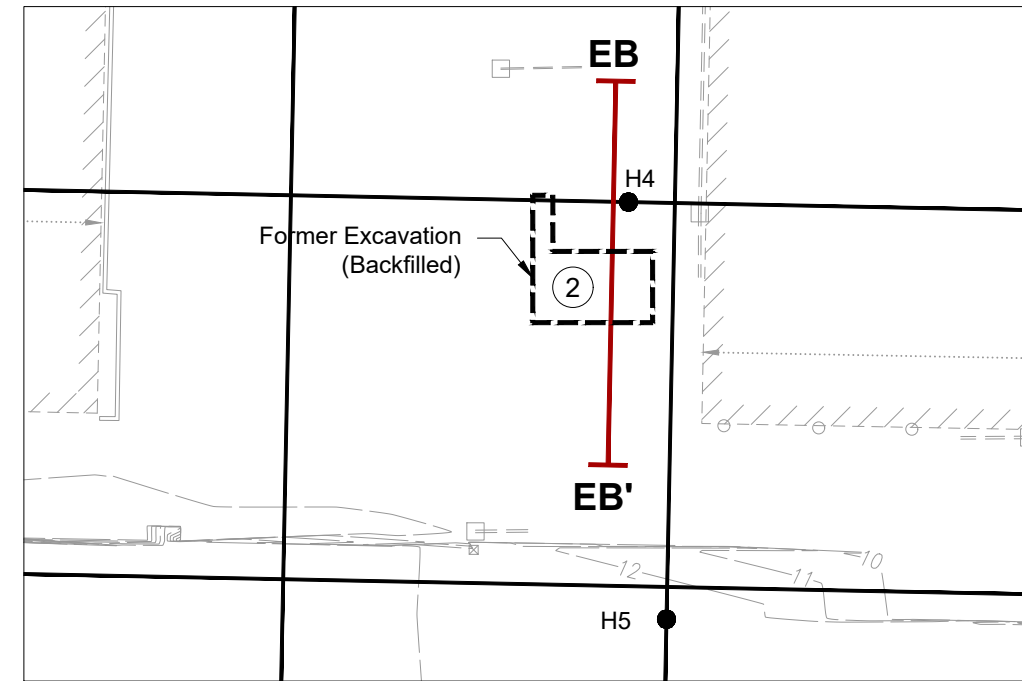
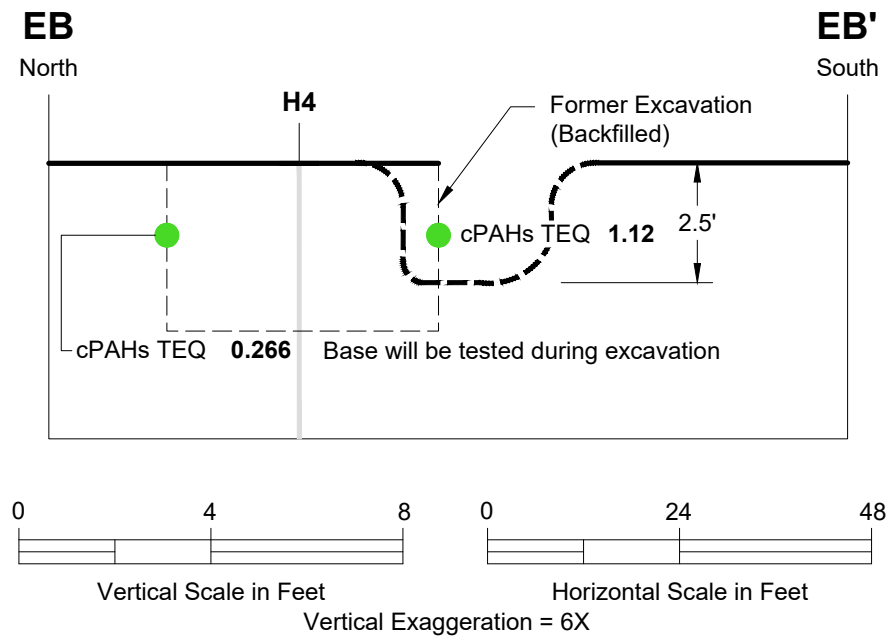
Engineering Design Report
Excavation in Areas 1, 2, 6, and 7;
Asphalt/Concrete Cover; and Institutional Controls

PROPOSED REMEDIAL ACTION EXCAVATIONS

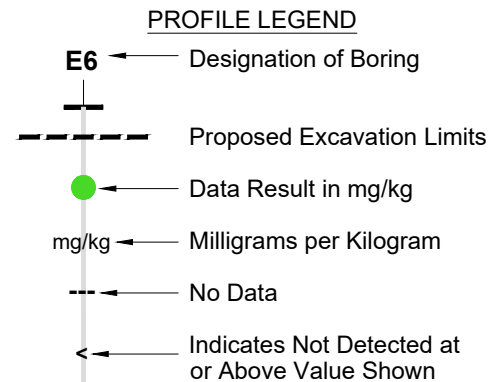
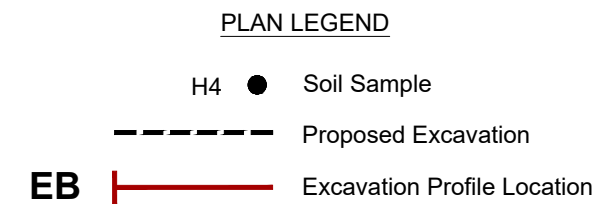
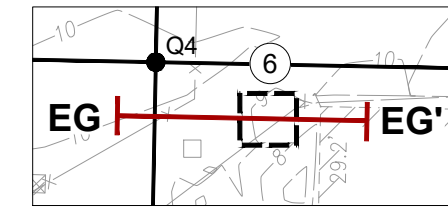
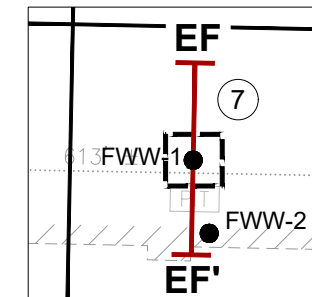
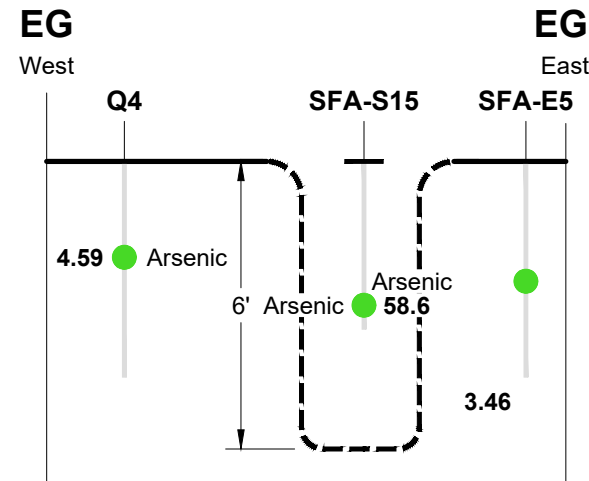
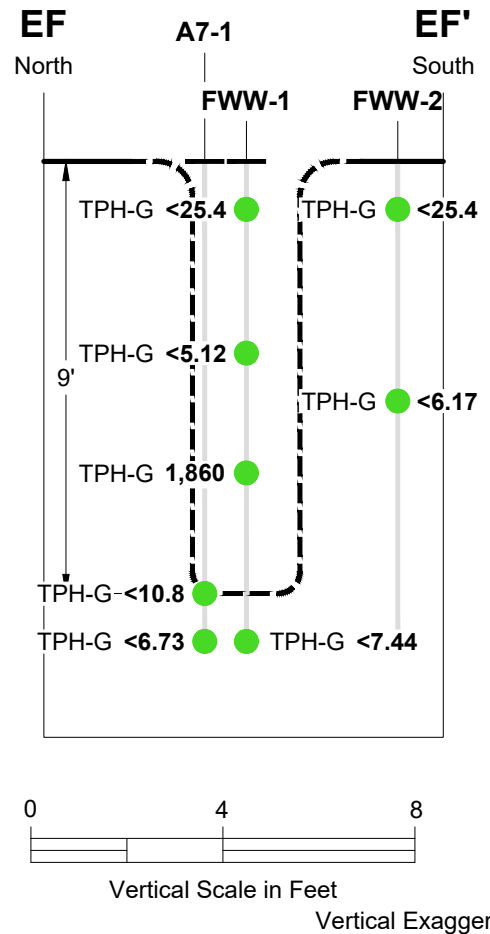
July 2021 21-1-12567-024

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FIG. 2



A7-1 offset for graphical representation. A7-1 was placed approximately center of the proposed excavation area.



DATA TABLE

	REMEDIATION LEVEL (mg/kg)
Arsenic	14.6
cPAHs TEQ	0.6
TPH-G	250

ABBREVIATIONS

TPH-G = Gasoline-Range Hydrocarbons

cPAHs TEQ = carcinogenic Polycyclic Aromatic Hydrocarbon Toxicity Equivalent

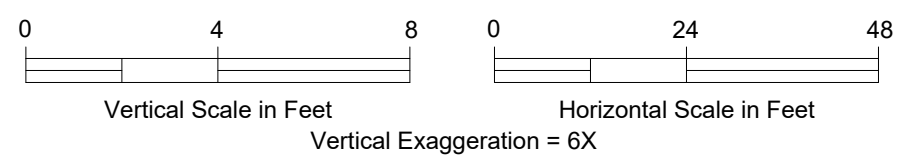
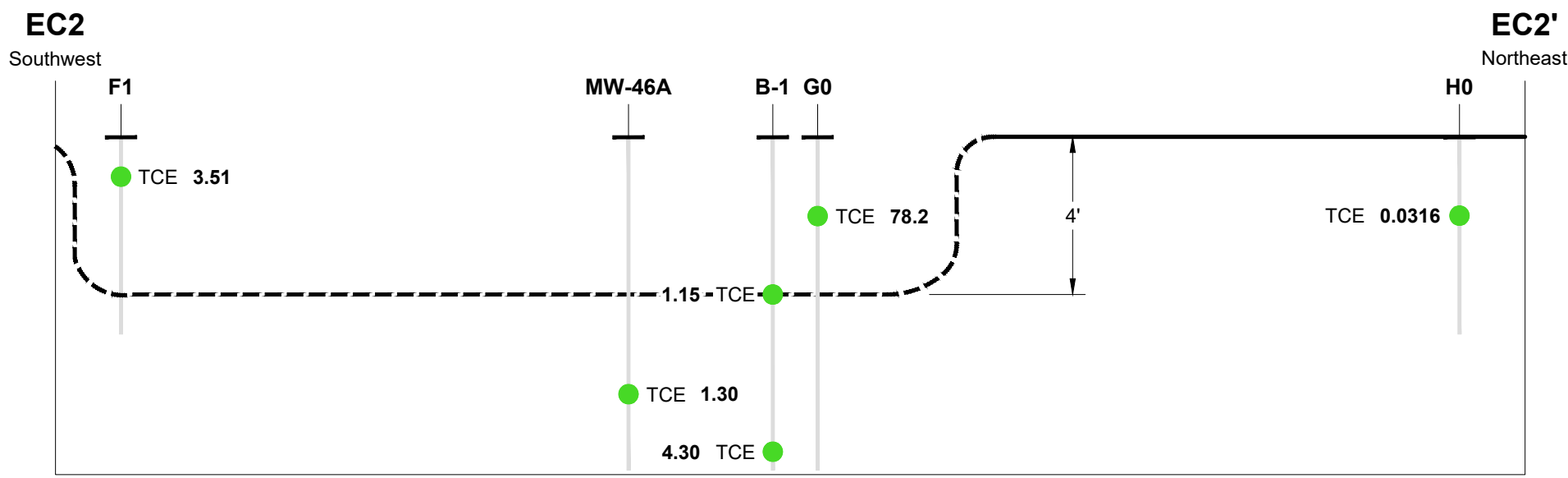
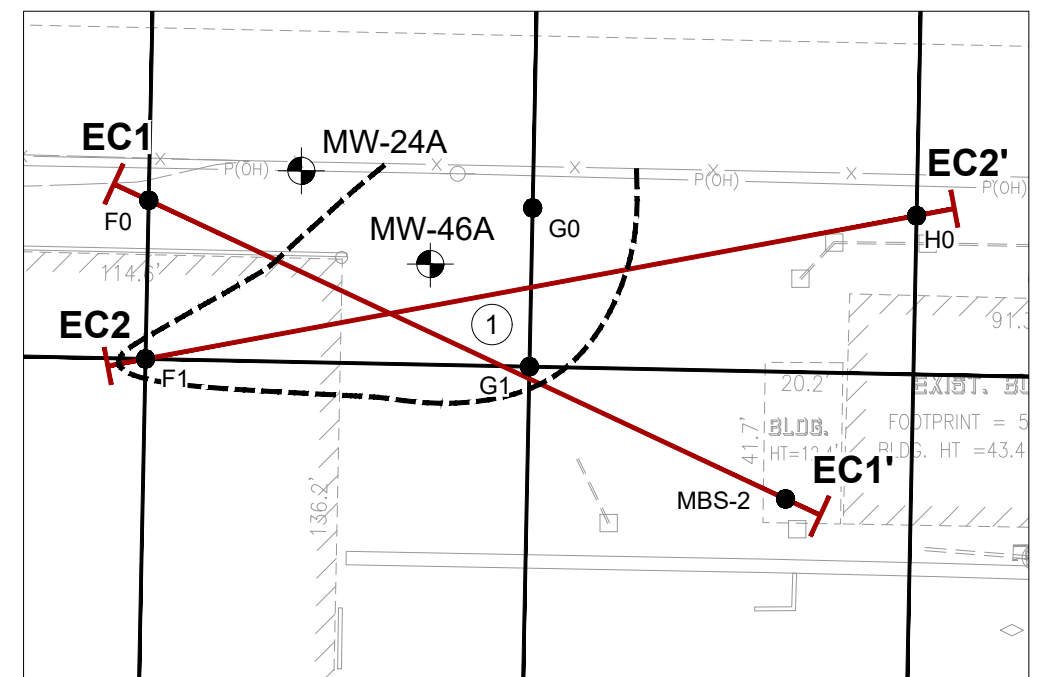
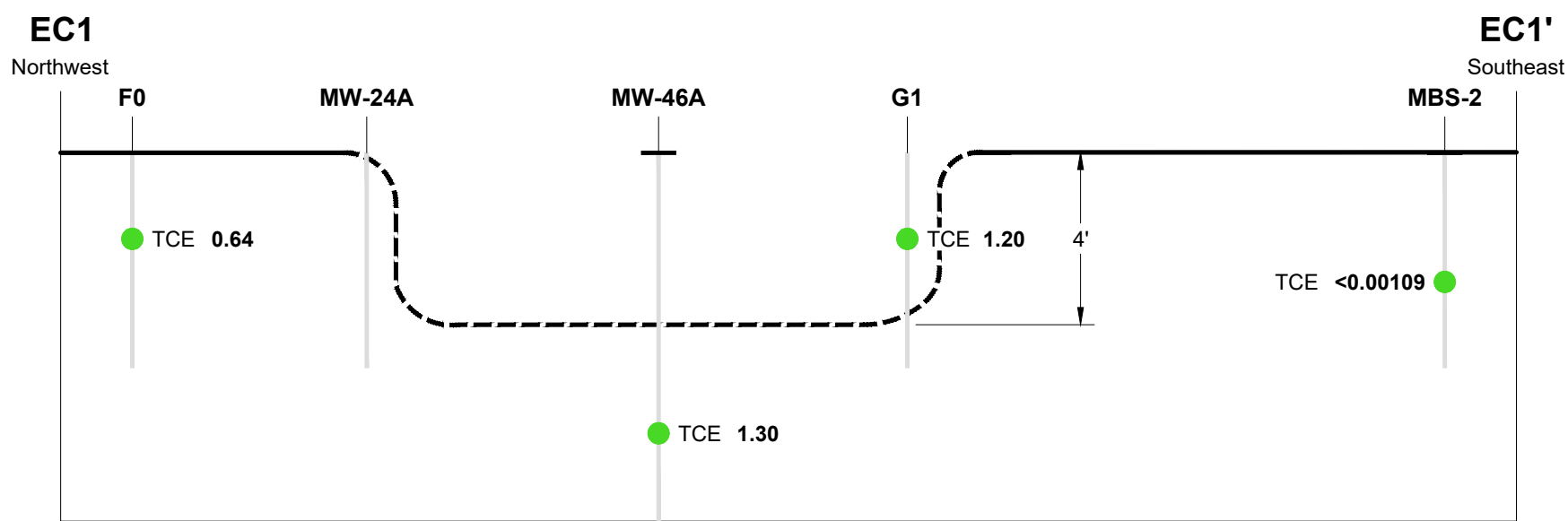
Engineering Design Report
Excavation in Areas 1, 2, 6, and 7;
Asphalt/Concrete Cover; and Institutional Controls

**PROPOSED EXCAVATION
PROFILES EB, EF AND EG**

July 2021

21-1-12567-024

Filename: C:\Users\jrs\CAD Group\Dropbox\JD\drive\211\12567\024\21-1-12567-024 Proposed Excavation Plan and Profiles.dwg Layout: Figure 5 Date: 07-07-2021 Login: JRS



- PLAN LEGEND**
- MW-46A Groundwater Monitoring Well
 - F1 Soil Sample
 - Proposed Excavation
 - EC1** Excavation Profile Location

- PROFILE LEGEND**
- E6** ← Designation of Boring
 - Proposed Excavation Limits
 - Data Result in mg/kg
 - mg/kg ← Milligrams per Kilogram
 - ← Not Detected Above Laboratory Reporting Limit
- DATA TABLE**
- | Designation of Boring | Trichloroethylene (TCE) | REMEDIATION LEVEL (mg/kg) |
|-----------------------|-------------------------|---------------------------|
| | | 5 |

Engineering Design Report
Excavation in Areas 1, 2, 6, and 7;
Asphalt/Concrete Cover; and Institutional Controls

**PROPOSED EXCAVATION
PROFILES EC1 AND EC2**

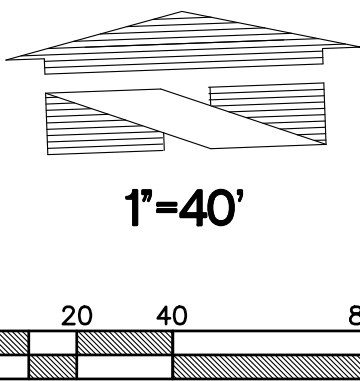
July 2021 21-1-12567-024

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FIG. 5

Appendix A

CenterPoint Proposed Drainage and Grading Plans



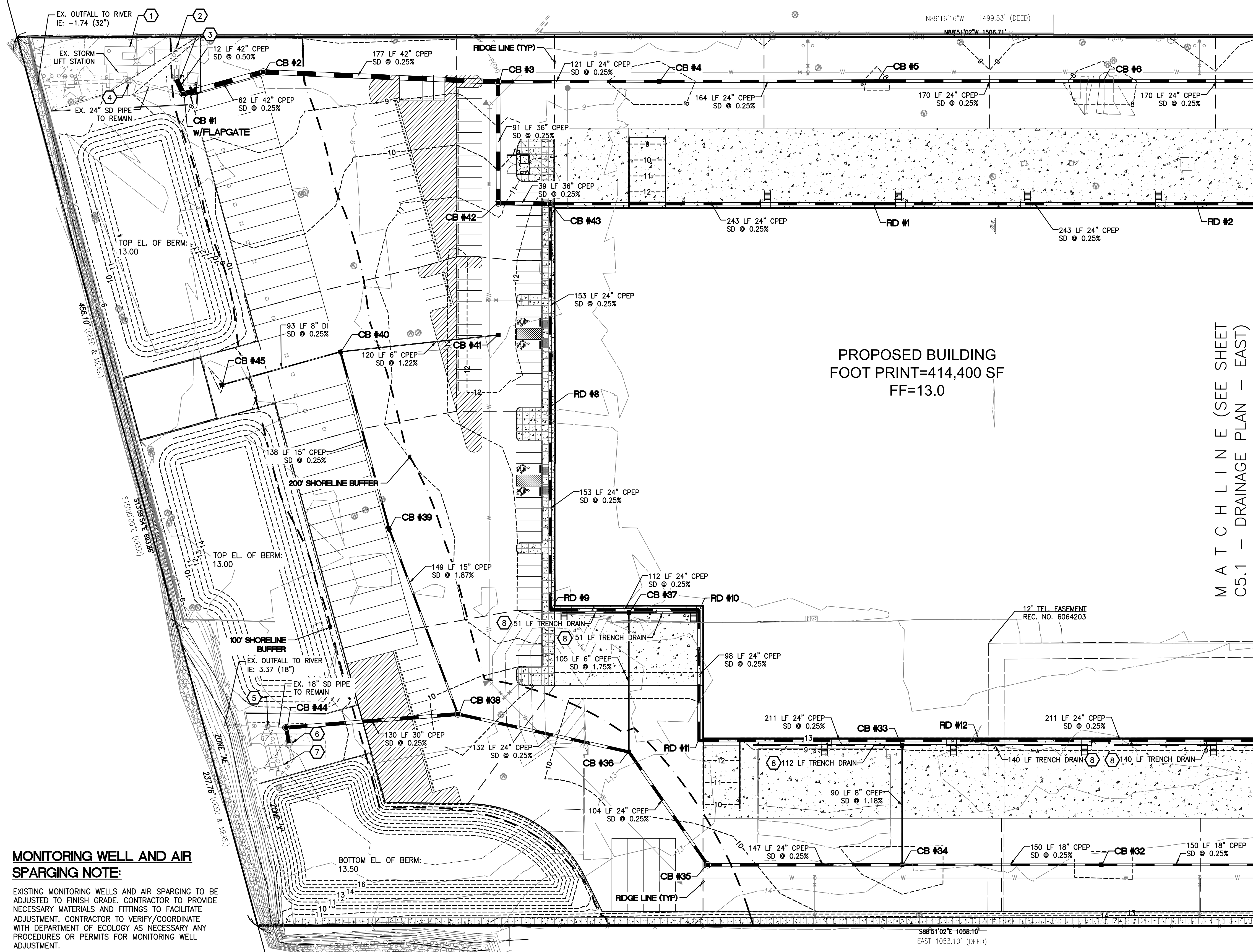
DRAINAGE PLAN - WEST

FOR
CENTERPOINT TUKWILA

PTN OF THE SE 1/4 AND THE SW 1/4 OF SEC. 23, TWP 24 N, RNG 4 E, W.M.
CITY OF TUKWILA, KING COUNTY, STATE OF WASHINGTON

STORM STRUCTURE NOTES:

- EXISTING 11.5' X 36.5' PANEL VAULT STORMFILTER. EXISTING FILTERS TO BE REPLACED WITH NEW MEDIA. CONTRACTOR TO COORDINATE WITH CONTECH NECESSARY MATERIALS AND PROCEDURES TO MAINTAIN WATER QUALITY VAULT'S DESIGN.
- EXISTING VORTECHS MODEL V4000 TO REMAIN.
- EXISTING SDMH W/ PUMP STATION.
RIM: ±12.72
IE: 1.86 (IN 12" SE)
IE: 11.27 (OUT 6" N)
PROPOSED CONNECTION TO EXISTING WATER QUALITY SYSTEM. CONTRACTOR TO VERIFY EXISTING STRUCTURE RIM AND INVERT ELEVATIONS AND SHALL NOTIFY BARGHAUSEN CONSULTING ENGINEERS, INC. OF ANY DISCREPANCIES.
- EXISTING SDMH TO REMAIN. CONTRACTOR TO VERIFY RIM AND INVERT ELEVATIONS TO ENSURE POSITIVE DRAINAGE.
- EXISTING TYPE 2-54" SDMH TO REMAIN.
RIM: ±11.36
IE: 6.88 (IN 18" E)
IE: 6.66 (OUT 18" W)
IE: 7.46 (IN 8" S)
- EXISTING SD MANHOLE W/ PUMP STATION. CONTRACTOR TO LOWER INLET INVERT ELEVATION.
RIM: ±11.95
IE: 3.57 (IN 12" N)
IE: 9.95 (OUT 6" S)
CONTRACTOR TO COORDINATE LOWERING OF EXISTING PUMP FLOATS. SEE DETAIL 2/C5.2 FOR PROPOSED FLOAT ELEVATIONS.
PROPOSED CONNECTION TO EXISTING WATER QUALITY SYSTEM. CONTRACTOR TO VERIFY EXISTING STRUCTURE RIM AND INVERT ELEVATIONS AND SHALL NOTIFY BARGHAUSEN CONSULTING ENGINEERS, INC. OF ANY DISCREPANCIES.
- EXISTING 8" X 22" PRECAST VAULT STORMFILTER. EXISTING FILTERS TO BE REPLACED WITH NEW MEDIA. CONTRACTOR TO COORDINATE WITH CONTECH NECESSARY MATERIALS AND PROCEDURES TO MAINTAIN WATER QUALITY VAULT'S DESIGN.
- PROPOSED TRENCH DRAIN. SEE DETAIL 1/C5.2.



MATCH LINE (SEE SHEET C5.1 - DRAINAGE PLAN - EAST)

PROPOSED BUILDING
FOOT PRINT=414,400 SF
FF=13.0

STORM STRUCTURE	TABLE
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CB #4, TYPE 1, W/ STANDARD GRATE	RIM = 7.61 IE=2.82 (24" E) IE=2.82 (24" W)
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MONITORING WELL AND AIR SPARGING NOTE:

EXISTING MONITORING WELLS AND AIR SPARGING TO BE ADJUSTED TO FINISH GRADE. CONTRACTOR TO PROVIDE NECESSARY MATERIALS AND FITTINGS TO FACILITATE ADJUSTMENT. CONTRACTOR TO VERIFY/COORDINATE WITH DEPARTMENT OF ECOLOGY AS NECESSARY ANY PROCEDURES OR PERMITS FOR MONITORING WELL ADJUSTMENT.

Job Number
20538

Sheet
C5.0 of **19**

For:
CENTERPOINT PROPERTIES
725 S FIGUEROA ST STE 3005
LOS ANGELES, CA 90017
CONTACT: JOHN LASS

Title:
DRAINAGE PLAN - WEST
FOR
CENTERPOINT TUKWILA
8801 EAST MARGINAL WAY SOUTH
TUKWILA, WA 98108

Scale: Horizontal 1"=40'
Vertical -

Designed	Drawn	Checked	Approved	Date
WED	WED	LD	DKB	2/11/20

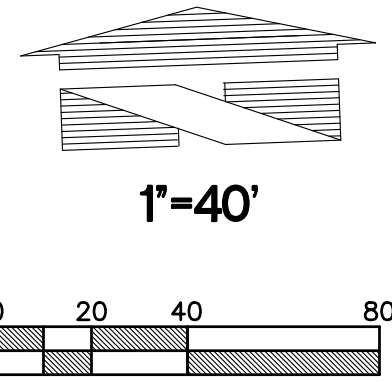
Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com

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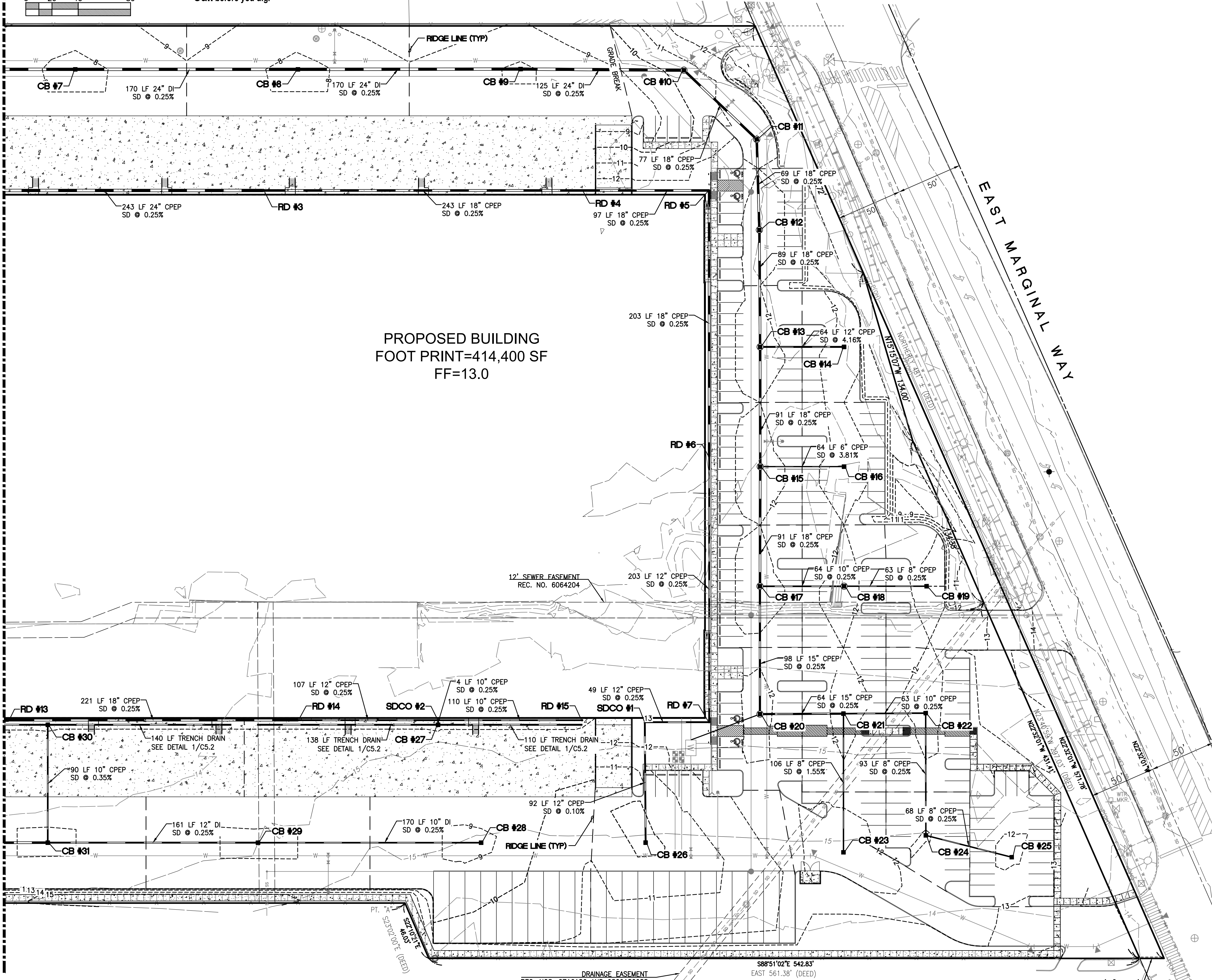
DRAINAGE PLAN - EAST

FOR CENTERPOINT TUKWILA

PTN OF THE SE 1/4 AND THE SW 1/4 OF SEC. 23, TWP 24 N, RNG 4 E, W.M.
CITY OF TUKWILA, KING COUNTY, STATE OF WASHINGTON



MATCHLINE (SEE SHEET C5.0 - DRAINAGE PLAN - WEST)



PROPOSED BUILDING
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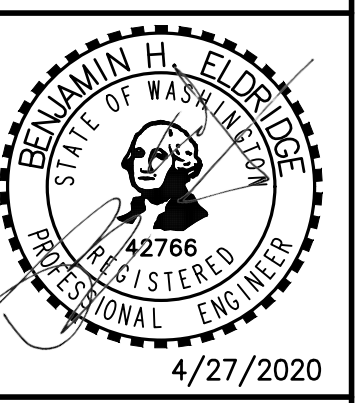
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CB #23, TYPE 1, W/ STANDARD GRATE RIM = 11.33 IE=8.33 (8" N)	SDCO #2, 6" CO W/ CONCRETE COLLAR RIM = 8.99 IE=6.02 (10" E) IE=6.02 (10" S) IE=6.02 (12" W)
CB #24, TYPE 1, W/ STANDARD GRATE RIM = 11.95 IE=7.08 (8" E) IE=7.08 (8" N)	

MONITORING WELL AND AIR SPARGING NOTE:
EXISTING MONITORING WELLS AND AIR SPARGING TO BE ADJUSTED TO FINISH GRADE. CONTRACTOR TO PROVIDE NECESSARY MATERIALS AND FITTINGS TO FACILITATE ADJUSTMENT. CONTRACTOR TO VERIFY/COORDINATE WITH DEPARTMENT OF ECOLOGY AS NECESSARY ANY PROCEDURES OR PERMITS FOR MONITORING WELL ADJUSTMENT.

Revision	No.	Date	By	Clk.	Appr.

Title:
DRAINAGE PLAN - EAST
FOR
CENTERPOINT TUKWILA
8801 EAST MARGINAL WAY SOUTH
TUKWILA, WA 98108

For:
CENTERPOINT PROPERTIES
725 S FIGUEROA ST STE 3005
LOS ANGELES, CA 90017
CONTACT: JOHN LASS

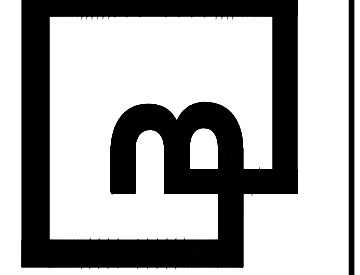


Scale:

Horizontal	1"=40'
Vertical	-

Designed	WED	
Drawn	WED	
Checked	LD	
Approved	DKB	
Date	2/11/20	

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Job Number
20538
Sheet
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