Remedial Investigation

Former Precision Engineering Property
1231 South Director Street
Seattle, Washington

for
Dick Morgan

November 4, 2026

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Bellingham, Washington 98225
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GeoEngineers

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Seattle, Washington

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Acronyms, Abbreviations, and Key Definitions

AO	Agreed Order
ARI	Analytical Resources, Inc.
AST	aboveground storage tank
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CAP	Cleanup Action Plan
Chromium	All forms of chromium, unless noted otherwise
Cis-1,2-DCE	cis-1,2-dichloroethene
cPAH	carcinogenic polycyclic aromatic hydrocarbon
COC	Contaminant of concern
COPC	chemical of potential concern
CSID	cleanup site ID
CSM	conceptual site model
CUL	cleanup level
Ecology	Washington State Department of Ecology
EHD	Environmental Health Disparities
EIM	Environmental Information Management
EPA	United States Environmental Protection Agency
EPH	extractable petroleum hydrocarbon
FS	feasibility study
GPR	ground-penetrating radar
Kennedy Jenks	Kennedy Jenks Consultants
LDW	Lower Duwamish Waterway
LUST	leaking underground storage tank
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligrams per kilogram
MTCA	Model Toxics Control Act
NFA	No Further Action

NPDES	National Pollutant Discharge Elimination System
Pacific Industrial Supply	Pacific Industrial Supply, Inc.
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCOCs	potential contaminants of concern
PCUL	preliminary cleanup level
PFAS	Per- and Polyfluoroalkyl substances
PID	photoionization detector
POC	point of compliance
Precision	Precision Engineering, Inc.
the Property	1231 S Director Street in Seattle, Washington
PVC	polyvinyl chloride
RI	remedial investigation
SAP/QAPP	sampling and analysis plan and quality assurance project plan
SGT	silica gel treatment
SIM	selected ion monitoring
the Site	The location where contamination is located
SVOC	semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TEE	terrestrial ecological evaluation
TEQ	toxic equivalency quotient
TCE	trichloroethene
TOC	Total organic carbon
Total diesel+oil	the sum of diesel- and oil-range organics
TPH	total petroleum hydrocarbon
Trans-1,2-DCE	trans-1,2-dichloroethene
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
UST	underground storage tank

VCP	Voluntary Cleanup Program
VOC	volatile organic compound
VPH	volatile petroleum hydrocarbon
VP/OC	vulnerable population or overburdened community
WAC	Washington Administrative Code
WBZ	water-bearing zone
WSDOT	Washington State Department of Transportation

Executive Summary

GeoEngineers, Inc. has prepared this Remedial Investigation (RI) report for the former Precision Engineering, Inc. site (the Site) in Seattle, Washington. The 3.5-acre industrial property contains one 62,000-square-foot building that was previously used for chromium plating and related industrial processes.

The property has undergone multiple investigative and remedial efforts since 1986 including the removal of contaminated soil and storage tanks in 2005. Contaminants at the Site are present in Site soil and groundwater that include chromium, trichloroethylene (TCE), and petroleum hydrocarbons. Residual contamination primarily remains in areas of the former plating tanks inside the building. Results from the environmental investigations conducted between 2005 and 2023 indicate that contaminants are predominantly confined to the property boundaries.

Groundwater monitoring well data and stormwater data indicate limited potential for contamination migration beyond the property boundary. Stormwater flows to a ditch that ultimately discharges to the Lower Duwamish Waterway (LDW). This and prior investigations confirm that contaminants are not migrating toward the LDW or into deeper groundwater zones, thus minimizing off-site risk to adjacent properties and the LDW. Additionally, analysis of chemicals of concern in soil and groundwater reveals that contamination hotspots are isolated within the property boundaries.

This RI (the third RI for the Site) synthesizes information from over 20 years of study including more than 100 investigation locations, 180 soil samples and 100 groundwater samples, as well as substantial analysis for soil vapor and air. This RI report concludes that contamination at the former Precision Engineering Site is adequately characterized to develop a Feasibility Study (FS) and prepare a draft Cleanup Action Plan (CAP) to address residual contamination

This Executive Summary should be used only in the context of the full report for which it is intended.

1.0 Introduction

GeoEngineers, Inc. (GeoEngineers) has prepared this remedial investigation (RI) report on behalf of Dick Morgan (the Client) for the former Precision Engineering, Inc. site ("Precision" or "the Site"). The Site is located at 1231 South Director Street in Seattle, Washington (the Precision Property). The Precision Property is south-southeast adjoining to the South Park neighborhood of Seattle (Figure 1-1).

Historically, the Property was used for industrial operations including "hard" chromium plating. CL Frazier Properties, LLC, currently owns the Precision Property, where Pacific Industrial Supply, Inc. (Pacific Industrial Supply) operates an industrial equipment manufacture and supply store.

1.1 CURRENT REGULATORY FRAMEWORK

The Site is listed by the Washington State Department of Ecology (Ecology) with cleanup site ID (CSID) 4532 and facility site ID (FSID) 2056. The Site is defined by the area where hazardous substances associated with Precision's historical operations on or off the Precision Property have come to be located in environmental media as a result of historical releases and subsequent environmental fate and transport mechanisms.

Agreed Order No. DE 18079 (AO) was negotiated between Ecology and the Client, with an effective date of December 18, 2020. This RI Report has been developed to characterize the Site including the distribution of hazardous substances and the threat these substances pose to human health and the environment and to enable cleanup standards to be established. Cleanup action alternatives will be developed and evaluated in a feasibility study (FS) following finalization of this RI Report. A Cleanup Action Plan (CAP) will then be prepared that documents the selected cleanup action. The RI Report, FS Report, and CAP are the deliverables required under this AO. This RI Report was developed in general accordance with the Model Toxics Control Act (MTCA) (Washington Administrative Code [WAC] 173-340). Regulatory history is discussed further in Section 2.3.

An RI report was prepared November 11, 2024. Ecology requested additional minor modifications to the RI report. A revised public review draft RI report was prepared April 8, 2026. Revisions included addition of a Terrestrial Ecological Evaluation form (Appendix N), arsenic soil background study (Appendix P), and an Ecology Preliminary Cleanup Level memorandum (Appendix Q). The RI was submitted for public comment in 2026, and there were no changes based on public comment.

1.2 PURPOSE AND OBJECTIVES

The purpose of this RI Report is to document the characterization of contamination at the Site, including the presence and potential release of hazardous substances and the threat these substances pose to human health and the environment, to establish appropriate Site cleanup standards, and to develop and evaluate cleanup action alternatives in a Feasibility Study (FS). The overall objective is to clean up the Site and achieve a No Further Action (NFA) with a potential environmental covenant recorded for the Precision Property.

2.0 Site Background and History

2.1 PROPERTY DESCRIPTION

The Precision Property is situated in the southeast quadrant of section 32, township 24 north, range 4 east of the Willamette Meridian, on King County tax parcel no. 0001600055. The approximately 3.5-acre Property is zoned for industrial use. One 62,000-square-foot building comprising three warehouse bays is currently located on the Property[1]. The western boundary of the Precision Property is a steep cut slope as discussed further below in the Property History (Section 2.2).

The surrounding area is a mix of industrial and residential properties (Figure 2-1). Since 1997, a towing and limousine service business has operated on the adjacent property to the east formerly identified as the Kaspac/Chiyoda property[2]. The former Kaspac/Chiyoda property is an Ecology cleanup site (CSID 2540). The former Kaspac/Chiyoda property was used for agriculture and agricultural-equipment storage prior to 1960; a car lot and gas station between 1960 and 1972; a road-striping paint company between 1972 and 1988; a transmission repair shop, construction contracting company, a roofing contractor between 1988 and 1997 (Ecology 2013), and a towing and limousine business until the present (2024). Seattle Refrigeration, a business that repairs and sells refrigerators, is located west of the Precision Property. Residential homes are located north of the Precision Property across South Director Street. A northbound onramp for State Route (SR) 99 is located south-adjacent to the Precision Engineering Property. The onramp is part of a larger "cloverleaf" (see Figure 2-1).

The Precision Property as well as nearby industrial properties are labeled in Figure 2-1. Past and present cleanup sites are highlighted in Figure 2-1 including the former Kaspac/Chiyoda property, Warner's Auto Repair, DBA & Airbus, KRS Marine, and Delta Marine Industries.

2.2 PROPERTY HISTORY

The Precision Property history is discussed below based on information provided in previous investigation reports (Maul Foster & Alongi, Inc. [MFA] 2005, 2006, 2008, 2011; Kennedy Jenks 2015) and a review of historical aerial photographs (Appendix A).

2.2.1 Aerial Photograph Review

The earliest available historical record reviewed for the Precision Property is a 1936 aerial photograph (Appendix A). The Precision Property and surroundings were generally developed as rural residential/agricultural properties in the 1936 aerial photograph. The Precision Property contained two residential-size structures, several smaller outbuildings, and an agricultural field including rows of vegetation and small trees. Bare soil is visible in areas of the Property including but not limited to the southeast and northeast portions. Roads were located adjacent to the Precision Property on the north and west sides. The properties north of the Precision Property were residential. The property to the west (later Seattle Refrigeration) appears to be used for agricultural purposes. The east-adjacent property (later the

[1] County assessor data lists the building as 62,000 square feet. It is not clear if this includes second-story areas. There are several thousand square feet of building footprint on the south side of Warehouse 1. The total building footprint (not including second story areas but including the south side of Warehouse 1) appears to be approximately 66,000 square feet. The phrase "the building" in this RI includes all these areas.

[2] The property has had various names in various historical reports including but not limited to Seattle Limousine.

Kaspac/Chiyoda cleanup site) and the south-adjacent property both appear to be rural residential properties.

The Precision Property and surroundings are little changed in the 1943, 1953 and 1956 aerial photographs except for vegetation changes and development of the former Kaspac/Chiyoda property from rural residential to apparent commercial use in the 1953 aerial photograph.

SR 99 and the interchange south-adjacent to Precision Engineering is visible in the 1965 aerial photograph. The creation of the highway and interchange significantly altered the general area south and east of the Precision Engineering Property. The south-adjacent rural residential property visible in the 1956 and earlier aerial photographs is no longer present having been replaced with the SR 99 on-ramp. The former Kaspac/Chiyoda property had been further redeveloped with several buildings removed that were visible in the 1956 aerial photograph and the addition of three new buildings. The Precision Engineering Property was little changed except for tree removal in the northwest portion of the Property and some ground clearing in the southeast portion of the Property.

Warehouse 1 of the Precision Engineering business is visible in a 1969 aerial photograph. Cars are parked to the north, east, and south of the building. The areas to the north and east appear to be paved although it is difficult to be certain. The remainder of the Precision Property and surrounding areas remained little changed with the exception of removal of agricultural buildings from the west-adjacent property (later Seattle Refrigeration).

The 1977 aerial photograph indicates that Warehouse 1 of Precision Engineering had been expanded to the south with an expanded building footprint. Cars were parked on the east side of Warehouse 1. One building on the former Kaspac/Chiyoda Property had an addition to the north. The last remaining building on the future Seattle Refrigeration property had been removed. Otherwise, the Precision Engineering Property and surrounding areas remained little changed compared to the 1969 aerial photograph.

The Precision Engineering Property and Seattle Refrigeration property were significantly changed in a 1980 aerial photograph. Warehouses 2 and 3 are visible at the Precision Engineering Property bringing the building footprint to its present shape (2024). The area was paved around the building with cars parked around the building. The western and northern portions of the Property had been excavated to provide the flat surface for construction of Warehouses 2 and 3. The present-day Seattle Refrigeration property had been cleared and a commercial building is visible on the property (i.e., the current, 2024, building).

The Precision Engineering and surrounding properties were little changed in aerial photographs dated 1985 and 1990.

There were no cars parked around the Precision Engineering building, and little or no equipment, dumpsters, etc. visible in the 2006 aerial photograph. Otherwise, there were few if any changes to the Property and surroundings.

Materials can be seen stored south of the Precision building in the 2009 aerial photograph. The materials appear to include Pacific Industrial Supply's wire spools and other equipment (i.e., potential dumpsters and/or shipping container-sized equipment).

The Precision Property and surroundings appeared little changed in aerial photographs dated 2013 and 2017.

2.2.2 Precision Engineering History

Precision operated an industrial manufacturing business on the Property from 1968 to March 1, 2005 (MFA 2008). The operation included manufacturing and repair of hydraulic cylinders, metal rolls used in the manufacturing of paper and sheet metal products, and other equipment. Services included grinding and polishing, honing, hard-chrome plating, milling, welding, and application of flame- and arc-applied metal coating, much of which involved the use of chromic acid. From 1985 to 2003, approximately 10,000 square feet of the west side of the building (i.e., Warehouse 3) was leased to Baszile Metals Service, an aluminum distributorship.

Historical areas of interest associated with Precision's operations, including former tanks used to contain process chemicals and wastes, are shown in Figure 2-2 and are summarized in Table 2-1. The equipment listed below was removed from the Property by 2005 at the end of Precision's operations/ownership. Potential historical chemical releases associated with the Site features are summarized below:

- **Chromic acid plating tanks**. Chromium[3] and trichloroethylene[4] (TCE) impacts to shallow soil, shallow groundwater, and vapor due to leaking plating tanks. Tanks included aboveground tanks 1 and 2, in-ground tanks 3 through 6, aboveground tanks 3a and 4a, in-ground tank 7, and aboveground tanks in a temporary plating area.
- **Parts washing**. TCE, methyl ethyl ketone, and Stoddard solvent impacts to shallow soil and shallow groundwater from parts washing and degreasing operations.
- **Trench drains and former sanitary sewer**. Chromium and TCE impacts to shallow soil and shallow groundwater from chrome-plating rinse water that was discharged to the King County METRO sanitary sewer system prior to 1986. Discharges could have occurred from leaky trenches and/or sewer pipes. Discharge was re-routed to containment vaults after 1986.
- **Scrubber Room**. Chromium impacts to shallow soil and shallow groundwater from equipment located in the scrubber room.
- **Steam cleaning areas**. Petroleum hydrocarbons and metals (copper, lead, nickel, zinc, and chromium) impacts to shallow soil and shallow groundwater from steam cleaning activities, or spills associated with a sodium hydroxide tank that was in the area. Fluids were discharged to an oil/water separator and then to the sewer until 1986. In 1986, steam cleaning operations were moved from a covered area located on the southeast corner of the building to inside the building.
- **Other building areas**. Chromium, TCE, petroleum hydrocarbons and/or metals from other areas within the building including south of Warehouse 1 (i.e., hazardous waste storage area; used oil aboveground storage tank (AST); boiler room and associated heating oil underground storage tank (UST); and compressor room).

[3] Chromium in this report refers to chromium in all its forms. Chromium exists in valence states ranging from -2 to +6. The most important and stable forms are 0, +3 (trivalent), and +6 (hexavalent).

[4] Potentially including TCE breakdown products cis- and trans-1,2-Dichloroethylene, 1,1-Dichloroethylene, and vinyl chloride.

- **Hydraulic Cylinder Test Vault**. Chromium and hydraulic oil impacts to soil and shallow groundwater from cracks and seams in former hydraulic cylinder test vault. The vault is still present but it is not in use.
- **Drainage ditch**. Impacts to shallow soil and water from impacted runoff into the ditch, potential groundwater intrusion through cracks in storm system piping with subsequent discharge to the ditch and/or groundwater seepage into the ditch.

Precision ceased operations on the Property by March 1, 2005. Equipment was removed and an environmental investigation was performed (MFA 2005). The Property was sold to CL Frazier Properties, LLC on March 29, 2007. The Property has been occupied by Pacific Industrial Supply, a wire rope and marine/industrial supply distributor, from 2007 to present (2024). Additional environmental investigations occurred between 2005 and 2021 as discussed further in Section 4 below.

Current (2024) Property features are shown in Figure 2-3. Pacific Industrial Supply has retail space in Warehouses 1 and 2, wire rope manufacture in Warehouse 2, and storage in Warehouse 3 and the building areas south of Warehouse 1. Figure 2-3 also shows the location of 23 monitoring wells installed between 1988 and 2023.

2.3 REGULATORY HISTORY

The Site regulatory history is discussed in this section and summarized in Table 2-2. Precision completed several corrective actions at the Site between 1986 and 2003 in response to a February 1986 compliance order issued by Municipality of Metropolitan Seattle and as required by Ecology in response to National Pollutant Discharge Elimination System (NPDES) permit and hazardous waste regulation violations identified during Ecology inspections (Ecology 2013). Corrective actions included measures to address sanitary sewer discharge, stormwater discharge and hazardous waste storage violations. Precision also conducted several environmental investigations and cleanup actions at the Site between 1988 and 1993.

Investigations completed between 1988 and 1990 were performed under the 1986 Ecology Administrative Order No. DE 86-307, an amendment to that order, and a 1987 Ecology compliance letter (Ecology 2013). Precision conducted an independent remedial action in 1993. Between 2005 and 2011, Precision conducted additional environmental investigation and cleanup actions at the Site, including an RI, risk assessment, and feasibility study under Ecology's Voluntary Cleanup Program (VCP) (MFA 2008, 2011). Ecology issued VCP opinion letters in 2009, 2011, and 2015 (Ecology 2009, 2011a, 2015) requesting further action based on its review of this work. Ecology performed an RI at the Site between 2013 and 2015 (Kennedy Jenks 2015) to evaluate the potential for impacts to Site media, focusing on potential impacts and/or contaminant migration pathways to the Lower Duwamish Waterway (LDW). Conclusions from Ecology's RI (Kennedy Jenks 2015, page 48) are excerpted as follows:

"The potential for significant off-property chromium impacts to soil or groundwater resulting from on-property sources, appears to be limited."

"Significant on-property or off-property migration of chromium in groundwater has not been identified."

"Concentrations of TCE in soil and groundwater appear to be confined to former use areas beneath the existing building and were not detected above the MTCA Method A soil or groundwater CULs in samples collected during the 2014/2015 RI."

"Vinyl chloride was detected in groundwater beneath the former chrome shop in 2005, suggesting biodegradation of TCE is occurring."

"Significant groundwater transport impacts to the LDW appear unlikely based on the available analytical data."

Despite the findings above, Ecology requested that Precision Engineering continue investigation activities for potential connections to the LDW. Precision conducted additional environmental investigation and cleanup activities at the Site between 2019 to 2020 that are discussed further in Section 4. Section 5 discusses further activities performed to present (2024).

Pacific Industrial Supply was issued NPDES Permit No. WAR125474 on December 9, 2011. Stormwater best management practices and corrective actions were identified during compliance inspections conducted by Ecology and King County in 2008 and 2009. Corrective actions included cleaning and maintenance actions as well as repairing cracks and holes around a storm drain manhole (Ecology 2013). Ecology determined that the facility complied with the corrective actions after a follow-up inspection in 2011, and that the potential for sediment recontamination to the LDW from Pacific Industrial Supply's current operations was low provided that the improvements and source control best management practices were maintained (Ecology 2013). However, additional violations and corrective actions were identified during a 2022 compliance inspection conducted by Ecology. The additional violations and corrective actions included an outdated Stormwater Pollution Prevention Plan (SWPPP), lack of required quarterly vacuum sweeping, lack of monthly inspections, lack of employee annual training, lack of required onsite documentation, dumpsters without lids, lack of sampling, and hazardous materials stored outdoors without secondary containment.

3.0 Environmental Setting

3.1 PHYSICAL SETTING

The Precision Property is relatively flat, aside from steep (approximately 50 degree) slopes along the northern and western perimeters. The western slope is approximately 30 feet high, and the northern slope ranges from 30 feet in the west to zero feet north of Warehouse 1 (see Figure 3-1). The hillslope was excavated in the late 1970s to obtain a level surface for construction of Warehouses 2 and 3 of the Precision Engineering Building.



Looking northwest at the Precision building. The 30-foot-high western slope is visible in background, with Seattle Refrigeration building atop. The red arrow points to the single Property catch basin.

The land surface at the Precision Engineering Property is almost entirely covered with impervious surfaces, including the building, surrounding asphalt paving, and the slopes on the north and west sides. There are narrow, vegetated landscape strips on the north, west, and south sides of the Property.

Subsurface utilities include a natural gas line along the eastern perimeter and a portion of the southern perimeter of the Precision Property, and water and sanitary sewer service lines extending from the Precision

Building to South Director Street (see Figure 2-3). Historical trench drains that fed historical sanitary sewer lines have been disconnected and sealed (MFA 2008).

The equipment, tanks, and vaults associated with Precision's historical operations (see Figure 2-2) have been removed and/or sealed, except for a former hydraulic cylinder test vault that remains outside the building, to the west of Warehouse 3. The former evaporator pit was backfilled and sealed with concrete as part of a 2020 interim action implemented to remove contaminated groundwater seepage in the pit. The seepage was identified as containing chromium at hazardous waste concentrations including TCE at concentrations that posed a risk to indoor air (MFA 2020).

3.2 STORMWATER

Stormwater from the majority of the Precision Property flows to a single catch basin located south of Warehouse 2 (Figure 2-3; red arrow in photo above). This includes stormwater falling on the roofs of Warehouse 3, Warehouse 2, and the western portion of Warehouse 1, as well as paved areas north, south, and west of the building[5]. The catch basin discharges stormwater via a short section of underground stormwater pipe through a manhole and additional stormwater pipe to a ditch south of the Property. Stormwater from the paved area east of Precision Engineering also ultimately flows to this ditch.



Looking north along 14th Avenue South. Stormwater flows from roads to the ditch.

The ditch also receives stormwater from the former Kaspac/Chiyoda property, the western portion of 14th Avenue South and the northern portion of the Highway 99 on-ramp (see photo at right). The ditch consists of a shallow depression at its north and west ends, with a low point of about 6 feet below surrounding grades south of the Precision Engineering Property (Figure 3-1). The ditch discharges from the low point to the south through a 24-inch diameter concrete culvert to the Highway 99 cloverleaf stormwater pond system, and ultimately to the LDW via the stormwater system under South 95th Street. The stormwater flow path from the Precision Property to the LDW is more than 3,300 feet, passing through multiple pipes, ponds, ditches and culverts. A map of offsite stormwater infrastructure is shown in Appendix B. The map was provided by the Washington State Department of Transportation (WSDOT).

3.3 GEOLOGY

The Precision Property is located within the Puget Sound Lowlands in an alluvial valley of the LDW. The Precision Property is bordered by steep slopes on its western and northern boundaries but otherwise it is relatively flat. The Precision Property and vicinity is situated on Pleistocene-age glacial deposits on the southern side of a hillock underlain by Tertiary sedimentary bedrock (the Blakely Formation). A thin wedge of fill/recent alluvium is present beneath the eastern portion of the Property; the wedge thickens to the southeast towards the LDW river valley. According to the Geologic Map of Seattle (Troost et al. 2005), the

[5] Roof downspouts from Warehouses 1, 2, and 3 terminate at the paved ground surface surrounding the building. The building areas south of Warehouse 1 do not have downspouts; precipitation from the roofs flows off the roofs and falls to the paved surfaces below.

Property and vicinity are underlain by Quaternary Vashon recessional outwash deposits consisting of "stratified sand and gravel, moderately sorted to well sorted, and less common silty sand and silt" and Quaternary alluvium consisting of "sand, silt, gravel, and cobbles deposited by streams and running water." Quaternary Vashon recessional outwash thicknesses typically range from about 3 to 20 feet; Quaternary alluvium ranges from a few feet to 100 feet thick. Alluvium and peat are mapped between the Precision Property and LDW. A portion of the Geologic Map of Seattle including the Precision Property and vicinity is included in Appendix C.

The geologic interpretation at the Site is based on information provided in more than 90 borings and/or monitoring wells as shown in Figure 3-1. This figure includes an east-west cross section line (Cross Section A-A') and a north-south cross section (Cross Section B-B'), and the cross sections are depicted in Figure 3-2 and Figure 3-3, respectively. The geology at the Precision Property generally consists of the following units (see Figure 3-3):

- **Surficial unit** with anthropogenic fill and/or alluvium and/or outwash deposits. This unit is thickest on the east side of the Property and pinches out to the west underneath the Precision building.
  - Localized anthropogenic fill ranges from 2 feet thick in the west to up to 10 feet thick in the eastern portion of the Property.
  - Native alluvial and recessional outwash deposits consisting of silty sands and sandy silts with gravel and lenses of silt, clay, and organic materials (woody debris and peat) is present from the surface to a depth of approximately 20 feet in the eastern portion of the Property. The peat lenses are generally less than 1 foot thick and vary up to 2 feet in some locations.
- **Sand and silt** unit with shell fragments associated with and underlying the native alluvium is up to 10 feet thick in the eastern portion of the Property and extends beyond the neighboring former Kaspac/Chiyoda property to the east. To the west, this unit also appears to pinch out near the middle of the Precision building.
- **Glacial till unit** consisting of dense to very dense gravelly, sandy silt from the surface to approximately 20 feet below ground surface (bgs) in the western portion of the Property and from 20 to 40 feet bgs in the eastern portion of the Property.
- **Advance glacial outwash unit** consisting of sand and gravel observed to start about 30 to 40 feet bgs.

The maximum depth of exploration at the Property is approximately 50 feet bgs in boring SB15. Several other borings have been completed to greater than 40 feet bgs. Bedrock was not encountered in any borings. Boring logs are included in Appendix D.

3.4 HYDROGEOLOGY

The Site hydrogeology is informed by the more than 90 borings at and near the Site, including 23 monitoring wells. Monitoring well construction data is summarized in Table 3-1, and depth to water measurements from 2019 to 2023 are presented in Table 3-2. The horizontal and vertical locations of each monitoring well were surveyed by a licensed surveyor in 2022 and 2023 (Appendix E).

Two water-bearing zones (WBZs) are present beneath the Property as established by previous investigations (MFA 2008; Kennedy Jenks 2015) and supported by additional explorations performed during this RI. The WBZs include a shallow WBZ in the surficial unit and a deep WBZ in the advance outwash unit. The shallow WBZ is present in the eastern portion of the Property with saturated conditions observed from

approximately 5 to 20 feet bgs. The shallow WBZ pinches out to the west underneath the Precision Engineering building. The top of the deep WBZ is present beginning at approximately 40 feet bgs in the eastern portion of the Property and at approximately 30 feet bgs in the western portion of the Property. The deep WBZ is confined and hydraulically separated from the shallow WBZ by the glacial till unit.

The shallow WBZ is partially confined locally by low permeability layers. Static groundwater elevations in many shallow monitoring wells rose to higher elevations than where groundwater was initially encountered during drilling activities. This observation is consistent with a 1995 USGS water resources investigation report for southwestern King County that indicates the alluvium layer may include both confined and unconfined saturated conditions (USGS 1995).

Groundwater flow directions are to the east with occasional flow directions to the east-northeast or east-southeast in both the shallow and deep WBZs. Groundwater contours and inferred average groundwater flow directions for the shallow and deep WBZs between 2020 and 2023 are shown in Figures 3-4 through 3-11. The groundwater contours are based on depth to water measurements from the north side of the polyvinyl chloride (PVC) rim in each well within a short-time period (typically several hours) on the same day. Depth to water measurements were converted to NAVD88 elevations using the surveyed elevations of the monitoring well PVC rims' north sides.

The Site-specific hydrogeology described above is generally consistent with that described for the central Duwamish Valley in the shallow groundwater use designation report prepared by the Duwamish Coalition (Duwamish Coalition 1998).

4.0 Historical Investigations and Cleanups

Previous environmental investigation and cleanup activities at the Site and the adjacent former Kaspac/Chiyoda property are discussed below. Activities at Precision Engineering are summarized for soil and/or groundwater in Section 4.1 and for air in Section 4.2. Section 4.3 describes a geophysical investigation inside the Precision Engineering building. Activities at Kaspac/Chiyoda are summarized in Section 4.4. An investigation summary for Precision Engineering from 1988 to the most recent investigations (2023) is provided in Table 4-1.

4.1 PRECISION ENGINEERING – SOIL AND GROUNDWATER

Extensive investigations and cleanup actions focusing on soil and/or groundwater were conducted at the Site between 1986 and 2021. Activities were generally performed in association with regulatory involvement (Section 2.3). Historical soil and/or groundwater investigations are divided into two subsections below with time periods from 1986 to 2005 and 2005 to 2021.

4.1.1 1986 to 2005

Soil and/or groundwater investigations at Precision Engineering between 1986 and 2005 include those conducted in response to Ecology enforcement actions between 1986 and 1990, and investigation and cleanup conducted as independent actions in 1992/1993. Previous activities are described in detail in previous reports (MFA 2005, 2008, 2011; Ecology 2013; Kennedy Jenks 2015). Monitoring wells MW-1 through MW-4 were installed in 1988 (Sweet-Edwards/EMCON 1988).

Previous cleanup actions conducted at the Site include the following:

- 1990. Removal of former plating tanks 1 and 2, the tank containment vaults, and approximately 114 cubic yards of contaminated concrete and soil around the tanks with chromium concentrations at or greater than 80 milligrams per kilogram (mg/kg) to a maximum depth of 13 feet bgs (Precision Engineering 1993).
- 1992. Removal of former plating tanks 3 through 6, the tank containment vaults, a 35- by 40-foot section of concrete flooring from below the tanks, and soil visibly contaminated with chromium to a maximum depth of 28 inches bgs (Precision Engineering 1993).

Excavation boundaries for the tank excavations discussed above are shown in Figure 2-3. Contamination was left in place following the cleanup actions described above. This included hexavalent chromium in soil with concentrations up to 73 mg/kg and 7,470 mg/kg in the 1990 and 1993 soil excavations, respectively (Kennedy Jenks 2015).

Soil and/or groundwater data collected from 1989 to 2005 is included in Appendix F. This data is included for reference but is generally not used in evaluating the nature and extent of contamination[6]. There is sufficient soil data collected between 2005 and 2023 and groundwater data from 2019 to 2024 to characterize the Site.

4.1.2 2005 to 2021

Soil and/or groundwater investigations and cleanups were performed at Precision Engineering between 2005 and 2021 under the VCP. Activities are described in detail in previous reports (MFA 2005, 2008, 2011; 2020; Ecology 2013; Kennedy Jenks 2015). Investigations are summarized in Table 4-1. Figure 4-1 shows the exploration locations completed from 2005 to 2021; Figure 4-2 shows only the soil and/or groundwater locations, and Figure 4-3 shows only air-related sampling.

Investigations included the following:

- Monitoring wells MW1 through MW4 were installed in 1988 (Sweet-Edwards/EMCON 1988). No soil samples were submitted for chemical analysis.
- Soil and groundwater sampling performed in 2005 (MFA 2005) and 2006 (MFA 2006) from boring locations GP1 through GP33, monitoring wells MW5 through MW8, and hand auger locations HA1 through HA5 (in the ditch).
- Soil and air sampling was performed in 2006 (MFA 2006). Soil sampling was limited to hand-auger soil sampling performed in the ditch primarily for arsenic and lead. Air sampling is discussed below in Section 4.2.
- A cleanup action was conducted at the Site in 2007/2008 that included removal of approximately 100 cubic yards of soil with arsenic and lead concentrations greater than the respective MTCA Method

[6] Data is not used due to the outdated types of tests performed (the EP Tox test); unknown sample locations for some samples; samples collected as composites; or samples that were collected from areas that were later over-excavated and therefore no longer present at the Site.

A unrestricted land use cleanup levels (CULs) from the ditch (MFA 2008). The excavation area is shown in Figure 2-3.

- Soil, groundwater, and air sampling were performed by Ecology in 2014/2015 (Remedial Investigation Report, Kennedy Jenks 2015) from boring locations SB1 through SB19, monitoring wells MW9 through MW11, and a one-time air sampling event.
- Four quarters of groundwater monitoring were conducted at the Site between July 2019 and April 2020 from the monitoring wells that existed at that time (MW1 through MW11).

Soil data collected from 2005 to 2021 (except soil excavated from the ditch in 2007) is used in this RI to evaluate the nature and extent of contamination as discussed further in Section 7. Recent groundwater data (from 2019 to present) is used as well. Groundwater data prior to 2019 is not used because it is outdated and superseded by multiple rounds of recent data as discussed with Ecology. The air data collected from 2005 to 2021 is used in the characterization of the Site.

4.2 PRECISION ENGINEERING – AIR

Indoor air and sub-slab soil vapor samples were collected in 2006 (MFA 2008) and 2015 (Kennedy Jenks 2015). Results indicated TCE was a potential contaminant of concern at the Site. No other chemicals were identified as a concern. Ecology requested that a vapor assessment be conducted to evaluate if TCE in indoor air at the Site exceeded the new action limits following Ecology's adoption of new indoor air TCE action limits as outlined in Ecology's Implementation Memorandum No. 22 (Ecology 2019).

A work plan was prepared (MFA 2020) identifying the indoor air assessment process followed by implementation of the indoor air assessment and an interim action. Selected pages from a resulting Vapor Report (MFA 2020) are included in Appendix G. The report discusses an initial vapor assessment, installation of air purifiers, and collection of a sample of the groundwater seepage from the former evaporator pit. Interim remedial actions included decommissioning, backfilling, and sealing the former evaporator pit, and sealing cracks and joints in the building concrete slab. Results of the post-interim remedial action indoor air sampling confirmed that TCE concentrations are less than the short-term action limit but remain greater than the MTCA Method B indoor air CULs. Air monitoring and slab inspections are ongoing. The data discussed in this section is used in this RI to evaluate the nature and extent of contamination and is discussed further in Section 7.

4.3 PRECISION ENGINEERING – GEOPHYSICAL INVESTIGATION

A geophysical survey was performed under subcontract to MFA in November 2021 to identify potential USTs in the boiler room area of Warehouse 1 (i.e., the southern portion of Warehouse 1). Small anomalies were identified during the geophysical survey. However, anomalies indicative of USTs were not definitively identified.

Survey activities also assessed the concrete thickness and potential presence of rebar in the building slab in other areas of the building to assist with planning drilling activities in the building (i.e., for drilling that occurred in 2022 and 2023; see Section 5). Concrete thickness ranged from 2.5 inches to 11 inches with most areas of concrete being 5 to 6 inches thick. Spacing between rebar was observed to be 6 to 12 inches apart.

The geophysical report is included as Appendix H.

4.4 FORMER KASPAC/CHIYODA PROPERTY

Petroleum hydrocarbon, solvent, and metals contamination have been documented in soil and groundwater at the former Kaspac/Chiyoda property, also known as the Seattle Limousine Property. Historical operations on that property were identified as the contamination source. Contaminants include gasoline-, diesel-, and oil-range hydrocarbons; benzene, toluene, ethylbenzene, and xylene (BTEX); arsenic, cadmium, chromium, copper, lead, silver, and zinc; and TCE (Ecology 2013).

Appendix I includes a figure showing previous sample locations, monitoring wells, and excavation boundaries on the former Seattle Limousine (Kaspac/Chiyoda) property, as well as tables summarizing soil and groundwater analytical results, excerpted from a Kennedy Jenks RI (2015).

The following contamination sources were identified at the former Kaspac/Chiyoda property (Kennedy Jenks 2015; Ecology 2013) (see Figure 8 included in Appendix I):

- An 8,000-gallon leaking underground storage tank (LUST) formerly containing leaded gasoline was removed in 1989 from the west side of a building.
- Soil contaminated with paint from improper disposal of waste paint to the west of Building 1.
- The Kaspac Corporation was cited by Ecology in April 1989 for discharge of oil, gas, diesel and hydraulic fluid to groundwater and/or surface water in the southwestern corner of the property.

Several independent cleanup actions were completed between 1989 and 1997 including decommissioning (removal) of the former LUST, excavation of petroleum-contaminated soil associated with the LUST and near the loading dock, excavation of paint-stained soils and groundwater treatment via pumping and discharge to the sanitary sewer (Kennedy Jenks 2015; Ecology 2013). Quarterly groundwater monitoring was conducted in monitoring wells on the Kaspac/Chiyoda property in 1997 following completion of the remedial actions (Ecology 2013). Ecology issued a VCP NFA determination for the site in 1998. Petroleum and BTEX constituents detected at concentrations below MTCA Method A CULs remain in soil and groundwater along the southern portion of the property and in soil near the former LUST area within the central portion of the property (Ecology 2013) (see Appendix I).

5.0 Field Investigations (2022 – 2023)

GeoEngineers and Ecology held a series of meetings in December 2021 through January 2022 to identify remaining data gaps and develop investigation activities to fill the data gaps and prepare this RI Report. Data gaps generally include the following:

- Analysis for chemicals of concern not previously analyzed at the Site, including Per- and Polyfluoroalkyl substances (PFAS); polychlorinated biphenyls (PCBs); full suite semivolatile organic compounds (SVOCs); and 1,4-dioxane.
- Further investigation to evaluate the potential for releases at the Site to contribute the contaminants to the LDW, including preferential pathways (former sanitary sewer lines and other utilities).

- Further investigation of arsenic in soil and groundwater to evaluate if the Site is a source of arsenic or if arsenic is elevated on an area-wide basis.
- Additional investigation regarding areas of interest at and near Precision Engineering (hydraulic cylinder test vault, boiler room potential USTs, the ditch, etc.).

A draft and final Work Plan and a Work Plan Addendum (together identified in this report as the Work Plan) were prepared by GeoEngineers and reviewed and approved by Ecology to perform the work described in this section (GeoEngineers 2022, 2023). The Work Plan included a Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP). The work described below was performed in accordance with the Work Plan.

The following figures are provided for the discussions in this section: Figure 5-1 shows the exploration locations completed between 2005 and 2023; Figure 5-2 shows only the soil and/or groundwater investigation locations completed between 2005 and 2023; and Figure 5-3 shows only air-related sampling locations between 2005 and 2023.

5.1 SOIL INVESTIGATION

GeoEngineers implemented the additional site investigation activities at and near the Precision Property in two phases. The first phase of the investigation included advancing a total of 13 soil borings (SB20 through SB33) and installation of seven permanent groundwater monitoring wells (MW12 through MW18) located on and near the Precision Property in February and March 2022. An additional five soil borings (SB34 through SB37) and five permanent groundwater monitoring wells (MW19 through MW23) were advanced off-property along the 14th Avenue South and Northbound WA-99 on-ramp rights-of-way during the second phase of the investigation in May 2023. The second phase of investigation also included four shallow hand-auger soil borings (HA26 through HA29) located within the WA-99 on-ramp right-of-way. Boring logs are provided in Appendix D and monitoring well construction details are summarized in Table 3-1.

Soil samples were collected from the borings during drilling activities for lithologic description, field screening, and chemical analyses (Table 4-1). Soil samples were field screened for visual indications of contamination and headspace vapor analysis was conducted using a photoionization detector (PID). Additional soil samples were collected where soil exhibited visual and/or olfactory indications of impacts (i.e., high PID readings, staining, sheen, odor). Soil samples collected for chemical analysis were kept on ice in laboratory-provided glassware and subsequently delivered to Analytical Resources, Inc. (ARI), a Washington State-accredited laboratory, for chemical analysis under standard chain-of-custody procedures. At least one vadose soil sample and one saturated soil sample were collected from each soil and monitoring well boring for chemical analysis in accordance with the Work Plan.

Soil samples collected during drilling activities were submitted for a selection of the following chemical analysis:

- Metals including arsenic, cadmium, total chromium, copper, lead, mercury, nickel, selenium, thallium and zinc by EPA method 6020B and hexavalent chromium by method 7196A.
- TCE and degradation products (1,1- dichloroethene [DCE], cis- and trans-1,2-DCE, and vinyl chloride) by EPA 8260D.

- Petroleum hydrocarbons by NWTPH-HCID with follow up analysis by NWTPH-Gx and/or NWTPH-Dx when HCID indicated a detection(s).
- Extractable petroleum hydrocarbon/volatile petroleum hydrocarbon (EPH/VPH) by methods NWTPH-EPH and NWTPH-VPH if select samples had total petroleum hydrocarbon (TPH) concentrations exceeding 1,000 mg/kg. This analysis was not performed on any of the samples as no sample exceeded 1,000 mg/kg of TPH.
- SVOCs—PAHs by EPA 8270E selected ion monitoring (SIM).
- 1,2,4-trichlorobenzene; 1,2-, 1,3-, and 1,4-dichlorobenzene; and hexachlorobutadiene by EPA 8260D.
- Full suite VOCs by EPA 8260D.
- Full suite SVOCs by EPA 8270E.
- 1,4-dioxane by EPA 8270D.
- PCB Aroclors by EPA 8082A.
- PFAS by EPA 537.1 Modified.

5.2 GROUNDWATER SAMPLING

The monitoring wells were developed followed by a total of three groundwater sampling events at the Site between April 2022 and December 2023. The first sampling event was performed in April 2022 following the first phase of investigation activities. Two additional sampling events were performed in July-August 2023 and December 2023 following the second phase of investigation activities.

Groundwater sampling was performed using low-flow techniques using a peristaltic pump and disposable high-density polyethylene (HDPE) tubing. Purging was performed at a low flow rate (e.g., 0.1 to 0.5 liter per minute) until a minimum of one well volume was removed, and water quality field parameters stabilized (e.g., temperature, specific conductance, pH, turbidity) (Table 5-1). Depth to water measurements were collected in the wells on the same day as sampling during the April 2022 and August 2023 sampling events to prepare groundwater contour maps[7] (Section 3.3) (Table 3-2).

Groundwater samples collected for analysis of dissolved metals were filtered in the field using a disposable 0.45-micron filter before being transferred into laboratory-supplied containers. The remaining groundwater samples were transferred directly into laboratory-supplied containers. The sample containers were kept on ice in laboratory-provided glassware and subsequently delivered to ARI for chemical analysis under standard chain-of-custody procedures.

Groundwater samples were analyzed for a selection of the following:

- Metals including arsenic, cadmium, total chromium, copper, lead, nickel, selenium, thallium and zinc by EPA methods 6020, hexavalent chromium by 7196A and mercury by 1631E. Dissolved metals were field filtered.

[7] A depth to water snapshot was inadvertently not performed in December 2023. This is not considered a data gap given that multiple prior snapshots show a generally easterly groundwater flow direction.

- Petroleum hydrocarbons. Samples were analyzed by HCID and NWTPH-Dx. The samples were analyzed without silica gel treatment (SGT). Selected samples were also analyzed with SGT.
- EPH/VPH by methods NWTPH-EPH and/or NWTPH-VPH.
- TCE and degradation products (1,1-DCE, cis- and trans-1,2-DCE, and vinyl chloride) by EPA 8260D.
- Full suite VOCs by EPA 8260D.
- PAHs-SIM by EPA 8270E-SIM.
- PCBs by EPA 8082A.
- 1,4-dioxane by EPA 8270D
- Full suite SVOCs by EPA 8270E.
- PFAS by 537.1 Modified.
- Total organic carbon (TOC) by EPA 5310.
- Nitrate as nitrogen and sulfate by EPA 300.0.
- Dissolved manganese by EPA 6020.

5.3 DITCH WATER SAMPLING

The Work Plan included at least two ditch water sampling events at up to four locations within the ditch located south of the Precision Engineering Property and east of the former Kaspac/Chiyoda property. Two sampling events were performed. GeoEngineers observed the ditch during multiple site visits in 2022 and 2023 to evaluate if water was present and to collect water samples if present. The ditch was observed to be dry during most site visits except during two rain events on March 28 and December 4, 2023. This suggests that the ditch only contains water during rain events and groundwater does not typically discharge directly to the ditch. This is consistent with the depth-to-water measurements in monitoring wells that indicate the seasonal high groundwater table is below the lowest point in the ditch. The seasonal high groundwater table in the shallow WBZ occurs in the wet winter season, as expected and as shown by inspection of the NAVD88 water elevations in shallow WBZ wells in Table 3-2. Table 3-2 indicates the highest water levels occurred during the December 2023 sampling event. The deepest portion of the ditch is approximately elevation 16 NAVD88, and the groundwater table between MW18 and MW19 is approximately one foot lower; this is illustrated in cross section B-B' in Figure 3-3. It should be noted the ditch was also reported to be dry as far back as 2005 when a staff gauge was installed in the ditch and checked for water (MFA 2006).

Water samples were collected from the ditch during two rain events. Sufficient water was present in the ditch during these events to collect samples although the water was very shallow (less than one inch deep). Therefore, water samples were collected using a peristaltic pump and tubing. Water was pumped directly into laboratory-supplied containers. Sampling events included the following days/locations during rain events:

- **March 28, 2023:** One sample was collected at a location designated as SW1. SW1 is located at the lowest portion of the ditch, just north of the inlet to the 24-inch diameter concrete culvert that discharges stormwater south to the WSDOT ponds (Figure 5-1). The sample represents stormwater runoff from Precision Engineering, Kaspac/Chiyoda, 14th Avenue South, and Highway 99 on-ramp. The

other planned locations (SW2 through SW4) were observed to be dry, or there was saturated soil with a thin film of overlying water but insufficient standing water and no flowing water).

- **December 4, 2023:** Two samples were collected during this event. One sample was collected at SW1 and one sample was collected at SW2 located west of SW1. Water collected at SW2 is representative of stormwater runoff from Precision Engineering and the Highway 99 on-ramp.

The sample containers were kept on ice in laboratory-provided glassware and subsequently delivered to ARI for chemical analysis under standard chain-of-custody procedures.

Ditch water samples were analyzed for the following:

- Metals. The samples were analyzed for the following metals: arsenic, cadmium, total chromium, copper, lead, nickel, selenium, thallium and zinc by EPA methods 6020; hexavalent chromium by 7196A; and mercury by 1631E. Metals were analyzed as total and dissolved metals. Samples for dissolved metals analysis were field filtered through 0.45 micrometer filters.
- Petroleum hydrocarbons. The samples were analyzed by HCID and NWTPH-Dx. The samples were analyzed without SGT. Samples were to be analyzed by NWTPH-Gx if there were gasoline-range detections by HCID. Sample SW1 collected on March 28, 2023 was inadvertently analyzed for NWTPH-Gx although there were no detections by HCID.
- TCE and degradation products (1,1-DCE, cis- and trans-1,2-DCE, and vinyl chloride) by EPA 8260D.
- Methylene chloride.
- 1,4-dioxane by EPA 8270D.
- PAHs-SIM by EPA 8270E-SIM.

5.4 INDOOR AIR

Previous investigations identified TCE as the only contaminant of concern in indoor air (Section 4.2). Interim actions were implemented to address the TCE indoor air concerns in 2020. Thereafter, GeoEngineers continued periodic indoor air sampling at locations RAD-1 through RAD-5 (Figure 5-3) per a 2020 Work Plan (MFA 2020).

5.5 WORK PLAN DEVIATIONS

There were several minor deviations from the work plan that included the following:

- While greater than 95% of requested analyses were performed, groundwater field parameters were not collected during one sampling round at MW2, and TPH and cPAHs were not analyzed during one sampling round at MW22, due to insufficient groundwater recharge rate.
- Dissolved mercury was not analyzed in MW10 during one sampling event due to a lack of low-level mercury laboratory containers.
- Monitoring well MW14 was planned to be installed as a deep monitoring well to investigate TCE impacts to the deep WBZ. However, deep groundwater was not encountered at the time of drilling (to 50 feet bgs), and MW14 was therefore installed as a shallow monitoring well. Note that TCE was not detected in deep soil samples from MW14 nor from downgradient deep monitoring wells MW16 or MW17.

The Work Plan deviations above do not negatively impact Site evaluation in our opinion.

6.0 Cleanup Standards

This section discusses the cleanup standards including cleanup levels, points of compliance, and additional requirements per WAC 173-340-700(3). Appendix Q (Development of PCULs [Ecology]) provides additional details relevant to the discussion in this section.

6.1 CLEANUP LEVELS

Cleanup levels (CULs) are the concentration of hazardous substances in Site soil, groundwater, surface water, and air that are protective of human health and the environment. Ecology provided preliminary cleanup levels (PCULs) to GeoEngineers during Work Plan development (Ecology 2022). The PCULs were developed by Ecology as screening levels specific to protection of the LDW.

The PCULs for vadose and saturated soil, groundwater, and air are summarized in Table 6-1. The complete set of tables provided by Ecology including the various cleanup levels considered for each media are provided in Appendix J.

The PCULs shown in Table 6-1 are considered conservative preliminary cleanup levels to identify potential contaminants of concern (PCOCs) for the Site. PCULs will be further refined in the FS and/or CAP where the PCULs will be considered cleanup levels for the Site.

6.2 POINTS OF COMPLIANCE

The points of compliance are the locations where cleanup levels must be met. Points of compliance are established for the Precision Engineering Site for soil, groundwater, surface water, and air.

6.2.1 Soil

The point of compliance for soil protective of drinking water is considered throughout the Site. Groundwater beneath and downgradient of Precision Engineering is currently not considered potable and unlikely to be considered potable in the future as demonstrated in reports for the LDW in general (Duwamish Coalition 1998) as well as investigations specific to Precision Engineering (MFA 2008, 2011). However, groundwater is considered potable as an environmentally conservative approach for the purposes of the RI PCULs. This preliminary potability determination may be revisited in the FS.

The point of compliance for soil protective of indoor air (i.e., protective of vapors) is from the ground surface to the uppermost saturated zone. The uppermost saturated zone at Precision Engineering is approximately 5 feet bgs.

The point of compliance for soil protective of human exposure via direct contact is throughout the Site from the ground surface to 15 feet below the ground surface. This represents a reasonable estimate of the depth of soil that could be excavated and distributed at the soil surface as a result of site development activities.

In summary, this RI preliminarily assumes a soil point of compliance as throughout the Site.

6.2.2 Groundwater

The standard point of compliance for groundwater is throughout the Site from the uppermost level of the saturated zone extending to the lowest depth which could potentially be affected by the Site. This would include the shallow WBZ and potentially the deep WBZ. A conditional point of compliance may be established by Ecology when it is not practicable to meet the cleanup level throughout the Site within a reasonable restoration time frame. The conditional point of compliance is as close as practicable to the source of hazardous substances and not to exceed the property boundary. A conditional point of compliance will likely be proposed in the CAP and could include selected wells at or within the downgradient property boundary. Wells could include a representative set from MW11, MW6, MW2, MW7, MW9, MW10, MW18.

6.2.3 Surface Water

The point of compliance for surface water is the point or points where hazardous substances are released to surface waters of the state unless Ecology authorizes a mixing zone. A mixing zone is not allowed where hazardous substances are released to surface water from groundwater discharge. Groundwater does not appear to discharge to surface water on or near the Precision Property including within the ditch (see Section 5.3). The ditch receives stormwater from the impermeable surfaces of the Precision Engineering Property, as well as all of the Kaspac/Chiyoda property and adjacent roadways. Stormwater discharges from the Precision Engineering Property are covered by Pacific Industrial Supply's Industrial Stormwater General Permit.

6.2.4 Air

The point of compliance for air is the ambient outdoor air and air within any building, utility vault, manhole or other structure large enough for a person to fit into, throughout the site.

6.3 ADDITIONAL REQUIREMENTS

Cleanup standards must comply with additional requirements including state and federal laws. The PCULs provided by Ecology shown in Table 6-1 incorporate these state and federal laws, as well as other laws and regulations. The FS will discuss other state and federal laws applicable to the cleanup that is selected for the Site.

7.0 Nature and Extent of Contamination

This section describes the nature and extent of contamination in Site media of concern including soil, groundwater, ditch water and air. Summary tables of chemicals of concern that exceeded screening levels in soil, groundwater, and ditch water are presented in Tables 7-1 through 7-4. Complete data tables including non-exceedances are provided in Appendix K. Laboratory reports and data validation reports are in Appendix L. The results of data validation included adding estimated ("J") to selected data and changing five soil methylene chloride results from detected to not detected ("UB") based on method blank contamination. Otherwise, all data were considered usable for their intended purpose.

Table 7-5 evaluates the PCOCs that exceeded PCULs in soil or groundwater to determine the chemicals of concern (COCs). Air contaminants of concern are limited to TCE as discussed in Section 7.6. Arsenic was ruled out as a COC as discussed in Appendix P.

The COCs for the Site include chromium and mercury, diesel- and lube-oil range petroleum hydrocarbons, TCE, 1,4-dioxane and total cPAH toxic equivalency quotient (TEQ) as shown in Table 7-5. Chromium is a primary COC for the Site. Mercury exceeds PCULs in soil and groundwater although there are no specific associations between chromium plating and mercury. Petroleum hydrocarbons were used onsite and there are two soil "hotspots" as discussed below. TCE is a primary COC and was used onsite and is present in soil, two monitoring wells, and sub-slab soil gas. 1,4-dioxane is generally known to have been used as a solvent stabilizer and therefore could potentially be due to onsite solvent use. cPAHs could be associated with petroleum use, although they could be due to background conditions[8]. Other PCOCs are not COCs as discussed in Table 7-5, typically for multiple lines of reasoning for any individual PCOC.

The COCs are discussed for each media below. The nature and extent of these COCs are illustrated in the following figures grouped by media and contaminant type:

- Vadose soil: Figures 7-1A (chromium and mercury), 7-1B (TCE and 1,4-dioxane) and 7-1C (TPH and cPAHs)
- Saturated soil: Figures 7-2A (chromium and mercury), 7-2B (TCE and 1,4-dioxane) and 7-2C (TPH and cPAHs)
- Shallow groundwater: Figures 7-3A (chromium and mercury), 7-3B (TCE and 1,4-dioxane) and 7-3C (TPH and cPAHs).
- Deep groundwater: Figures 7-4A (chromium and mercury), 7-4B (TCE and 1,4-dioxane) and 7-4C (TPH and cPAHs)

Chromium and mercury are grouped together because both are metals. TCE and 1,4-dioxane are grouped because 1,4-dioxane is generally known to have been added to solvents as a stabilizer. TPH and cPAHs are grouped because cPAHs can be associated with heavy oils and/or used oil. Each figure indicates exceedance factors of the PCULs using colors that range from non-detect (or detected below PCUL) in green, to detected at greater than 100 times the PCUL in purple.

7.1 VADOSE SOIL

Vadose soil samples were collected in the upper 5 feet bgs from multiple locations in and around the Precision Engineering Property (Figure 5-2). Vadose soil COC exceedances are summarized in Table 7-1 and shown in Figures 7-1A through 7-1C. The COCs that exceeded PCULs are discussed below.

7.1.1 Chromium and Hexavalent Chromium

Chromium and/or hexavalent chromium exceeded PCULs in numerous vadose soil samples collected only in Warehouse 1 and the southern portion of Warehouse 2 (GP1 through GP4, GP6 through GP11, GP18, GP22, GP32, and SB33) (Table 7-1). The highest chromium concentration of 6,750 mg/kg was at GP32 which is near former chromic acid tanks 3 and 4a (Figure 7-1A). Hexavalent chromium also exceeded the screening level although at lower concentrations (0.074 mg/kg to 89 mg/kg) in ditch samples HA1 through HA6. Hexavalent chromium did not exceed the PCUL in ditch samples collected further to the south at HA26

[8] PAHs, including cPAHs, are also released from non-Precision Engineering, "background" sources, including wood burning and vehicle emissions (Ecology 2012).

through HA29. Neither chromium nor hexavalent chromium exceeded the PCULs outside the building aside from HA1 through HA6.

7.1.2 Mercury

Mercury exceeded the vadose PCUL of 0.07 mg/kg in soil samples including inside Warehouse 1, east of the building, and in selected ditch vadose soil samples. Maximum mercury (1.1 mg/kg) occurred in GP18 near which is near former chromic acid tanks 3 and 4a (Figure 7-1A).

7.1.3 Trichloroethylene

TCE exceeded the vadose soil PCUL of 0.0044 mg/kg only inside Warehouse 1 at locations GP6, GP11, GP14, SB24, SB25, and SB33. These borings are located within former chromic acid plating tank areas as well as the former grinding shop (Figure 7-1B; see Figure 2-2 for grinding shop location).

7.1.4 1,4-Dioxane

1,4-dioxane did not exceed the PCUL of 0.11 mg/kg in any vadose soil sample.

7.1.5 Petroleum Hydrocarbons

Diesel- and lube oil-range petroleum hydrocarbons exceeded the PCUL (2,000 mg/kg) in vadose soil with concentrations of 10,000 mg/kg and 12,000 mg/kg, respectively, at the SB3 location. The sum of petroleum hydrocarbons was 22,000 mg/kg. Petroleum hydrocarbons did not exceed in any samples immediately surrounding SB3, indicating SB3 likely represents an isolated hot spot of petroleum hydrocarbons. One other isolated hot spot on the Site is GP21 discussed in Section 7.2.4 below (saturated soil).

Lube-oil range petroleum hydrocarbons were detected slightly greater than the PCUL in HA2 at a depth of 0.5 feet bgs (collected in 2005) with a concentration of 3,170 mg/kg that slightly exceeds the PCUL of 2,000 mg/kg. There were no exceedances in HA2 in the next deepest sample at 1.5 feet bgs. Samples collected in boring SB36 in 2023 (adjacent to HA2) did not exceed petroleum hydrocarbons PCUL in vadose soil.

7.1.6 cPAH TEQ

The cPAH TEQ exceeded the PCUL of 0.00031 mg/kg at numerous locations inside and outside the building. It should be noted that the median detected vadose soil cPAH TEQ of 0.0139 mg/kg is lower than the median cPAH TEQ of 0.084 mg/kg in 120 shallow soil samples collected as part of an Ecology study of six Seattle neighborhoods (Ecology 2011b). Furthermore, the cPAH TEQ concentrations increase away from the Precision Property, with the highest concentrations adjacent to the Highway 99 on-ramp and 14th Avenue South (i.e., HA26 through HA28, and MW20 through MW23) (Table 7-1 and Figure 7-1C).

7.2 SATURATED SOIL

Saturated soil samples were collected between 5 feet bgs and 50 feet bgs. Saturated soil COC exceedances are summarized in Table 7-2 and shown in Figures 7-2A through 7-2C. The COCs that exceeded PCULs are discussed below.

7.2.1 Chromium and Hexavalent Chromium

Chromium and/or hexavalent chromium exceeded PCULs in numerous saturated soil samples only in Warehouse 1, with one exception discussed below. The highest chromium concentration of 1,870 mg/kg was at MW15 which is near former chromic acid tank 4 (Figure 7-1A). The one exception is a reported hexavalent chromium concentration of 1.78 mg/kg in sample SB17-43 adjacent to 14th Avenue South, at a depth of 43 feet bgs. The detection is limited in nature in that there were no PCUL exceedances of chromium or hexavalent chromium in any of the following:

- Soil samples SB17-26 and SB17-40, which were collected above SB17-43.
- Soil samples collected in nearby borings and at multiple depths including SB13-9, MW21-17, and MW22-46. MW22 is 10 feet east of SB17, and sample MW22-46 was collected at a similar depth to SB17-43.
- Groundwater samples from multiple monitoring wells located between SB17 and the Precision building including shallow monitoring wells MW2, MW6, and MW10, and deep groundwater wells MW7, MW9, and MW16 (Sections 7.3 and 7.4).

7.2.2 Mercury

Mercury only slightly exceeded the PCUL of 0.07 mg/kg in two samples, SB30-7.5-8.5 and SB32-4-5. The borings are located in, and near, the southeast corner of Warehouse 1. In both cases, deeper saturated soil samples did not exceed PCUL.

7.2.3 Trichloroethylene

Trichloroethylene exceeded the PCUL of 0.00027 mg/kg at several locations in Warehouse 1 including GP6, GP11, MW14, MW15, SB24, SB25 and SB33. TCE did not exceed the PCUL outside Warehouse 1. The deepest TCE exceedances were up to 18 feet bgs, however deeper samples were below PCUL at MW14-35, MW14-45, MW15-29, and MW15-36.

7.2.4 1,4-Dioxane

1,4-dioxane only exceeded in one saturated soil sample at MW22-11 at 11 feet bgs. 1,4-dioxane did not exceed in three other soil samples above and below MW22-11 in the same boring, including MW22-2.5-4, MW22-30-31, and MW22-45-45.5. Nor did 1,4-dioxane exceed in the south-adjacent sample MW21-15-16.5. 1,4-dioxane was also not detected in groundwater in MW21 or MW22 (Sections 7.3 and 7.4).

7.2.5 Petroleum Hydrocarbons

Petroleum hydrocarbons exceeded the PCUL (2,000 mg/kg) at GP21 located in the former boiler room, at a depth of 6.5 feet bgs. Diesel- and lube oil-range petroleum hydrocarbons were detected at concentrations of 5,270 and 19,900 mg/kg, respectively, for a sum petroleum hydrocarbon concentration of 25,170 mg/kg. There were no surrounding soil samples with exceedances of petroleum hydrocarbons (Figure 7-2C). A geophysical survey was performed in 2021 to identify potential USTs in the boiler room; none were identified (Section 4.3).

The sum of diesel- and lube oil-range petroleum hydrocarbons slightly exceeded the PCUL (2,000 mg/kg) at SB5-11 with a concentration of 2,320 mg/kg. The SB5 boring log indicates the sample was collected just below “wood debris and clay” (likely peat; see boring log in Appendix D) The boring log noted no odor

or sheen at all depths in the boring. The laboratory noted there were quality control issues with the associated batch of soil samples analyzed by NWTPH-Dx, and that the results of organics or additional hydrocarbons were not identifiable (i.e. did not resemble petroleum products). The results for SB5-11 may be related to naturally occurring organics in this sample rather than spilled petroleum.

7.2.6 cPAH TEQ

The cPAH TEQ exceeded the PCUL of 0.000016 mg/kg at numerous locations inside and outside the building. Exceedances occurred at multiple depths up to 45 feet bgs. The median cPAH TEQ is 0.0048 mg/kg, much lower than the 0.084 mg/kg calculated for typical Seattle neighborhoods (Ecology 2011b). Carcinogenic PAHs are not correlated with petroleum hydrocarbons in any of the samples. All samples with cPAH exceedances were either non-detect for petroleum hydrocarbons or below PCUL for petroleum hydrocarbons. It appears the exceedances in off-property locations such as MW-19 through MW-23 are not related to site releases of petroleum. Review of boring logs for MW-19 through MW-23 indicates no petroleum staining or odors. One piece of suspected treated wood was observed at 5 feet bgs in MW-20. However, the wood is likely related to old fill along 14th Avenue South given that no such treated wood was observed in any of the other borings for the project.

7.3 SHALLOW GROUNDWATER

Shallow groundwater samples were collected from 15 shallow monitoring wells at the Site. The data from 2019 to 2023 is being evaluated in this RI, with most wells having seven rounds of data from multiple wet and dry seasons. Data from prior to 2019 is not used since it is outdated (2005 to 2015) and superseded by up to seven rounds of more recent monitoring[9]. Shallow groundwater COC exceedances are summarized in Table 7-3 and shown in Figures 7-2A through 7-2C. The COCs that exceeded PCULs are discussed below.

Note that the analytical method for hexavalent chromium in water includes laboratory filtration of the sample through a 0.45-micron filter. Therefore, there are no total (unfiltered) hexavalent chromium results or total (unfiltered) trivalent chromium results. The hexavalent and trivalent results are therefore included under dissolved metals in Table 7-3.

7.3.1 Chromium and Hexavalent Chromium

Chromium and hexavalent chromium always exceeded the groundwater PCULs of 100 µg/L and 0.046 µg/L, respectively, in MW-5 (Figure 7-2A). MW5 is a shallow well located in the former chromic acid plating area in Warehouse 1 and frequently contains high concentrations of chromium (ranging from 38,900 µg/L to 133,000 µg/L). The chromium is predominantly in the form of hexavalent chromium (Table 7-3). There are no other chromium or hexavalent chromium exceedances in shallow wells at the Site, with three exceptions:

- MW8. Hexavalent chromium was reported at an estimated concentration of 16 µg/L during only one out of six sampling events (July 14, 2023). Hexavalent chromium was not detected in sampling events before or after the July 14, 2023 sampling event. The result is estimated (J) and only slightly greater

[9] Groundwater "grab" sampling from temporary direct push borings are also not used in the RI evaluation. The data are in Appendix F for reference. The data were historically used to guide subsequent sampling investigations but are considered non-representative and outdated for characterizing the nature and extent of contamination.

than the laboratory's reporting limit of 13 µg/L. Furthermore, the unfiltered chromium result in the same sample was only detected at 8.5 µg/L[10]. Finally, crossgradient and downgradient nearby shallow wells MW19, MW20, and MW21 never exceeded the PCUL for chromium or hexavalent chromium including during the dry and wet season sampling events (Figure 7-2A).

- MW18. Hexavalent chromium was reported at 19 µg/L during an initial sampling event on April 21, 2022, but not during two subsequent sampling events. Crossgradient and downgradient nearby shallow wells MW19 and MW20 never exceeded the PCUL for chromium or hexavalent chromium including during the dry and wet season sampling events (Figure 7-2A).
- MW23. Hexavalent chromium was reported at an estimated concentration of 13 µg/L during an initial sampling event on July 25, 2023, but not during a subsequent sampling event performed on December 6, 2023. It is noted that the result is estimated (J) and at the laboratory's reporting limit of 13 µg/L. Furthermore, the unfiltered chromium result in the same sample was only detected at 3.51 gµg/L.

7.3.2 Mercury

Total and dissolved mercury slightly exceeded the groundwater PCUL of 0.025 mg/L once in MW5 (0.0283 µg/L total and 0.0252 µg/L dissolved) in 2022, but not during two follow up sampling events in 2023. Total mercury exceeded the PCUL in MW18 during all three sampling events, however total mercury trended downward through the three sampling events. Dissolved mercury in the same samples were below the PCUL and several orders of magnitude lower than total mercury concentrations. Dissolved mercury only exceeded the PCUL during the first sampling event.

7.3.3 Trichloroethylene

TCE exceeded the groundwater PCUL of 0.70 µg/L during each sampling event in MW5 and MW14. These wells are shallow wells located within the former Warehouse 1. There were no other exceedances of TCE in groundwater.

7.3.4 1,4-Dioxane

1,4-dioxane exceeded the groundwater PCUL of 0.44 µg/L once in MW2, each sampling event at MW5, and each sampling event at MW8, MW10, and MW11. There were no exceedances of 1,4-dioxane in shallow wells along the ditch including at MW19, MW20, MW21, and MW23.

7.3.5 Petroleum Hydrocarbons

Petroleum hydrocarbons exceeded the PCUL of 500 µg/L in the following shallow monitoring wells.

- MW2. TPH exceeded the PCUL during three out of seven sampling events, with total TPH concentrations ranging from 700 µg/L to 1,240 µg/L.

[10] In theory one of the results is incorrect because it is not possible to have any form of a metal at a higher concentration than the total (sum) concentration. A likely cause of the discrepancy is the very low concentrations of both results, which are less than 2 times their respective reporting limits and therefore near the end of the calibration curve. It is also possible hexavalent chromium was introduced by the lab filters, though no lab filter blanks were analyzed, as is the practice for hexavalent chromium analysis.

- MW6. TPH exceeded the PCL during six out of seven sampling events, with total TPH concentrations ranging from 523 µg/L to 1,180 µg/L.
- MW8. TPH slightly exceeded the PCUL during only one out of seven sampling events, with a total TPH concentration of 523 µg/L. The exceedance occurred in 2019, and the PCUL was not exceeded during the subsequent five sampling events in 2020 through 2023.
- MW10. TPH exceeded the PCUL during three out of seven sampling events, with total TPH concentrations ranging from 800 µg/L to 1,290 µg/L.
- MW11. TPH slightly exceeded the PCUL during only one out of seven sampling events, with a total TPH concentration of 680 µg/L. The exceedance occurred in 2019, and the PCUL was not exceeded during the subsequent five sampling events in 2020 through 2023.
- MW18. TPH exceeded the PCUL during the first two out of three sampling events, with total TPH concentrations of 754 µg/L and 1,110 µg/L.

Petroleum hydrocarbons in shallow groundwater at the Site could be related to historical spills. However, it is suspected that the petroleum hydrocarbons detections and/or exceedances at the Site could be due to the presence of naturally occurring organics in shallow groundwater from peat deposits known to be in the subsurface. The wells described above except for MW8 have well screen intervals screened across or within several feet of layers of peat as noted on the boring logs (Appendix D). Additional evidence that TPH exceedances may be due to natural organics as opposed to petroleum products include the following.:

- No odors were present while sampling any of the wells. Purge water from numerous wells exhibited a slight yellow color indicative of decaying organics. No sheen was present in well purge water with the exception of one well, MW10. There were no PCUL exceedances of other chemicals typically associated with petroleum releases (BETX, naphthalene, etc.).
- Three groundwater samples that contained detectable TPH by method NWTPH-Dx were analyzed for VPH and/or EPH and the results were that none were detected. The three groundwater samples were collected from MW2 and MW18. The data are shown in Appendix K.
- One groundwater sample was collected as a split and analyzed by NWTPH-Dx with and without silica gel cleanup (SGC). The sample (MW18-230713) yielded the following results: diesel-range petroleum hydrocarbons were detected at 876 mg/L without SGC (greater than the PCUL of 500 mg/L) and 169 mg/L with SGC (less than the PCUL); and lube-oil range petroleum hydrocarbons were detected at 234 mg/L without SGC and 200 mg/L with SGC. The data are shown in Appendix K.

7.3.6 cPAH TEQ

The cPAH TEQ PCUL of 0.0097 µg/L was only exceeded in one sample (MW18-220421) at an estimated concentration slightly greater than the PCUL of 0.0132 µg/L. The detected concentration is less than two times the PCUL.

7.4 DEEP GROUNDWATER

Deep groundwater samples were collected from eight deep monitoring wells at the Site. As with shallow groundwater, data from 2019 to 2022 is used to determine the nature and extent of contamination. There were few exceedances of COCs in deep groundwater, and only in MW7 and MW9. Deep groundwater exceedances are summarized in Table 7-3.

There were no exceedances of chromium, hexavalent chromium, TCE, or cPAH TEQ in any deep wells. Total and dissolved mercury exceeded the PCUL of 0.025 µg/L in MW7 in three out of three sampling events. Total mercury exceeded the PCUL in MW9 in two out of three sampling events. 1,4-dioxane exceeded the PCUL of 0.44 µg/L in MW7 in one out of three sampling events, and in MW9 in three out of three sampling events. Total TPH slightly exceeded the PCUL of 500 µg/L in MW9 in one out of seven sampling events (530 mg/L). None of these chemicals exceeded in MW22, which is a deep monitoring well located downgradient of the Site.

7.5 DITCH WATER SAMPLES

Samples of water present in the ditch were collected during two rain events, March 28, 2023 and December 4, 2023. The ditch was observed to be dry during multiple other site visits. Samples were collected at SW1 which is located at the north end of the 24-inch diameter concrete culvert that discharges stormwater south to the WSDOT ponds (Figure 5-1). SW2 is located west of SW1. Data are compared to the groundwater PCULs as a reference comparison. Chemical exceedances are summarized in Table 7-4.

Chromium and hexavalent chromium did not exceed PCULs in any samples. Total and dissolved mercury exceeded the PCUL of 0.025 µg/L in SW1 during the first sampling event only on March 28, 2023. It is noted that other metals and cPAHs were elevated in that same sample as compared to the sample collected on December 4, 2023. It is possible that elevated turbidity in the sample collected on March 28th contributed to the higher concentrations because metals and cPAHs will sorb to soil. TCE and 1,4-dioxane did not exceed PCULs in any of the samples. TPH was not detected in the samples. cPAHs slightly exceeded the PCUL of 0.0097 µg/L in SW1 sample collected on March 28, 2023, as noted above, but not in SW1 or SW2 in December 2023.

7.6 AIR

Air impacts are limited to TCE in sub-slab soil gas and historically in indoor air as described in the 2020 Vapor Report (MFA 2020) and as confirmed by ongoing indoor air Priority Monitoring performed between 2020 and 2023 (GeoEngineers 2023). Selected pages from the Vapor Report are included in Appendix G-1, and the Priority Monitoring results are included in Appendix G-2.

Results from an investigation performed in February 2020 indicated TCE exceeded PCULs in sub-slab soil gas and indoor air samples. Table 4-4 of the report indicates TCE exceeded the air PCUL of 11 micrograms per cubic meter (µg/m^3) in sub-slab soil gas, with the highest concentration (sample A9) near the former TCE tank. Table 4-5 indicates that most indoor air samples exceeded the TCE MTCA Method B CUL of 0.33 µg/m^3, with many exceeding the short-term action level of 7.5 µg/m^3. Interim remedial actions were performed in April 2020 including sealing the concrete slab of the building and decommissioning the former evaporator pit and filling it with concrete (Appendix G-1). Priority Monitoring for TCE in indoor air is ongoing with these results indicating a steady decline in TCE concentrations to less than the MTCA Method B CUL since the interim remedial actions as shown in Table 1 of Appendix G-2.

7.7 NATURE AND EXTENT SUMMARY

This section presents a summary of the nature and extent of contamination (i.e., a summary of Sections 7.1 through 7.6). This section discusses each COC group individually including chromium and mercury; TCE

and 1,4-dioxane; and TPH and cPAHs. Lateral and vertical extent of contamination are discussed at the end of this section.

7.7.1 Chromium and Mercury

Chromium and/or hexavalent chromium are present at relatively high concentrations in soil primarily in Warehouse 1 and in shallow groundwater at MW5. Chromium and hexavalent chromium do not appear to be mobilizing in groundwater based on results in the other shallow and deep groundwater monitoring wells: Wells downgradient of MW5 (east through southeast of MW5) including shallow wells MW2, MW6, MW10, and MW21 and deep wells MW7, MW9, MW16, and MW22 never exceed the PCUL for chromium or hexavalent chromium. Shallow wells MW8 and MW18 each had one anomalous exceedance of hexavalent chromium, with no exceedances during numerous other sampling events. Shallow wells MW19, MW20, and MW21 that are downgradient of MW8 and MW18 did not exceed the PCUL for hexavalent chromium. Shallow well MW23 exceeded the groundwater PCUL for hexavalent chromium during an initial sampling event and only detected at a very low concentration (at the laboratory reporting limit of 13 µg/L) and not detected during a subsequent sampling event. Chromium and hexavalent chromium do not exceed PCULs in any of the ditch water samples.

Mercury slightly exceeds the soil PCULs primarily in vadose soil inside and outside the building with no clear pattern. Mercury exceeds the groundwater PCUL in shallow well MW18 but not in downgradient wells MW19 or MW20. Mercury exceeds the groundwater PCUL in deep wells MW7 and MW9 but not in downgradient deep well MW22.

7.7.2 TCE and 1,4-Dioxane

TCE is present primarily only in Warehouse 1 soils and soil gas, and in shallow groundwater in MW5 and MW14 (both inside Warehouse 1) only. TCE is not mobilizing in groundwater as it is not detected in any groundwater monitoring wells except shallow wells MW5 and MW14. TCE concentrations in indoor air are less than the MTCA Method B CUL and continue to decline since interim remedial actions were performed in 2020. 1,4-dioxane is only detected in one out of 33 soil samples, at MW22 which is located far from any known source. 1,4-dioxane is not collocated with Site TCE exceedances (as would be expected given that 1,4-dioxane is generally known to have been used as a solvent stabilizer). 1,4-dioxane exceeds the groundwater PCUL in shallow monitoring wells in Warehouse 1 and in wells adjacent to the building but does not exceed PCULs in the wells located further downgradient (i.e., MW18 through MW23 located along Highway 99 on-ramp and 14th Avenue South). 1,4-dioxane does not exceed the groundwater PCUL in the ditch water samples.

7.7.3 Petroleum Hydrocarbons and cPAHs

Petroleum hydrocarbons exceed the PCULs primarily in two soil hotspots (SB3 south of the building and GP21 near the boiler room). The two hotspots are each surrounded by soil sample locations that do not exceed PCULs. Petroleum hydrocarbons slightly exceed PCULs in several shallow groundwater monitoring wells, but the apparent exceedances are more likely due to naturally occurring organic material (peat) as discussed in Section 7.3.5. Petroleum hydrocarbons do not exceed PCULs in any of the wells MW18 through MW23 located along Highway 99 on-ramp and 14th Avenue South. Petroleum hydrocarbons do not exceed groundwater PCULs in any of the ditch water samples.

cPAH TEQ is not collocated with locations of petroleum hydrocarbon PCUL exceedances as would be expected. Rather, cPAH TEQ is present at low concentrations that tend to increase away from the Precision Engineering Property towards roadways. This suggests cPAHs are potentially present as a background condition and/or from adjacent roadways rather than sourced from Precision Engineering. cPAH TEQ only slightly exceeds the groundwater PCUL in one out of 106 samples (MW18-220421) and by less than two times the PCUL. cPAHs were detected in one ditch water sample at a concentration less than 2 times the PCUL that may have been related to excessive turbidity in the sample. cPAH TEQ was not detected in two other ditch water samples.

7.7.4 Vertical and Lateral Extent

The vertical and lateral extent of contamination has been defined. One of the objectives of drilling monitoring wells MW14 and MW15 was to assess vertical extent of impacts in Warehouse 1 where the most significant contaminant source area is located (multiple chromic acid tanks and TCE use). Soil samples collected from those borings at depth do not exceed PCULs for COCs (see Table 7-2, samples MW14-44-45[11] and MW15-28-29). Groundwater samples collected from deep monitoring well MW15 also did not exceed PCULs for COCs (see Table 7-3, MW15 [total of three samples]).

The lateral extent of soil contamination is generally defined by the Property boundaries with Warehouse 1 as the boundary for some COCs; the lateral extent of soil PCUL exceedances of chromium, TCE, 1,4-dioxane, and petroleum hydrocarbons are generally within these boundaries[12] (Figures 7-1A, 7-1B, 7-1C, 7-2A, 7-2B, and 7-2C). Mercury and cPAHs exceed PCULs in some soil samples at or past the Property boundaries. However, it is unlikely that additional soil sampling further from the Property would result in delineation. The soil cPAH TEQ PCULs of 0.00031 mg/kg for vadose soil and 0.000016 mg/kg for saturated soil would likely frequently exceed in many samples beyond the Property given the highly urbanized/commercialized environment and given the PCULs are far lower than urban "background" concentrations. As noted previously, soil cPAH TEQ concentrations appear to increase away from Precision Engineering, and cPAH TEQ is not collocated with petroleum hydrocarbon exceedances on the Site. Where mercury exceeds PCULs in Site soils, the concentrations are often only slightly above 0.07 mg/kg (Washington State background soil concentration) and may also be elevated due to non-Precision Engineering sources.

The lateral extent of groundwater contamination is defined as generally within Warehouse 1 and, for some COCs downgradient to, but not past, the Kaspac/Chiyoda property. Shallow and deep monitoring wells MW18 through MW23 do not exceed PCULs for any COCs except for 1 aberrant result at MW23 as discussed in Section 7.3.1.

[11] A single detection of chrysene at an estimated concentration of 0.00173 mg/kg technically means the cPAH TEQ was "exceeded," however this is considered insignificant because chrysene is not a Site COC, and the concentration is far lower than urban "background" chrysene concentrations (Ecology 2011b).

[12] Hexavalent chromium and/or TPH exceed in soil slightly south of the southern property line (e.g. HA2) but are bounded by "clean" samples further to the south (e.g. HA28).

8.0 Conceptual Site Model

The CSM describes primary sources and release mechanisms, fate and transport processes, exposure pathways, and receptors. A preliminary CSM was developed in the Work Plan (GeoEngineers 2022). This section presents the refined CSM based on review of all data and information collected up to and including the RI.

The primary purpose of the CSM is to describe pathways by which human and ecological receptors could be exposed to site-related chemicals. A complete exposure pathway consists of four necessary elements: (1) a source and mechanism of chemical release to the environment, (2) an environmental transport medium for a released chemical, (3) a point of potential contact with the impacted medium (referred to as the exposure point), and (4) an exposure route (e.g., direct contact) at the exposure point. The CSM has been refined based on the current understanding of physical conditions, historical operations, and investigation results. The CSM is described below and is illustrated in Figure 8-1. Environmental transport and exposure pathways were evaluated based on the CSM, as discussed below.

8.1 PRIMARY SOURCES AND RELEASE MECHANISMS

Potential sources of contamination associated with historical operations at the Site were identified during previous environmental investigations. Leaks and spills of process chemicals, fuels, solvents, and wastes associated with former Precision operations. The following former features and associated activities may have contributed to contamination at the Site (see Figure 2-2 for historical site features and Figure 2-3 for current site features).

- Tanks and vaults associated with chrome-plating activities: plating tanks and plating tank vaults; caustics, acids, and wastewater tanks; and evaporator tanks and vaults.
- Solvent use and storage associated with parts-cleaning and -degreasing activities, including a steam cleaning pit and a TCE tank in the chrome-plating/steam cleaning area, an oil/water separator that received steam cleaning liquids, and a degreaser system in the cylinder shop.
- A waste-oil AST.
- Leaks of hydraulic oil associated with general equipment use.
- Grinding and machining of metal parts.
- Hydraulic cylinder test vault. The vault was checked twice in 2022 for volume of water to potentially allow for sample collection but was found to be dry and empty on both events.
- A previously suspected abandoned-in-place UST in the boiler room (see Figure 2-2). A geophysical survey was performed in the boiler room in 2021 and no USTs were found (Appendix H).

These potential sources may have released contamination to the soil, groundwater, indoor air, and ambient air via direct releases to surface and subsurface soil or groundwater; or via leaks or discharges from vaults, trenches, and drainage features.

8.2 FATE AND TRANSPORT PROCESSES

The preliminary CSM developed in the Work Plan (GeoEngineers 2023) identified the following eight potential mechanisms with the potential to influence the fate and transport of chemicals at the Site:

1. Natural biodegradation
2. Sorption to soil
3. Advection and dispersion in groundwater
4. Volatilization of chemicals from soil or groundwater to indoor air
5. Leaching of chemicals from soil to groundwater
6. Stormwater entrainment and discharge to the drainage ditch
7. Infiltration of chemicals in into stormwater features (e.g., stormwater pipes and/or the Site manhole) and subsequent discharge to the drainage ditch, and
8. Direct discharge of groundwater seepage to the drainage ditch.

The CSM is refined following the RI investigation (Section 5) to eliminate from consideration mechanism #8. Direct discharge of groundwater seepage to the ditch appears unlikely given that groundwater seepage to the ditch does not appear to be occurring based on the following: the ditch was observed to be dry during multiple site visits except during rain events (Section 5.3); the seasonal high groundwater elevation is below the deepest portion of the ditch (Figure 3-3); and COCs generally do not exceed PCULs in ditch water samples (Table 7-4)[13].

Contaminant releases to the surface or subsurface have the potential to migrate vertically downward to the water table, resulting in impacts to shallow soil and dissolved-phase impacts to groundwater in the shallow WBZ beneath the Site. Volatile contaminants in surface and subsurface soil and/or groundwater may also partition to the vapor phase, resulting in impacts to indoor or ambient air quality.

The preliminary CSM identified that dissolved-phase contamination has the potential to migrate via groundwater flow potentially resulting in downgradient groundwater or surface water impacts via discharge to the drainage ditch and subsequent stormwater transport and discharge to the LDW. The discharge of contaminants to the drainage ditch via groundwater appears unlikely as discussed above. Furthermore, dissolved-phase contaminant migration in groundwater to the LDW appears very unlikely based on the limited impacts observed in downgradient groundwater wells as discussed in Section 7.3 and 7.4, and as reiterated herein: Chromium and hexavalent chromium are present in MW5 groundwater at relatively high concentrations (maximum 163,000 µg/L hexavalent chromium), yet chromium and hexavalent chromium do not exceed PCULs in MW2 or MW6 just east of the building, nor do they exceed PCULs in MW21 and MW23 along 14th Avenue South. TCE and 1,4-dioxane also exceed PCULs in MW5 groundwater, yet they do not exceed PCULs in MW2 or MW6 except for one slight exceedance of 1,4-dioxane in MW2 during one sampling event only; 1,4-dioxane does not exceed further downgradient at MW21 or MW23.

Groundwater contaminant transport modeling was performed during a prior investigation, and a memorandum with the modeling results is included as Appendix M. The contaminants addressed by the modeling included the current (2024) COCs chromium, TCE, petroleum hydrocarbons, and selected PAHs, and also two COCs that have since been eliminated (copper and vinyl chloride). Model inputs were

[13] The March 28, 2023 sample contained elevated mercury and cPAHs that may have been associated with elevated turbidity, but it is noteworthy that chromium, hexavalent chromium, TCE, 1,4-dioxane, and TPH did not exceed PCULs in any ditch water samples.

considered environmentally conservative. Results indicated that the off-Property extent of Site groundwater impacts would not reach the LDW. Ecology accepted the modeling work as a reasonable indicator that Site groundwater would not directly discharge to the LDW but noted that the conclusions must be supported with data (Ecology 2009). The general lack of PCUL exceedances of COCs in wells MW19 through MW23 and ditch water samples SW1 and SW2 confirm the previous modeling work.

The Property is almost entirely covered with impervious surfaces except the vegetated strip along the southern border of the Property, north of the State Route 99 on-ramp. Therefore, stormwater runoff and discharge and wind entrainment and transport of surface soil are not currently complete environmental transport pathways for contamination associated with former Precision operations.

Potential mechanisms for transport of Site contamination to the portion of the ditch to the south of the Property include soil or groundwater infiltration into stormwater pipes or vaults through cracks with subsequent discharge through the outfall to the south of the Property (see Figure 2-3), or erosion and stormwater entrainment of contaminated shallow soil along the embankments of the ditch to the south. The only potential mechanism previously identified for Site contamination to be transported to the portion of the ditch located to the east of the Property was via groundwater transport and discharge. However, the groundwater table elevation is below that portion of the ditch thus confirming this pathway is incomplete (See Figure 3-2).

Historical stormwater runoff to the southern portion of the ditch during Precision's operations may have contributed contamination to the ditch. However, impacts appear to be limited to low concentrations of a single COC in vadose soil only - hexavalent chromium exceeded the PCUL in vadose soil samples in HA1, HA2, and HA6-11 in 2005/2006 (Figure 7-1A). However, hexavalent chromium does not exceed in vadose soil to the south in HA26 through HA29 (Figure 7-1A), nor does it exceed PCULs in saturated soils in borings SB34 through SB37 located in the ditch (Figure 7-2A). TCE and 1,4-dioxane do not exceed PCULs in vadose or saturated ditch soil (Figures 7-1B and 7-2B).

Petroleum hydrocarbons generally do not exceed in soil within the ditch except in one vadose soil sample (HA2 at 0.5 feet bgs) that is very limited in nature (Section 7.1.5). Chromium, hexavalent chromium, TCE, 1,4-dioxane and petroleum hydrocarbons do not exceed PCULs in the ditch water samples. Mercury and cPAH TEQ exceed PCULs in soil within the ditch but the cPAH TEQ exceedances appear unlikely to be related to former Precision Engineering operations. There is also no strong connection between site operations and the slightly elevated mercury concentrations in limited locations.

8.3 POTENTIAL EXPOSURE PATHWAYS

The following are potentially complete current or future exposure pathways (Figure 8-1).

- Dermal contact with, and/or incidental ingestion of chemicals in soil at the Property. This pathway is currently incomplete due to buildings and pavement; however, it could be a complete exposure pathway in the future if soils on the Property were exposed for any reason (e.g. utility work, Property redevelopment).
- Inhalation of airborne particles (dust) generated from soil on the Property. This is also only a future pathway if soils on the Property were exposed.

- Inhalation of air vapors emanating from soil and/or groundwater via vapor intrusion into the building or outdoors. TCE is the only air COC. This pathway is incomplete following the interim remedial actions performed in 2020 that is confirmed by the results from the six rounds of subsequent indoor air sampling that shows that TCE concentrations are less than the cleanup levels and falling with each sampling round (Appendices G-1 and G-2). The pathway could be a complete exposure pathway in the future if soil under Warehouse 1 was exposed.
- Dermal contact with or ingestion of chemicals in groundwater. This pathway is currently incomplete. Groundwater is currently not used for drinking water at or downgradient of the Site. It should be noted groundwater is likely non-potable as discussed in Section 6.2.1. Potential future pathways could include dermal contact by construction workers, by future property users if buildings or pavement were altered or replaced, and/or future (but unlikely) drinking water use.
- Dermal contact with or incidental ingestion of ditch soils or stormwater, or inhalation of soil dust, in the ditch south of the property. This pathway could be complete in the future if soil was disturbed. The pathway is currently a complete pathway but one that is considered minor/unlikely due to the following:
  - The limited area of contaminated soil in the ditch related to Precision's operations. The area is estimated to be less than 0.1 acres (i.e., in the vicinity of the stormwater outfall into the ditch).
  - The limited use of the ditch. People do not regularly use or enter the ditch, and the ditch is low quality habitat for terrestrial biota and surrounded on all sides by developed commercial businesses and highways.

The following pathways were considered to have inadequate data in the preliminary CSM in the Work Plan and can now be refined (Figure 8-1).

- Incidental ingestion of and dermal contact with chemicals in surface water and/or sediment in the LDW. These pathways are now incomplete. Site contaminants are not impacting the LDW via groundwater discharge, nor by stormwater discharge from the ditch.
- Consumption of aquatic organisms that have bioaccumulated chemicals in their tissues in the LDW. This pathway is now incomplete. The Site contaminants are not impacting aquatic organisms in the LDW.

8.4 POTENTIAL RECEPTORS

The following current and/or future human and ecological receptors may potentially be exposed to chemicals originating from the Site.

- Occupational workers or general public visitors at industrial businesses located within the Site boundaries (i.e., the Precision Property and, to a lesser extent, the ditch to the south).
- Construction and trench workers working within the Site boundaries.
- Terrestrial biota within the ditch (or on the Property if soils were exposed in the future).

8.5 TERRESTRIAL ECOLOGICAL EVALUATION

The terrestrial ecological evaluation (TEE) process is required at all MTCA sites where there has been a release or a threatened release of a hazardous substance that may pose a threat to the terrestrial environment. The TEE procedure is structured with the intent of protecting terrestrial wildlife at industrial

and commercial sites and protecting terrestrial plants, soil biota, and terrestrial wildlife at other sites, as provided under WAC 173-340-7490(3)(b). A simplified TEE was conducted for the Site to present sufficient information to evaluate the ecological protectiveness of current and future conditions at the Site (see WAC 173-340-7490[1][b]).

The Site does not meet the TEE exclusionary criteria. However, the Site qualifies for a simplified TEE because the site-specific TEE criteria outlined in WAC 173-340-7491(a) do not apply. The Site does not pose a threat to ecological receptors and the TEE evaluation is ended (Appendix N) based on the simplified TEE evaluation criteria (MTCA Table 749-1).

8.6 ENVIRONMENTAL JUSTICE CONSIDERATIONS

Effective January 1, 2024, WAC 173-340-380(5)(c) requires that persons assess impacts to likely vulnerable populations and overburdened communities during a Remedial Investigation. Ecology Publication No. 24-09-044 (Ecology 2024) defines criteria for whether a potentially exposed population includes a likely vulnerable population or overburdened community (VP/OC). These criteria were evaluated by comparing factors on the Washington State Department of Health's Environmental Health Disparities (EHD) Map with the criteria in Ecology Publication No. 24-09-044, which indicates VP/OCs are indicated by EHD ranks of 9 or 10. The Site and surroundings have an EHD Index rank of 10 (Appendix O). The communities are therefore vulnerable and/or overburdened. This will be taken into consideration during the feasibility study.

8.7 CLIMATE CHANGE RESILIENCY

WAC 173-340-360 requires that cleanup actions provide resilience to climate change impacts that have a high likelihood of occurring and severely compromising the long-term effectiveness of the cleanup. Sufficient data has been collected during this RI to inform cleanup decisions insofar as climate change resiliency is concerned and the data will be considered in the feasibility study. The Site is not located along or near a shoreline nor is it located within a current floodplain or flood hazard boundary based on King County iMap data. The only location of potential soil erosion would be the ditch area. However, the ditch area is heavily vegetated and not prone to high volume stormwater runoff events. The drainage basin to the ditch is estimated to be less than 6 acres in size.

9.0 Summary, Recommendations, and Conclusion

This Remedial Investigation report has been prepared for the former Precision Engineering, Inc. site in Seattle, Washington. The RI was prepared in accordance with Agreed Order No. DE 18079, and in accordance with the Work Plan (GeoEngineers 2021) and Work Plan Addendum (GeoEngineers 2022). The purpose of the RI is to characterize the Site to enable cleanup standards to be established and to develop and evaluate cleanup action alternatives in a feasibility study. This RI (third RI for the Site) synthesizes information from over 20 years of studies including more than 100 investigation locations, 180 soil samples and 100 groundwater samples for primary COCs (e.g. chromium, hexavalent chromium, TCE), as well as substantial analysis for soil vapor and air. Results indicate that soil contamination is generally limited to the Property and, for some COCs, within Warehouse 1. Groundwater contamination is generally limited to the Property and, for some COCs, to, but not past, the Kaspac/Chiyoda property. Indoor air COC (TCE) is currently less than the cleanup level following the 2020 Interim Actions. The results of the 2015 RI

for the Site preliminarily established that the Site is not contributing contamination to the LDW. The results of the current (2024) RI for the Site fills data gaps identified in the 2015 RI. Based on this further assessment, the Site is not contributing contamination to the LDW. In our opinion, this RI adequately characterizes the Site and is sufficient to prepare a Feasibility Study and draft Cleanup Action Plan.

10.0 References

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11.0 Limitations

We have prepared this report for the exclusive use of Dick Morgan for the Former Precision Engineering Property, located at 1231 South Director Street, Seattle, Washington. Dick Morgan may distribute copies of this report to authorized agents and regulatory agencies as may be required for the Project.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. The conclusions and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty, express or implied, applies to this report.

Any electronic form, facsimile or hard copy of the original document (email, text, table and/or figure), if provided, and any attachments should be considered a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

Tables

Table 2-1

Historical Site Features

Precision Engineering, Inc.
Seattle, Washington

Site Feature[1]	Description	Investigation History	Remediation History	Pre-RI Conditions (Through 2021)
Chromic Acid Plating Tanks 1 and 2	Both tanks were installed in 1968 within an in-ground containment vault located in the plating shop along the southern wall of warehouse 1. Tanks were removed and reconstructed in early 1990s during remedial actions, and tanks were removed from the Site in 2005.	Sweet Edwards/EMCON in 1988 and 1989. Yellow-stained soil was observed in an opening in the concrete floor. Thirteen hand-auger borings and borings B-1 through B-5 were completed adjacent to former Plating Tanks 1 and 2. Additional investigation was conducted in 2005 & 2006 by MFA to characterize soils near Plating Tanks 1 and 2.	Tanks were removed and reconstructed during remedial actions in 1990. Contaminated soil was excavated. Approximately 114 CY of soil and concrete removed - soils excavated up to 13 feet below ground surface (bgs). Groundwater was encountered in base of excavation.	Hexavalent chromium detected in four of five confirmation samples up to 73 milligrams per kilogram (mg/kg).
Chromic Acid Plating Tanks 3 through 6	Aboveground tanks with a concrete curb surrounding them. Tanks were located in the plating shop, northwest of former plating tanks 1 and 2. Concrete-lined trench drains were located to the east and west of these tanks. Tanks 3 through 6 were removed in 1992 during remedial action and replaced with Tanks 3a and 4a (see next row below).[2]	Plating Tanks 3, 4, 5 and 6 were removed in 1992 including a 35-foot by 40-foot section of concrete below the tanks. Visibly contaminated soils were removed within the excavation that extended up to 28 inches bgs. Chromium [Toxicity Characteristic Leaching Procedure (TCLP)] was detected in soils and concrete, and soil and concrete with low detections was used as excavation backfill. Additional geoprobe drilling was conducted in 2005 by MFA for soil and groundwater analysis. TCE and hexavalent chromium concentrations exceeded the respective MTCA Method A cleanup levels.	Tanks were removed in 1992. A portion of the soil was excavated. Concrete below the tanks was also removed. Excavation was backfilled with a portion of the excavated material.	Soil sampling results suggest that hexavalent chromium is present in soils including isolated TCE in soils.
Chromic Acid Plating Tanks 3a and 4a	Aboveground tanks installed in 1992 as replacement tanks for former plating tanks 3 through 6. Tank 3a was located west of former plating tanks 1 and 2, and Tank 4a was located north of former Tanks 3-6. All tanks were removed in 2005.[3]	Former plating tank 3a was located just west of tanks 1 and 2; see discussion for tanks 1 and 2 above. Former plating tank 4a was just north of tanks 3-6; see discussion of tanks 3-6 above.	Tanks 3a and 3b were removed in 2005.	Soil sampling results suggest that hexavalent chromium is present in soils including isolated TCE in soils.
Deep Vault (Chromic Acid Tank 7 and Other Tanks)	A containment vault with dimensions of 24 feet long, 8 feet wide, and 16 feet deep was installed in 1980 with three tanks placed within the vault. These tanks included Tank 7 (chromic acid), a sodium hydroxide strip tank and a sodium bicarbonate strip tank.[4] Tank 7 was 9 feet long, 7.5 feet wide, and 16 feet deep. All tanks in the deep vault were removed in 2005.	One 20-foot soil boring was drilled northeast of Tank 7 in 1989. Groundwater was encountered at 9 feet bgs. Soil was sampled for pH and metals. Chromium was not detected in leachate above the Extraction Procedure Toxicity Test (EP Tox) Method reporting limit of 0.005 milligrams per liter (mg/L). Three additional soil borings, GP-7, GP-9, and GP-10 were drilled north of the Tank 7 vault during MFA's 2005 investigation.	In 1989 groundwater was sampled from within the vault, concrete repaired, a liner installed at the base, and a new concrete slab was poured at the base of the vault.	The tanks were removed in 2005. The vault has been filled in and concrete poured to match the surrounding floor.
Temporary Plating Area	Temporary aboveground chromic acid plating tanks were used in the area north of Tank 7 in warehouse 2. The general area is labeled in Figure 2-2.	Several soil borings were advanced in 2005 near the temporary plating area (GP10, GP23, GP24). Soil samples were analyzed for chromium and hexavalent chromium, and concentrations were detected at concentrations less than the MTCA Method A cleanup level.	NA	No plating activities since 2005.
TCE Tank / Parts Washing	Parts washing and degreasing was conducted at the facility. Solvents used included trichloroethylene (TCE). Methyl ethyl ketone (MEK) and Stoddard solvent may also have been used. Prior to 1986, a closed-loop vapor degreaser system in the cylinder shop used TCE. A TCE tank was located in the chrome plating area near Tanks 3 through 6.	Explorations were performed near the former TCE tank. Exact locations not specified. Parts washing areas may have been investigated in conjunction with sampling at other areas of concern.	The area where the TCE tank was located was excavated; see discussion under Former Plating Tanks 3 through 6.	The former equipment has all been removed since 2005.
Trench Drains and Former Sanitary Sewer	Four trench drains located inside the plating shop discharged to the sanitary sewer prior to 1986. Two trench drains were located in the grinding shop, and two trench drains were located east and west of chromium plating tanks 3 through 6[5]. The trench drains were connected to the former sanitary sewer lines in warehouse 1. A former sanitary sewer line was also present in warehouse 2 although there were no floor drains shown connected to it. After July 1986, the trench drains were re-routed to drain to the containment vaults. The floor drains were filled with concrete in 2005.	Multiple soil borings and/or monitoring wells were advanced in 2005 and 2006 near trench drains and former sanitary sewer lines. TCE, chromium, and hexavalent chromium were detected at concentrations exceeding MTCA Method A cleanup levels in one or more locations.	The four trench drains were filled with concrete upon Precision closure in 2005.	Results of the 2005 soil sampling suggest hexavalent chromium and TCE are present in soils. Trench drains have been filled with concrete.

Site Feature[1]	Description	Investigation History	Remediation History	Pre-RI Conditions (Through 2021)
Scrubber Room	A cooling-water tank, chromic-acid evaporator, chromic-acid purification unit, and aboveground chromic-acid holding tank were located in the scrubber room. The evaporator was located within an in-ground concrete vault (evaporator pit). The evaporator was used to concentrate chromic-acid wastes.	Two soil borings were advanced south of the scrubber room in 2005. Soil samples from both locations were analyzed for chromium and hexavalent chromium. Chromium and hexavalent chromium concentrations were detected at concentrations less than the respective MTCA Method A cleanup levels.	All tanks and equipment were removed upon Precision closure in 2005. In 2020, the evaporator pit was decommissioned as part of interim actions. Decommissioning included removing standing water, sealing the pit floor with concrete, filling the pit with compacted 6-inch lifts of gravel, and pouring a 5-inch concrete slab over the gravel to match surrounding building floor grade.	Equipment removed in 2005 and the evaporator pit was decommissioned in 2020.
Covered Former Steam Cleaning Area	An outdoor, covered, steam-cleaning area was located south of the southeast corner of warehouse 1 and was used prior to 1986. A sanitary sewer drain was located in the area. Liquids were discharged via the drain to an oil/water separator. In 1986, the oil/water separator was dismantled and steam cleaning operations were moved inside (to the west to the 'steam clean pit'). A sodium hydroxide stripping tank was also located in the former outdoor covered area, as well as a compressor condensate tank.	Multiple borings were advanced in 2005 and 2015 around the former steam cleaning area (GP30, GP31, SB31, SB32 etc.). Contaminants of concern were either not detected or detected at concentrations less than the MTCA respective cleanup levels.	Sewer drain was decommissioned in 1986.	Area used for general equipment storage and employee break area now by Pacific Industrial Supply. The former drain is filled with concrete and is no longer a drain.
Steam Clean Pit Area	After 1986, steam cleaning operations were moved indoors to the steam clean pit area. A containment curb was located along the southern wall of the area. A sodium hydroxide tank was located east of the steam clean pit.	Multiple borings were advanced in 2005 and 2015 around the former steam cleaning area (GP29, SB3, MW4). Contaminants of concern were either not detected or detected at concentrations less than the respective MTCA cleanup levels.	NA	No longer used for steam cleaning. Sodium hydroxide tank removed in 2005. The curb was demolished to allow forklift traffic through.
Other Building Areas	Other areas not discussed above, located in the building areas south of Warehouse 1, include a hazardous waste storage area including a used oil AST; the boiler room, and the compressor room. The boiler reportedly used fuel from an underground storage tank (UST) in the boiler room. The UST was reportedly decommissioned in place and filled with slurry in 1992. The exact location of the UST is unknown. Other areas in warehouse 1 included the grinding shop, cylinder shop, paint booth, pump repair room, and auxiliary room.	Multiple soil borings and/or monitoring wells were advanced in 2005 through 2015.	NA	The used oil AST was removed in 2005. The boiler room UST was abandoned in place and filled with slurry in 1992. The current boiler uses natural gas. Hazardous waste is no longer stored in the former hazardous waste storage area. Pacific Industrial Supply utilizes an air compressor in the compressor room. The remaining areas formerly used by Precision Engineering are now used by Pacific Industrial Supply
Hydraulic Cylinder Test Vault	A hydraulic cylinder test vault is located approximately 10 feet west of warehouse 3. The vault measures 4 feet in diameter and is approximately 25 feet deep.	Two soil samples were collected in 2005 near the hydraulic cylinder test vault in 2005 (GP5).	None.	Vault not used since 2005. Vault is covered with heavy locked lid. The lid was opened on two occasions in 2022 to observe for water (for potential sampling) and the vault was observed to be dry on both occasions.
Drainage Ditch	A drainage ditch is located south of the property boundary. The ditch wraps around the eastern side of the adjacent Seattle Limousine (Kaspac/Chiyoda) property, and receives overland flow from the Kaspac/Chiyoda property as well as the Precision Engineering property, 14th Avenue South, and the Highway 99 northbound entrance ramp. There is one stormwater pipe outfall into the ditch from Precision Engineering, and two outfalls from Kaspac/Chiyoda. Water in the ditch can discharge to the south in one 24-inch diameter concrete culvert to the WSDOT interchange pond.	Soil samples were collected from the ditch in April 1986 (4 samples), 1989 (15 samples), and 2006. Hexavalent chromium was detected near the stormwater outfall south of Precision Engineering. Lead and arsenic were detected at concentrations greater than the respective Model Toxics Control Act (MTCA) cleanup levels at several other locations within the ditch.	In October 2007, approximately 100 cubic yards (CY) of soil were excavated from the ditch and disposed offsite. Following confirmation sampling, additional excavation was conducted at two ditch locations in March 2008. Excavated areas were backfilled and reseeded. Not all impacted soil was removed.	One confirmation soil sample from the 2007/2008 remediation activities contained concentrations of lead and arsenic above the cleanup level.

Notes:

References for this table include MFA 2005, MFA 2008, MFA 2011, and Kennedy Jenks 2015 (see report text for reference list).

[1] Refer to Figure 2-2 for locations of site features.

[2] Figures in previous reports variously show these tanks as labeled 3 through 6 from north to south, or south to north. This report labels them from north to south.

[3] Note that in historical reports these tanks are referred to as tanks 3 and 4. To avoid potential confusion with former tanks 3 and 4, this report has renamed these tanks 3a and 4a.

[4] Multiple historical reports indicate the tanks included Tank 7 (chromic acid), a sodium hydroxide strip tank, and a sodium bicarbonate strip tank. All historical report figures show Tank 7. For the remaining two tanks, all historical reports seem to erroneously indicate they were both sodium carbonate tanks.

[5] Most historical report figures show the four trench drains as shown in Figure 2-3. Some historical reports incorrectly only show the northern two trench drains, and/or show the southeastern trench drain in an incorrect location. Figure 2-3 is interpreted to be correct.

Table 2-2

Regulatory History

Precision Engineering, Inc.
Seattle, Washington

Date	Description
1966 to 2005	Precision Engineering Operations
1977 to 1985	Precision Engineering held a waste discharge permit from Municipality of Metropolitan Seattle (METRO). Waste Discharge Permit Number 7052.
1985	Waste Discharge Permit Number 7052 cancelled by METRO.
May 1986	Ecology Administrative Order DE 86-307, requiring Precision to evaluate their facility, develop a Spill Prevention Plan, and apply for stormwater and wastewater discharge permits.
February 1986	Municipality of Metropolitan Seattle Compliance Order (Penalty and Compliance Schedule).
1988	Precision performed soil and groundwater investigations (Sweet-Edwards/EMCON, multiple reports[1]).
December 1988	Pollution Control Hearing Board No. 87-13 stipulated Precision had successfully complied with Agreed Order DE 86-307.
1989	Precision performed additional soil and groundwater investigations (Sweet-Edwards/EMCON, multiple reports).
1990 to 1993	Precision Engineering performed an Independent Remedial Action (Precision Engineering report).
August 1994	Ecology issued NPDES ISGP No. S03-001925 to Precision Engineering
June 2005	Precision performed a Preliminary Soil and Groundwater Site Assessment (MFA report)
December 2005	Precision performed a Supplemental Remedial Investigation (MFA report)
March 2006	Ecology VCP Opinion Letter requesting additional characterization
March 2006	Ecology Hazardous Waste & Toxics Reduction (HWTR) inspection indicated no violations, but to dispose of some 55-gallon drums to be considered "clean closed."
2006 to 2007	Precision performed Final Remedial Investigation and Risk Assessment (MFA report)
September 2009	Ecology VCP Opinion Letter requesting additional characterization
2007 to 2010	Precision performed Final Feasibility Study (MFA report)
July 2011	Ecology VCP Opinion Letter requesting additional characterization
2014 to 2015	Ecology performed a Remedial Investigation (Kennedy/Jenks report).
December 2015	Ecology VCP Opinion Letter requesting additional characterization
2019 to 2020	Precision Engineering performed additional investigation, and an interim action
December 2020	Ecology and Precision Engineering entered into Agreed Order DE 18079
2022 to 2023	Precision Engineering performed additional investigation per the Agreed Order

Notes:

[1] Specific reports/dates are shown in Table 4-1.

Table 3-1

Well Construction Details

Precision Engineering, Inc.

Seattle, Washington

Well Identification	Install Date	Water Bearing Zone	Stickup or Flush	Top of Casing Elevation (NAVD88)[1]	Screened interval (feet bgs)[2]
MW1	6/16/1988	Deep	Stickup	26.83	30-40
MW2	6/15/1988	Shallow	Flush	22.57	10-20
MW3	6/15/1988	Shallow	Stickup	23.23	10-20
MW4	6/16/1988	Shallow	Stickup	24.28	15-25
MW5	12/15/2005	Shallow	Flush	23.58	10-20
MW6	12/15/2005	Shallow	Flush	21.66	10-20
MW7	12/16/2005	Deep	Flush	21.53	26-31
MW8	12/15/2005	Shallow	Flush	21.06	10-20
MW9	8/16/2014	Deep	Flush	20.65	31-36
MW10	8/16/2014	Shallow	Flush	20.50	10-20
MW11	8/16/2014	Shallow	Flush	22.47	10-20
MW12	3/29/2022	Shallow	Flush	23.55	8-13
MW13	3/29/2022	Deep	Flush	23.21	26-31
MW14	3/24/2022	Shallow	Flush	23.49	10-20
MW15	3/23/2022	Deep	Flush	23.31	27-32
MW16	3/22/2022	Deep	Flush	22.28	26-31
MW17	3/21/2022	Deep	Flush	22.35	26-31
MW18	3/28/2022	Shallow	Flush	22.51	5-15
MW19	5/26/2023	Shallow	Stickup	24.52	10-15
MW20	5/25/2023	Shallow	Stickup	22.28	14-24
MW21	5/31/2023	Shallow	Stickup	22.67	10-20
MW22	5/30/2023	Deep	Stickup	22.60	54-59
MW23	5/24/2023	Shallow	Stickup	23.09	8-18

Notes:

[1] All wells were surveyed by True North Land Surveying, Inc. Wells MW1 through MW18 surveyed on June 1, 2022. Wells MW19 through MW23 surveyed on June 29, 2023.

[2] Approximate depth of the screened interval in feet below ground surface (to the nearest foot).

All wells are 2-inch diameter Schedule 40 PVC, 0.010" slot size, installed in auger- or sonic-drilled boreholes of 9-inch or greater borehole size. All well screen annular spaces were filled with colorado silica sand.

bgs = below ground surface

NAVD88 = North American Vertical Datum of 1988

See Appendix A for boring logs and Appendix B for well survey data

Table 3-2

Depth to Water and Groundwater Elevations 2019 – 2023

Precision Engineering, Inc.

Seattle, Washington

Well Identification	Water Bearing Zone	Screened Interval (feet bgs)	Top of Casing Elevation (NAVD88)	Date	Depth to Water (ft below top of casing)[1]	Water Level Elevation (ft NAVD88)
MW1	Deep	30-40	26.83	07/23/2019	3.09	23.74
				12/17/2019	1.82	25.01
				01/29/2020	0.31	26.52
				04/29/2020	0.74	26.09
				05/31/2022	0.21	26.62
				07/11/2023	2.82	24.01
				12/05/2023	1.09	25.74
MW2	Shallow	10-20	22.57	07/24/2019	5.32	17.25
				12/17/2019	2.52	20.05
				01/29/2020	4.35	18.22
				04/28/2020	4.48	18.09
				05/31/2022	4.45	18.12
				07/11/2023	4.24	18.33
				12/05/2023	4.26	18.31
MW3	Shallow	10-20	23.23	07/23/2019	6.29	16.94
				12/17/2019	6.01	17.22
				01/29/2020	5.00	18.23
				04/28/2020	5.65	17.58
				05/31/2022	5.48	17.75
				07/11/2023	6.21	17.02
				12/05/2023	5.11	18.12
MW4	Shallow	15-25	24.28	07/23/2019	3.11	21.17
				12/17/2019	1.94	22.34
				01/29/2020	1.55	22.73
				04/29/2020	0.75	23.53
				05/31/2022	2.30	21.98
				07/11/2023	3.32	20.96
				12/05/2023	2.05	22.23
MW5	Shallow	10-20	23.58	07/23/2019	5.72	17.86
				12/17/2019	5.50	18.08
				01/29/2020	4.71	18.87
				04/29/2020	4.79	18.79
				05/31/2022	4.72	18.86
				07/11/2023	5.61	17.97
				12/05/2023	5.00	18.58

Well Identification	Water Bearing Zone	Screened Interval (feet bgs)	Top of Casing Elevation (NAVD88)	Date	Depth to Water (ft below top of casing)[1]	Water Level Elevation (ft NAVD88)
MW6	Shallow	10-20	21.66	07/23/2019	5.19	16.47
				12/17/2019	5.41	16.25
				01/29/2020	4.99	16.67
				04/28/2020	5.15	16.51
				05/31/2022	4.20	17.46
				07/11/2023	4.18	17.48
				12/05/2023	4.18	17.48
MW7	Deep	26-31	21.53	07/23/2019	5.81	15.72
				12/17/2019	5.71	15.82
				01/29/2020	5.32	16.21
				04/28/2020	6.55	14.98
				05/31/2022	5.15	16.38
				07/11/2023	6.16	15.37
				12/05/2023	5.92	15.61
MW8	Shallow	10-20	21.06	07/23/2019	4.61	16.45
				12/18/2019	5.36	15.70
				01/29/2020	3.29	17.77
				04/28/2020	3.61	17.45
				05/31/2022	4.45	16.61
				07/11/2023	4.80	16.26
				12/05/2023	3.25	17.81
MW9	Deep	31-36	20.65	07/23/2019	5.91	14.74
				12/17/2019	6.13	14.52
				01/29/2020	5.32	15.33
				04/28/2020	5.18	15.47
				05/31/2022	3.20	17.45
				07/11/2023	5.81	14.84
				12/05/2023	5.40	15.25
MW10	Shallow	10-20	20.50	07/23/2019	4.20	16.30
				12/18/2019	4.76	15.74
				01/29/2020	3.66	16.84
				04/28/2020	6.11	14.39
				05/31/2022	3.13	17.37
				07/11/2023	4.67	15.83
				12/05/2023	3.75	16.75
MW11	Shallow	10-20	22.47	07/23/2019	5.22	17.25
				12/17/2019	5.19	17.28
				01/29/2020	4.35	18.12
				04/28/2020	4.59	17.88
				05/31/2022	4.15	18.32
				07/11/2023	4.88	17.59
				12/05/2023	4.12	18.35

Well Identification	Water Bearing Zone	Screened Interval (feet bgs)	Top of Casing Elevation (NAVD88)	Date	Depth to Water (ft below top of casing)[1]	Water Level Elevation (ft NAVD88)
MW12	Shallow	8-13	23.55	--	--	--
				--	--	--
				--	--	--
				--	--	--
				05/31/2022	0.70	22.85
				07/11/2023	0.12	23.43
				12/05/2023	0.30	23.25
MW13	Deep	26-31	23.21	--	--	--
				--	--	--
				--	--	--
				--	--	--
				05/31/2022	artesian	>23.21
				07/11/2023	artesian	>23.21
				12/05/2023	artesian	>23.21
MW14	Shallow	10-20	23.49	--	--	--
				--	--	--
				--	--	--
				--	--	--
				05/31/2022	4.34	19.15
				07/11/2023	4.60	18.89
				12/05/2023	5.79	17.70
MW15	Deep	27-32	23.31	--	--	--
				--	--	--
				--	--	--
				--	--	--
				05/31/2022	3.82	19.49
				07/11/2023	4.37	18.94
				12/05/2023	4.12	19.19
MW16	Deep	26-31	22.28	--	--	--
				--	--	--
				--	--	--
				--	--	--
				05/31/2022	4.18	18.10
				07/11/2023	4.51	17.77
				12/05/2023	8.14	14.14
MW17	Deep	26-31	22.35	--	--	--
				--	--	--
				--	--	--
				--	--	--
				05/31/2022	4.16	18.19
				07/11/2023	4.37	17.98
				12/05/2023	3.50	18.85

Well Identification	Water Bearing Zone	Screened Interval (feet bgs)	Top of Casing Elevation (NAVD88)	Date	Depth to Water (ft below top of casing)[1]	Water Level Elevation (ft NAVD88)
MW18	Shallow	5-15	22.51	--	--	--
				--	--	--
				--	--	--
				--	--	--
				05/31/2022	4.45	18.06
				07/11/2023	5.97	16.54
				12/05/2023	4.28	18.23
MW19	Shallow	10-15	24.52	--	--	--
				--	--	--
				--	--	--
				--	--	--
				--	--	--
				07/11/2023	9.21	15.31
				12/05/2023	6.49	18.03
MW20	Shallow	15-25	22.28	--	--	--
				--	--	--
				--	--	--
				--	--	--
				--	--	--
				07/11/2023	7.17	15.11
				12/05/2023	5.03	17.25
MW21	Shallow	10-20	22.67	--	--	--
				--	--	--
				--	--	--
				--	--	--
				--	--	--
				07/11/2023	6.61	16.06
				12/05/2023	4.72	17.95
MW22	Deep	54-59	22.60	--	--	--
				--	--	--
				--	--	--
				--	--	--
				--	--	--
				07/11/2023	7.75	14.85
				12/05/2023	7.17	15.43
MW23	Shallow	8-18	23.09	--	--	--
				--	--	--
				--	--	--
				--	--	--
				--	--	--
				07/11/2023	6.78	16.31
				12/05/2023	5.38	17.71

Notes:

[1] Depth to water measured from the north rim of PVC

-- = Well not installed until 2022 or 2023

NAVD88 = North American Vertical Datum of 1988

Table 4-1

Investigation Summary

Precision Engineering, Inc.
Seattle, Washington

Date of Work	Associated Reference	Sample Locations	Media Sampled	Laboratory Analysis Conducted	Summary of Activities	Used in RI?
May 1988	Sweet-Edwards/EMCON, Inc. 1988. Status Report Soils/Ground Water Investigation, Seattle Facility. Dated 15 December 1988.	HA-1 through HA-6	Soil	Extraction Procedure Toxicity Test (EP TOX) Chromium	Hand-augered locations adjacent to Plating Tank 1.	No, only EP Tox was conducted (and soil was later excavated)
June 1988	Sweet-Edwards/EMCON, Inc. 1988. Status Report Soils/Ground Water Investigation, Seattle Facility. Dated 15 December 1988.	MW1 through MW4	Groundwater	Total Chromium	Four groundwater monitoring wells constructed. No soil samples were submitted for chemical analysis.	Historical groundwater data not used; groundwater data from 2019 to 2023 is used
August 1988	Sweet-Edwards/EMCON, Inc. 1988. Status Report Soils/Ground Water Investigation, Seattle Facility. Dated 15 December 1988.	P-1	None	NA	Piezometer installed in August 1988 for evaluation of groundwater elevations. A boring log for P-2 installed in April 1989, was appended to this report.	No samples collected
March 1989	Sweet-Edwards/EMCON, Inc. 1989a. Tank #7 Precision Engineering, Inc. Seattle, Washington June 1989.	B-1	Soil	EP Tox metals, pH	Characterization of deep soil near Chromic Acid Tank 7 pit. Temporary well installed (no aqueous samples); however, was abandoned in April 1989.	No, only EP Tox and pH was conducted
March 1989	Sweet-Edwards/EMCON, Inc. 1989b. Precision Engineering, Drainage Ditch Soil EP Tox Results. Dated 28 April 1989.	S1 through S6	Soil	EP Tox metals	Surface soil samples from the drainage ditch south of the Former Precision Engineering property.	No, only EP Tox was conducted
March 1989	Sweet-Edwards/EMCON, Inc. 1989c. Precision Engineering, Letter regarding results from soil and groundwater investigation. Dated 24 August 1989.	S1 through S6, PEI-B1 through PEI-B4	Soil	EP Tox metals	Results only; interpretation in the February 1990 report.	No, only EP Tox was conducted
September 1989	Sweet-Edwards/EMCON, Inc. 1989d. Surface Soil Sampling, Precision Engineering Seattle Facility. Dated 30 August 1989.	HA-7 through HA-13	Soil	EP Tox Chromium	Second phase of hand auger investigation locations near Plating Tanks 1 and 2.	No, only EP Tox was conducted
November 1989	Sweet-Edwards/EMCON, Inc. 1990. Soil Sample Results: Tank No. 1 and Drainage Ditch, Precision Engineering, Inc. Seattle Facility. Dated 4 January 1990.	B-1 through B-5	Soil	EP Tox Chromium	Additional soil samples near Plating Tank 1.	No, only EP Tox was conducted
November 1989	Sweet-Edwards/EMCON, Inc. 1990. Soil Sample Results: Tank No. 1 and Drainage Ditch, Precision Engineering, Inc. Seattle Facility. Dated 4 January 1990.	S-7 through S-13	Soil	EP Tox Chromium	Soil samples in the drainage ditch near the S-6 sampling location.	No, only EP Tox was conducted
March 1989 and November 1989	Sweet-Edwards/EMCON, Inc. 1990. Soil Sampling, Precision Engineering, Inc. Seattle Washington. Dated 26 February 1990.	S1 through S13 and B1 through B4	Soil	EP Tox Chromium	Summarizes Phase I (locations S1 through S6), "background" samples B1 through B4, Phase II (S7 through S13).	No, only EP Tox was conducted
March and April 1993	Maul Foster Alongi. 1993. Precision Engineering, Inc. Independent Remedial Action Report. Dated 2 July 1993.	WP-1 through WP-14, NW-1, EW-1, MW-1, BW-1, PE-430B, PE-430E, PE-430S, PE-430W, PE-430N, BW-2	Soil and concrete	TCLP chromium and total chromium	Summarizes removal of Plating Tanks 3 through 6, and repairs to Tank 7. Also summarizes characterization activities conducted previously in 1988 through 1990, and remediation during excavation of Tanks 1 and 2.	No, soil/concrete was later excavated[1]
June 2005	Maul Foster Alongi. 2005. Preliminary Soil and Groundwater Site Assessment Report. Dated 5 August 2005.	GP1 through GP11	Soil and groundwater	Metals, VOCs, petroleum hydrocarbons, hexavalent chromium, PCBs and PAHs	Summarizes soil and groundwater sampling conducted following closure of Precision Engineering operations.	Yes

Date of Work	Associated Reference	Sample Locations	Media Sampled	Laboratory Analysis Conducted	Summary of Activities	Used in RI?
December 2005	Maul Foster Alongi. 2006. Supplemental Remedial Investigation. Dated 22 February 2006.	GP12 through GP31, MW5 through MW8, HA1 through HA5	Soil and groundwater	Metals, VOCs, petroleum hydrocarbons, hexavalent chromium, PCBs and PAHs	Summarizes second phase of soil sampling by Geoprobe, groundwater reconnaissance sampling, and construction of three additional monitoring wells. Includes investigation in the drainage ditch.	Yes
April 2006 through January 2007	Maul Foster Alongi. 2008. Final Remedial Investigation and Risk Assessment Report. Dated 21 July 2008.	HA6 through HA12, A1 through A3, A5 through A7, and IA1 through IA9	Soil, groundwater, indoor air and sub-slab soil vapor	VOCs, hexavalent chromium, PAHs	Summary of prior sampling activities. New activities as part of this report included indoor air and sub-slab vapor sampling, and further characterization in the drainage ditch.	Yes
October 2007 through July 2010	Maul Foster Alongi. 2011. Final Feasibility Study. Dated 3 March 2011.	B1 through B13, P1 through P9, SS1 through SS6, C1 through C3	Soil and groundwater	Metals, VOCs, petroleum hydrocarbons, hexavalent chromium, and PAHs	Additional groundwater samples from existing monitoring well network. An interim action was conducted in the drainage ditch.	No, sample data is limited to ditch soil that was later excavated, and outdated groundwater data
2014 to 2015	Kennedy/Jenks Consultants. 2015. Remedial Investigation Report, Former Precision Engineering Property. Dated August 6, 2015.	SB1 through SB19, MW9 through MW11, and IA-SHOP, AMB-OUTDOOR, SS-1 air/vapor samples	Soil, groundwater, indoor air, outdoor air, and sub-slab soil vapor	Metals, VOCs, petroleum hydrocarbons, hexavalent chromium	Soil, groundwater, and air/vapor sampling performed throughout the site and offsite (SB19). Includes installing three additional monitoring wells (MW9 through MW11).	yes
2019	No report.	MW1 through MW11	Groundwater	Metals, VOCs, petroleum hydrocarbons, hexavalent chromium, PAHs	Groundwater samples collected from MW1 through MW11 in July 2019 and December 2019.	yes
2020	No report.	MW1 through MW11	Groundwater	Metals, VOCs, petroleum hydrocarbons, hexavalent chromium, PAHs	Groundwater samples collected from MW1 through MW11 in January 2020 and April 2020.	yes
2020	Maul Foster Alongi. 2020. Vapor Report. Vapor Intrusion Assessment, Interim Remedial Actions, Vapor Intrusion Priority Work Plan. Dated 30 December 2020.	A8 through A11, IA8 through IA20, AA1 through AA5, RAD1 through RAD5, EVAPPIT	Indoor air, outdoor air, sub-slab soil vapor; and one water sample	Air/vapor analyzed for TCE and breakdown products, other VOCs. Water sample analyzed for TCE, metals, TPH	Air/vapor sampling performed throughout the site before, during and after interim actions to address indoor air concerns. One water sample analyzed from evaporator pit.	yes
2022	This RI.	SB20 through SB33, MW12 through MW18, RAD-1, RAD-4, RAD-5	Soil, groundwater, indoor air	Metals, VOCs, SVOCs, petroleum hydrocarbons, hexavalent chromium, PAHs, PCBs, PFAS, conventionals	Additional soil borings and monitoring wells; soil, groundwater sampled. Continued indoor air monitoring for TCE+.	Yes
2023	This RI.	SB34 through SB37, MW19 through MW23, SW-1, SWS-2, HA-26 through HA-29, RAD-1, RAD-4, RAD-5	Soil, groundwater, indoor air	Metals, VOCs, SVOCs, petroleum hydrocarbons, hexavalent chromium, PAHs, PCBs, PFAS, conventionals	Additional monitoring wells; soil, groundwater, and ditch water sampled. Continued indoor air monitoring for TCE+.	Yes

Notes:

[1] Some soil and/or concrete was reportedly replaced in the excavation. However, the soil sample data is quite outdated, exact locations unknown, and superseded by multiple more recent investigations spanning 2005 to 2023.

VOCs = volatile organic compounds

PAHs = polycyclic aromatic hydrocarbons

PCBs = polychlorinated biphenyls

Table 5-1

Groundwater Field Parameters and Geochemical Indicators

Precision Engineering, Inc.

Seattle, Washington

Well	WBZ	Date	Temp (C)	DO (mg/L)	SPC (uS/cm)	Sal (ppt)	pH	ORP (mV)	Turb (NTU)	Fe^{2+} (mg/L)	TOC (mg/L)	NO_3 (mg/L)	SO_4 (mg/L)	Diss. Mn (mg/L)
MW1	D	7/13/23	14.7	1.59	301	0.14	8.28	32.6	1.57	--	--	--	--	--
		12/5/23	12.4	1.26	299	0.14	8.25	114.7	3.99	--	--	--	--	--
MW2	S	7/14/23	17.8	2.20	2,848	1.49	6.75	-46.9	5.97	--	--	--	--	--
		12/6/23	--[1]	--	--	--	--	--	--	--	--	--	--	--
MW3	S	7/13/23	15.4	2.15	446	0.22	6.59	-20.5	2.13	3.5	15.34	0.1 U	0.1 U	1.27
		12/5/23	15.8	0.19	437	0.21	6.50	-96.3	6.98	2.0	14.60	0.1 U	0.1 U	1.20
MW4	S	7/21/23	17.7	1.70	469	0.23	7.81	-9.7	3.99	--	--	--	--	--
		12/6/23	14.9	0.65	479	0.23	7.77	100.0	4.64	--	--	--	--	--
MW5	S	7/20/23	17.9	0.53	705	0.35	6.58	114.9	1.94	0.0	3.66	0.1 U	95	0.420
		12/5/23	18.3	0.45	638	0.31	6.51	187.8	1.87	0.0	3.61	0.1 U	97.9	0.285
MW6	S	7/21/23	16.7	4.17	3,247	1.71	6.77	-54.3	5.85	--	--	--	--	--
		12/7/23	16.1	0.14	3,351	1.77	6.66	-171.7	23.71	--	--	--	--	--
MW7	D	7/24/23	16.4	1.35	2,227	1.15	6.95	128.9	1.15	--	--	--	--	--
		12/7/23	15.3	0.19	2,215	1.14	6.84	-24.7	0.10	--	--	--	--	--
MW8	S	7/14/23	16.5	2.15	1,780	0.91	6.52	-17.9	11.5	1.5	35.15	0.1 U	0.1 U	3.19
		12/6/23	15.7	0.16	1,167	0.58	6.54	-119.9	32.28	1.5	35.42	0.1 U	0.1 U	3.29
MW9	D	7/14/23	16.2	1.07	2,385	1.23	7.05	2.7	1.07	2.0	21.96	0.1 U	4.89	1.99
		12/7/23	14.9	0.19	2,358	1.22	6.96	-96.5	0.10	4	20.44	0.1 U	4.91	2.30
MW10	S	7/14/23	16.5	1.95	3,879	2.06	6.66	-49.1	3.87	2.5	106.7	2.73	0.1 U	1.63
		12/7/23	15.8	0.15	3,907	2.08	6.00	-140.4	21.12	4.0	114.9	0.1 U	0.1 U	1.49
MW11	S	7/20/23	16.7	0.33	1,178	0.59	6.66	-12.7	4.41	5.5	54.92	0.1 U	0.1 U	1.76
		12/5/23	16.1	0.14	1,225	0.61	6.57	-127.9	10.03	1.5	55.22	0.1 U	1.19	1.57
MW12	S	7/24/23	17.0	0.80	291	0.14	8.30	134.2	4.77	--	--	--	--	--
		12/4/23	15.3	0.17	297	0.14	8.23	109.9	16.81	--	--	--	--	--
MW13	D	7/24/23	14.0	1.57	339	0.16	8.11	127.5	3.27	0.0	0.78	0.1 U	35.5	0.115
		12/4/23	13.9	0.08	347	0.17	8.08	-81.4	14.1	0.0	1.29	0.1 U	36.6	0.118
MW14	S	7/24/23	17.2	0.58	303	0.14	7.54	60.0	2.11	1.0	13.89	0.1 U	20.6	0.282
		12/4/23	17.6	0.40	307	0.15	7.59	-158.9	4.49	0.0	1.82	0.1 U	19.2	0.253
MW15	D	7/20/23	17.6	0.65	290	0.14	7.87	61.5	1.57	0.0	--	--	--	--
		12/4/23	17.6	0.37	294	0.14	8.00	-186.2	8.12	0.0	--	--	--	--
MW16	D	7/21/23	16.4	1.80	951	0.47	7.21	-44.1	4.59	--	--	--	--	--
		12/5/23	16.0	0.51	929	0.46	7.11	-147.1	3.60	--	--	--	--	--
MW17	D	7/20/23	16.8	2.49	461	0.22	7.70	-37.4	4.84	1.0	1.19	0.1 U	26.1	0.173
		12/5/23	15.5	0.28	416	0.20	7.65	-176.5	51.24	0.5	1.75	0.1 U	27.3	0.135
MW18	S	7/13/23	17.4	1.56	957	0.47	6.70	-71.8	35.6	--	--	--	--	--
		12/5/23	14.1	0.12	971	0.48	6.75	-150.3	16.04	--	--	--	--	--
MW19	S	7/25/23	15.3	0.29	622	0.30	6.77	65.3	4.15	0.5	8.41	0.1 U	3.96	1.97
		12/6/23	13.5	0.09	600	0.29	6.63	-108.5	19.08	1.5	14.33	0.1 U	1.91	2.27
MW20	S	7/25/23	15.9	0.58	1169	0.59	6.76	52.6	4.82	--	--	--	--	--
		12/6/23	13.7	0.08	1141	0.57	6.77	-134.3	65.74	--	--	--	--	--
MW21	S	7/25/23	15.6	0.41	629	0.31	6.86	-20.1	1.74	3.0	--	--	--	--
		12/6/23	13.4	0.14	723	0.36	6.78	-163.5	21.71	2.0	--	--	--	--
MW22	D	7/25/23	15.4	1.01	2933	1.54	8.11	-67.7	3.70	--	--	--	--	--
		12/6/23	13.7	0.16	2988	1.57	7.75	-165.1	4.72	--	6.73	0.1 U	165	0.246
MW23	S	7/24/23	15.5	0.56	726	0.36	6.95	-63.9	4.87	1.5	32.32	0.1 U	1.01	4.49
		12/6/23	14.4	0.14	803	0.40	6.89	-218.2	22.39	6.5	36.46	0.1 U	0.1 U	5.74

Notes:

[1] There was insufficient groundwater recharge to obtain parameters and a groundwater sample within one day.

WBZ = water-bearing zones: S = Shallow WBZ; D = Deep WBZ

Temp (c) = Temperature in Celsius

DO = Dissolved oxygen

SPC = Specific Conductance in microSiemens per centimeter

Sal = Salinity in parts per thousand

ORP = Oxidation reduction potential in millivolts

uS/cm = microSiemens per centimeter

Turb = Turbidity in nephelometric turbidity units

Fe^{2+} = Ferrous iron

TOC = Total Organic Carbon

NO_3 = Nitrate as nitrogen

SO_4 = Sulfate

NTU = Nephelometric turbidity unit

Diss Mn = Dissolved Manganese

mg/L = milligram per liter

U = Not detected

-- Not performed

mV = Millivolt

ppt = parts per trillion

Table 6-1

PCULs for Soil, Groundwater, and Air

Precision Engineering, Inc.

Seattle, Washington

Chemical	Vadose Soil PCUL (mg/kg)	Saturated Soil PCUL (mg/kg)	Groundwater PCUL (µg/L)	Air PCUL (µg/m^3)	Sub-Slab Soil Gas Screening Level (µg/m^3)
Metals					
Antimony	5.4	0.27	6	0.14	NE
Arsenic	7.3	7.3	8	0.00058	NE
Beryllium	63	3.2	4	0.0010	NE
Cadmium	0.77	0.77	1.2	0.0014	NE
Chromium, total	260	260	100	NE	NE
Chromium, trivalent	548	48[1]	27	NE	NE
Chromium, hexavalent	0.018	0.00089	0.05	0.00001	NE
Copper	36	36	3.1	NE	NE
Lead	250	56	5.6	NE	NE
Mercury	0.07	0.07	0.025	0.14	4.57
Nickel	48	48	8.2	0.01	NE
Selenium	5.2	0.26	50	9.14	NE
Silver	0.32	0.02	1.9	NE	NE
Thallium	0.088	0.0044	0.062	NE	NE
Zinc	101	85	81	NE	NE
Petroleum Hydrocarbons					
Gasoline range hydrocarbons	100	100	800	140	4667
Diesel range hydrocarbons	2000	2000	500	140	NE
Oil range hydrocarbons	2000	2000	500	NE	NE
Total diesel & oil range hydrocarbons	2000	2000	500	NE	NE
Volatile Organic Compounds (VOCs)					
Acetone	29	2.1	7200	NE	NE
Acrolein	0.0044	0.00032	1.1	0.01	0.30
Acrylonitrile	0.00012	0.0000083	0.03	0.04	1.23
Benzene	0.0088	0.00056	1.60	0.32	10.68
Bromobenzene	0.56	0.033	64	27	912
Bromochloromethane	NE	NE	NE	18	NE
Bromoethane	NE	NE	NE	NE	NE
Bromoform	0.078	0.005	12	2.27	75.76
Bromomethane	0.051	0.0033	11	2.29	76.27
n-Butylbenzene	14	0.71	400	NE	NE
sec-Butylbenzene	25	1.3	800	NE	NE
tert-Butylbenzene	19	1	800	NE	NE
Carbon disulfide	4.1	0.25	800	320	10667
Carbon tetrachloride	0.0029	0.00015	0.35	0.42	13.89
Chlorobenzene	0.86	0.051	100	22.88	763
Chloroethane	NE	NE	14667	4576	152533
2-Chloroethyl vinyl ether	NE	NE	NE	NE	NE
Chloroform	0.074	0.0048	1.2	0.11	3.62
Chloromethane	NE	NE	153	41.12	1370.67
3-Chloro-1-propene	0.011	0.0007	2.08	0.42	NE
2-Chlorotoluene	1.9	0.11	160	NE	NE
4-Chlorotoluene	NE	NE	NE	NE	NE

Chemical	Vadose Soil PCUL (mg/kg)	Saturated Soil PCUL (mg/kg)	Groundwater PCUL (µg/L)	Air PCUL (µg/m^3)	Sub-Slab Soil Gas Screening Level (µg/m^3)
Dibromochloromethane	0.01	0.0007	2.2	NE	NE
1,2-Dibromo-3-chloropropane	0.00089	0.000056	0.042	0.00011	0.0037
Dibromomethane	0.42	0.028	80	1.82	60.80
Dichlorobromomethane	0.013	0.00089	1.4	0.07	2.24
trans-1,4-Dichloro-2-butene	NE	NE	NE	0.0006	NE
Dichlorodifluoromethane	38	0.53	4.2	45.76	1525
1,1-Dichloroethane	0.041	0.0026	7.7	1.56	52.08
1,2-Dichloroethane (EDC)	0.023	0.0016	3.5	0.096	3.21
1,1-Dichloroethylene	0.046	0.0025	7.0	91.36	3045
cis-1,2-Dichloroethylene	0.079	0.0052	16	NE	NE
trans-1,2-Dichloroethylene	0.52	0.032	77	18.29	609.52
1,2-Dichloroethylene (mixed isomers)	0.37	0.023	72	NE	NE
1,2-Dichloropropane	0.016	0.001	3.1	0.68	22.52
1,3-Dichloropropane	0.88	0.057	160	NE	NE
2,2-Dichloropropane	NE	NE	NE	NE	NE
1,1-Dichloropropene	NE	NE	NE	NE	NE
cis-1,3-Dichloropropene	0.0023	0.00014	0.44	NE	NE
trans-1,3-Dichloropropene	0.0023	0.00014	0.44	NE	NE
Ethane	NE	NE	NE	NE	NE
Ethylbenzene	0.18	0.01	21	458	15253
Ethylene dibromide (EDB)	0.0003	0.00002	0.05	0.0042	0.14
2-Hexanone	0.17	0.012	40	13.71	457
Isopropylbenzene (cumene)	15	0.79	800	182	6080
4-Isopropyltoluene	NE	NE	NE	NE	NE
Methyl ethyl ketone (2-butanone)	20	1.4	4800	2288	76267
Methyl iodide	NE	NE	NE	NE	NE
Methyl isobutyl ketone (4-methyl-2-pentanone)	2.7	0.19	640	1371	45707
Methyl tert-butyl ether	0.1	0.0072	24	9.62	320.51
Methylene chloride	0.022	0.0015	5.0	66	2200
n-Propylbenzene	16	0.88	800	458	15253
Styrene	2.2	0.12	100	458	15253
1,1,1,2-Tetrachloroethane	0.0098	0.00063	1.7	0.34	11.26
1,1,2,2-Tetrachloroethane	0.0012	0.00008	0.22	0.043	1.44
Tetrachloroethylene (PCE)	0.029	0.0016	2.9	9.62	320.51
Toluene	0.72	0.044	102	2288	76267
1,2,3-Trichlorobenzene	0.20	0.011	6.4	NE	NE
1,1,1-Trichloroethane	1.5	0.084	200	2288	76267
1,1,2-Trichloroethane	0.005	0.00033	0.90	0.09	3.05
Trichloroethylene (TCE)	0.0044	0.00027	0.70	0.33	11
Trichlorofluoroethane	NE	NE	NE	NE	NE
Trichlorofluoromethane	23	0.79	119	320	10667
1,2,3-Trichloropropane	0.0000024	0.00000015	0.00038	0.14	NE
Trichlorotrifluoroethane	7605	116	167	2288	76267
1,2,3-Trimethylbenzene	1.3	0.073	80	27.43	914.29
1,2,4-Trimethylbenzene	1.3	0.072	80	27.43	914.29
1,3,5-Trimethylbenzene	1.3	0.071	80	27.43	914.29
Vinyl acetate	33	2.3	7809	91.36	3045
Vinyl chloride	0.0011	0.000056	0.18	0.28	9.41

Chemical	Vadose Soil PCUL (mg/kg)	Saturated Soil PCUL (mg/kg)	Groundwater PCUL (µg/L)	Air PCUL (µg/m^3)	Sub-Slab Soil Gas Screening Level (µg/m^3)
Total xylenes	0.94	0.055	106	45.76	1525
Semivolatile Organic Compounds (SVOCs)					
Benzoic acid	0.65	0.17	589	NE	NE
Benzyl alcohol	0.057	0.017	56	NE	NE
Bis(2-chloroethoxy)methane	NE	NE	NE	NE	NE
Bis(2-chloroethyl)ether	0.00022	0.000014	0.040	0.0075	NE
Bis(chloromethyl)ether	0.0045	0.0045	0.00020	0.00004	NE
Bis(2-chloro-1-methylethyl)ether	1.81	0.12	320	NE	NE
Bis(2-ethylhexyl) phthalate	0.1	0.0051	0.046	1	NE
4-Bromophenyl phenyl ether	NE	NE	NE	NE	NE
Butyl benzyl phthalate	0.0036	0.00018	0.013	NE	NE
Carbazole	NE	NE	NE	NE	NE
4-Chloroaniline	0.0027	0.00017	0.44	NE	NE
4-Chloro-3-methylphenol	0.5	0.028	36	NE	NE
2-Chloronaphthalene	5.4	0.28	100	NE	NE
2-Chlorophenol	0.2	0.011	17	NE	NE
4-Chlorophenyl phenyl ether	NE	NE	NE	NE	NE
Dibutyl phthalate	0.28	0.015	8.0	NE	NE
1,2-Dichlorobenzene	0.035	0.003	4.5	91	3045
1,3-Dichlorobenzene	0.023	0.0013	2.0	NE	NE
1,4-Dichlorobenzene	0.11	0.0081	5.0	0.23	7.58
3,3'-Dichlorobenzidine	0.000034	0.000002	0.0033	0.01	NE
2,4-Dichlorophenol	0.069	0.0043	10	NE	NE
Diethyl phthalate	0.2	0.034	93	NE	NE
Dimethyl phthalate	0.071	0.019	59	NE	NE
2,4-Dimethylphenol	0.029	0.0023	2.9	NE	NE
1,2-Dinitrobenzene	8	8	1.6	NE	NE
1,3-Dinitrobenzene	8	8	1.6	NE	NE
1,4-Dinitrobenzene	8	8	1.6	NE	NE
4,6-Dinitro-2-methylphenol	0.13	0.0073	7.0	NE	NE
2,4-Dinitrophenol	0.13	0.0092	32	NE	NE
2,4-Dinitrotoluene	0.0028	0.00016	0.18	0.028	NE
2,6-Dinitrotoluene	0.0009	0.000051	0.058	NE	NE
Di-n-octyl phthalate	6.2	0.33	2.3	NE	NE
1,4-Dioxane	0.0018	0.00013	0.44	0.50	NE
Hexachlorobenzene	0.000008	0.0000004	0.000005	0.01	0.18
Hexachlorobutadiene	0.00021	0.000011	0.010	0.11	3.79
Hexachlorocyclopentadiene	0.032	0.0017	1.0	0.09	3.05
Hexachloroethane	0.00016	0.0000097	0.020	0.23	7.58
Isophorone	0.49	0.032	92	913.6	NE
2-Methoxynaphthalene	NE	NE	NE	NE	NE
2-Methylphenol (o-cresol)	0.069	0.0064	11	273.6	NE
3-Methylphenol (m-cresol)	4000	4000	800	273.6	NE
4-Methylphenol (p-cresol)	0.67	0.062	106	273.6	NE
2-Nitroaniline	1	0.064	160	0.023	NE
3-Nitroaniline	NE	NE	NE	NE	NE
4-Nitroaniline	0.018	0.0013	4.4	2.74	NE
Nitrobenzene	0.1	0.0065	16	0.063	NE
2-Nitrophenol	NE	NE	NE	NE	NE
4-Nitrophenol	NE	NE	NE	NE	NE

Chemical	Vadose Soil PCUL (mg/kg)	Saturated Soil PCUL (mg/kg)	Groundwater PCUL (µg/L)	Air PCUL (µg/m^3)	Sub-Slab Soil Gas Screening Level (µg/m^3)
n-Nitrosodiphenylamine	0.028	0.0016	0.55	0.96	NE
n-Nitrosodi-n-propylamine	0.00012	0.000007	0.013	0.0013	NE
Pentachlorophenol	0.000032	0.0000018	0.0020	0.49	NE
Phenol	0.42	0.048	101	91.36	NE
1,2,4-Trichlorobenzene	0.031	0.0019	0.96	0.91	30.45
2,4,5-Trichlorophenol	0.0013	0.00007	0.037	NE	NE
2,4,6-Trichlorophenol	0.092	0.0053	8.0	0.8	NE
Polycyclic Aromatic Hydrocarbons (PAHs)					
Acenaphthene	0.5	0.028	5.3	NE	NE
Acenaphthylene	1.3	1.3	NE	NE	NE
Anthracene	0.96	0.051	2.1	NE	NE
Benzo(a)anthracene	NE	NE	0.00016	NE	NE
Benzo(b)fluoranthene	NE	NE	0.00016	NE	NE
Benzo(k)fluoranthene	NE	NE	0.0016	NE	NE
Total benzofluoranthenes	3.2	3.2	NE	NE	NE
Benzo(g,h,i)perylene	0.67	0.67	NE	NE	NE
Benzo(a)pyrene	0.00031	0.000016	0.000016	0.00091	NE
Chrysene	NE	NE	0.016	NE	NE
Dibenz(a,h)anthracene	NE	NE	0.000016	NE	NE
Dibenzofuran	0.54	0.029	3.1	NE	NE
Fluoranthene	1.7	0.09	1.8	NE	NE
Fluorene	0.54	0.029	3.7	NE	NE
Indeno(1,2,3-cd)pyrene	NE	NE	0.00016	NE	NE
1-Methylnaphthalene	0.082	0.0042	1.5	NE	NE
2-Methylnaphthalene	0.67	0.039	14	NE	NE
Naphthalene	0.039	0.0021	1.4	0.074	2.45
Phenanthrene	1.5	1.5	NE	NE	NE
Pyrene	2.6	0.14	2.0	NE	NE
Total cPAH TEQ	0.00031	0.000016	0.0097	0.0011	NE
Polychlorinated Biphenyls (PCBs)					
Total PCB Aroclors	0.000011	0.00000055	0.000007	0.0044	NE
Total PCB TEQ	0.0000000069	0.00000000035	0.0000000044	0.000000066	NE
Per- and Polyfluoroalkyl Substances (PFAS)					
Perfluorobutanesulfonic acid (PFBS)	0.0018	0.00012	0.35	NE	NE
Perfluorohexanoic acid (PFHxA)	0.035	0.0025	8	NE	NE
Perfluorohexanesulfonic acid (PFHxS)	0.00041	0.000026	0.065	NE	NE
Perfluorononanoic acid (PFNA)	0.00008	0.0000048	0.009	NE	NE
Perfluorooctanesulfonic acid (PFOS)	0.00017	0.00001	0.015	NE	NE
Perfluorooctanoic acid (PFOA)	0.000063	0.000004	0.01	NE	NE

Notes:

PCUL = Preliminary Cleanup Level

mg/kg = milligram per kilogram

µg/L = microgram per liter

µg/m^3 = microgram per cubic meter

cPAH = carcinogenic polycyclic aromatic hydrocarbon

TEQ = Total toxic equivalent concentration

NE = Not established

[1] LDW PCUL is 27.1 mg/kg, however the PCUL has been adjusted for Puget Sound background of 48 mg/kg (Ecology 1994) per WAC 173-340-700(6)(d)

Table 7-1

Summary of Vadose Soil Exceedances

Precision Engineering, Inc.

Seattle, Washington

Location Identification		GP1	GP2	GP3	GP4	GP5	GP6	GP7	GP8	GP9	GP10	GP11	GP12	GP12	GP13	GP14	GP15	GP16
Sample Identification		GP1-S-1.5	GP2-S-1.0	GP3-S-2.0	GP4-S-1.5	GP5-S-1.5	GP6-S-1.0	GP7-S-2.0	GP8-S-1.5	GP9-S-2.0	GP10-S-1.5	GP11-S-2.0	GP12-S-3.0	GP12-S-5.0	GP13-S-1.0	GP14-S-3.0	GP15-S-3.0	GP16-S-1.0
Sample Date		6/7/05	6/7/05	6/9/05	6/16/05	6/16/05	6/16/05	6/16/05	6/16/05	6/17/05	6/17/05	6/17/05	12/13/05	12/13/05	12/14/05	12/13/05	12/13/05	12/13/05
Start Depth (feet)		1.5	1	2	1.5	1.5	1	2	1.5	2	1.5	2	3	5	1	3	3	1
End Depth (feet)		1.5	1	2	1.5	1.5	1	2	1.5	2	1.5	2	3	5	1	3	3	1
Analyte	**Soil PCUL - Vadose**																	
Metals (mg/kg)																		
Arsenic	7.3	--	**11.3**	--	--	--	--	--	--	--	--	--	**2.79**	--	**9.45**	**3**	**7.76**	--
Cadmium	0.77	--	0.542 U	--	--	--	--	--	--	--	--	--	0.591 U	--	**1.29**	0.609 U	**0.714**	--
Chromium	260	**205**	**2680**	**915**	**1230**	**18.9**	**584**	**23.6**	**22.2**	**43.3**	**21.8**	**21.7**	**24.3**	**25.2**	**26.6**	**24.8**	**24.7**	**30**
Chromium, Hexavalent	0.018	**152**	**523**	**27.7**	**53.4**	0.111 U	**627**	**0.119**	**0.661**	**2.97**	**0.142**	**0.573**	1.1 U	1 U	1.4 U	2 U	1.2 U	2.1 U
Chromium, Trivalent	548	**53**	**2157**	**887.3**	**1176.6**	**18.9**	ND	**23.481**	**21.539**	**40.33**	**21.658**	**21.127**	**24.3**	**25.2**	**26.6**	**24.8**	**24.7**	**30**
Copper	36	--	--	--	--	--	--	--	--	--	--	--	**17.6**	--	**29**	**14.4**	**30.4**	--
Lead	250	--	**34.8**	--	--	--	--	--	--	--	--	--	**2.45**	--	**21.1**	**2.2**	**18.7**	--
Mercury	0.07	--	--	--	--	--	--	--	--	--	--	--	0.131 U	--	0.168 U	0.12 U	0.154 U	--
Nickel	48	--	--	--	--	--	--	--	--	--	--	--	**25.6**	--	**21.8**	**32.9**	**16.4**	--
Selenium	5.2	--	--	--	--	--	--	--	--	--	--	--	0.591 U	--	0.593 U	0.609 U	0.529 U	--
Thallium	0.088	--	--	--	--	--	--	--	--	--	--	--	0.591 U	--	0.593 U	0.609 U	0.529 U	--
Zinc	101	--	--	--	--	--	--	--	--	--	--	--	**32.9**	--	**84.9**	**38.4**	**71.6**	--
Total Petroleum Hydrocarbons (mg/kg)																		
Diesel-range hydrocarbons	2,000	**49.9**	**53.3**	**48.9**	**60.4**	**48.4**	**52.4**	**49.2**	**51.9**	**51.5**	**52.6**	**52.8**	10.7 U	--	--	--	17.7	--
Lube oil-range hydrocarbons	2,000	**99.8**	**107**	**97.7**	**121**	**96.9**	**105**	**98.5**	**104**	**103**	**105**	**106**	26.6 U	--	--	--	59.1	--
Total TPH	2,000	**149.7**	**160.3**	**146.6**	**181.4**	**145.3**	**157.4**	**147.7**	**155.9**	**154.5**	**157.6**	**158.8**	ND	--	--	--	76.8	--
Volatile Organic Compounds (VOCs) (mg/kg)																		
Benzene	0.0088	0.000839 U	0.00096 U	0.0159 U	0.0103 U	0.00712 U	0.0085 U	0.00781 U	0.00986 U	0.00742 U	0.0112 U	0.00837 U	--	--	--	--	--	--
cis-1,2-Dichloroethylene	0.079	0.000839 U	0.00096 U	0.0795 U	0.0517 U	0.0356 U	0.0425 U	0.039 U	0.0493 U	0.0371 U	0.0558 U	0.0419 U	0.00286 U	0.00273 U	0.0119 U	0.00293 U	0.00326 U	0.00222 U
Methylene Chloride	0.022	0.000839 U	0.00096 U	0.0159 U	0.0103 U	0.00712 U	0.0085 U	0.00781 U	0.00986 U	0.00742 U	**0.0179**	0.00837 U	--	--	--	--	--	--
Trichloroethylene	0.0044	0.000839 U	0.00096 U	0.0159 U	0.0103 U	0.00712 U	**0.0405**	0.00781 U	0.00986 U	0.00742 U	0.0112 U	**0.0872**	0.00239 U	0.00227 U	0.00989 U	**0.00449**	0.00272 U	**0.00363**
Vinyl Chloride	0.0011	0.000839 U	0.00096 U	0.0159 U	0.0103 U	0.00712 U	0.0085 U	0.00781 U	0.00986 U	0.00742 U	0.0112 U	0.00837 U	0.00239 U	0.00227 U	0.00989 U	0.00244 U	0.00272 U	0.00185 U
Semivolatile Compounds (SVOCs) (mg/kg)																		
1,4-Dioxane	0.0018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl) Phthalate	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																		
1-Methylnaphthalene	0.082	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.00031	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	0.039	0.000839 U	0.00096 U	0.0795 U	0.0517 U	0.0356 U	0.0425 U	0.039 U	0.0493 U	0.0371 U	0.0558 U	0.0419 U	--	--	--	--	--	--
Total cPAH TEQ	0.00031	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)																		
PCB-Aroclor 1254	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCB Aroclors	0.000011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																		
Perfluorohexanesulfonic acid (PFHxS)	0.00041	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.00017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.000063	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location Identification		GP16		GP17		GP18		GP19		GP20		GP21		GP22		GP24		GP25		GP26		GP27		GP28		GP29		GP30		GP31		GP32		HA1	
Sample Identification		GP16-S-5.0		GP17-S-1.0		GP18-S-1.0		GP19-S-1.0		GP20-S-1.0		GP21-S-1.0		GP22-S-1.0		GP24-S-3.0		GP25-S-1.0		GP26-S-1.0		GP27-S-1.0		GP28-S-1.0		GP29-S-1.0		GP30-S-1.0		GP31-S-1.0		GP32-S-1.0		HA1-0.5	
Sample Date		12/13/05		12/13/05		12/13/05		12/13/05		12/14/05		12/14/05		12/13/05		12/14/05		12/12/05		12/12/05		12/12/05		12/12/05		12/12/05		12/12/05		12/12/05		12/14/05		12/15/05	
Start Depth (feet)		5		1		1		1		1		1		1		3		1		1		1		1		1		1		1		1		0.5	
End Depth (feet)		5		1		1		1		1		1		1		3		1		1		1		1		1		1		1		1		0.5	
Analyte	**Soil PCUL - Vadose**																																		
Metals (mg/kg)																																			
Arsenic	7.3	--		--		**3.55**		--		**5.47**		--		--		**3.06**		--		--		--		**1.89**		**5.91**	U	--		**5.72**		--		**3.81**	
Cadmium	0.77	--		--		0.615	U	--		0.592	U	--		--		0.542	U	--		--		--		0.542	U	0.577	U	--		0.549	U	--		0.576	U
Chromium	260	**26.2**		**254**		**4430**		**22**		**17.6**		**25.6**		**46.8**		**30.2**		**19.3**		**23.7**		**22**		**20.5**		**29.6**		**27.2**		**19.2**		**6750**		**34.3**	
Chromium, Hexavalent	0.018	2.1	U	1.7	U	**2300**	J	2.5	U	1.1	U	1	U	**2.9**	J	1	U	1.8	U	2.2	U	2.2	U	2.2	U	2.4	U	2.1	U	2.1	U	**3500**	J	2.9	U
Chromium, Trivalent	548	**26.2**		**254**		**2130**	J	**22**		**17.6**		**25.6**		**43.9**	J	**30.2**		**19.3**		**23.7**		**22**		**20.5**		**29.6**		**27.2**		**19.2**		**3250**	J	**34.3**	
Copper	36	--		--		**113**		--		**29.4**		--		--		**16.5**		--		--		--		**12.6**		**15.6**		--		**40.2**		--		**32.8**	
Lead	250	--		--		**26.3**		--		**10.1**		--		--		**3.09**		--		--		--		**1.54**		**18**		--		**14.2**		--		**34.6**	
Mercury	0.07	--		--		**1.1**		--		0.152	U	--		--		0.115	U	--		--		--		0.144	U	**0.876**		--		0.131	U	--		0.132	U
Nickel	48	--		--		**23.1**		--		**13**		--		--		**28.5**		--		--		--		**22.5**		**27**		--		**14.4**		--		**21.3**	
Selenium	5.2	--		--		0.615	U	--		0.592	U	--		--		0.542	U	--		--		--		0.542	U	0.577	U	--		0.549	U	--		0.576	U
Thallium	0.088	--		--		0.615	U	--		0.592	U	--		--		0.542	U	--		--		--		0.542	U	0.577	U	--		0.549	U	--		0.576	U
Zinc	101	--		--		**40.9**		--		**49.3**		--		--		**44.3**		--		--		--		**24.9**		**36.9**		--		**46.1**		--		**140**	
Total Petroleum Hydrocarbons (mg/kg)																																			
Diesel-range hydrocarbons	2,000	11.2	U	**11.6**		**156**		**52.8**		**198**		11.2	U			11.1	U			**36.4**				10.8	U	**80.4**		**14.9**		**145**		11.3	U	**210**	
Lube oil-range hydrocarbons	2,000	28	U	**63.1**		**742**		**172**		**301**		28	U			27.8	U			**121**				27	U	**249**		**90.5**		**1300**		28.3	U	**1170**	
Total TPH	2,000	ND		**74.7**		**898**		**224.8**		**499**		ND				ND				**157.4**				ND		**329.4**		**105.4**		**1445**		ND		**1380**	
Volatile Organic Compounds (VOCs) (mg/kg)																																			
Benzene	0.0088	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		0.00172	U
cis-1,2-Dichloroethylene	0.079	0.00255	U	0.00251	U	0.00283	U	0.0032	U	0.00315	U	0.00261	U	0.00272	U	0.00309	U	0.00256	U	0.00241	U	0.00263	U	0.00224	U	**0.00494**		0.00287	U	0.00242	U	0.00284	U	0.00344	U
Methylene Chloride	0.022	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		0.00401	U
Trichloroethylene	0.0044	0.00212	U	0.00209	U	**0.00343**		0.00267	U	0.00262	U	0.00218	U	0.00226	U	0.00258	U	0.00213	U	0.00201	U	0.00219	U	0.00187	U	0.00247	U	0.00239	U	0.00202	U	0.00237	U	0.00287	U
Vinyl Chloride	0.0011	0.00212	U	0.00209	U	0.00236	U	0.00267	U	0.00262	U	0.00218	U	0.00226	U	0.00258	U	0.00213	U	0.00201	U	0.00219	U	0.00187	U	0.00247	U	0.00239	U	0.00202	U	0.00237	U	0.00287	U
Semivolatile Compounds (SVOCs) (mg/kg)																																			
1,4-Dioxane	0.0018	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Bis(2-Ethylhexyl) Phthalate	0.1	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Diethyl Phthalate	0.2	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																																			
1-Methylnaphthalene	0.082	--		--		**0.0167**		0.0124	U	0.012	U	--		--		--		--		--		--		--		0.0119	U	--		0.0117	U	--		0.0151	U
Benzo(a)anthracene	NE	--		--		**0.0235**		0.0124	U	0.012	U	--		--		--		--		--		--		--		**0.075**		--		0.0117	U	--		0.0151	U
Benzo(a)pyrene	0.00031	--		--		0.0111	U	0.0124	U	0.012	U	--		--		--		--		--		--		--		**0.0571**		--		0.0117	U	--		0.0151	U
Benzo(b)fluoranthene	NE	--		--		**0.0746**		0.0124	U	0.012	U	--		--		--		--		--		--		--		**0.0611**		--		0.0117	U	--		0.0151	U
Benzo(k)fluoranthene	NE	--		--		**0.056**		0.0124	U	0.012	U	--		--		--		--		--		--		--		**0.0703**		--		0.0117	U	--		0.0151	U
Chrysene	NE	--		--		**0.0717**		**0.0127**		0.012	U	--		--		--		--		--		--		--		**0.122**		--		**0.034**		--		0.0151	U
Dibenzo(a,h)anthracene	NE	--		--		0.0111	U	0.0124	U	0.012	U	--		--		--		--		--		--		--		**0.0162**		--		0.0117	U	--		0.0151	U
Indeno(1,2,3-c,d)pyrene	NE	--		--		0.0111	U	0.0124	U	0.012	U	--		--		--		--		--		--		--		**0.026**		--		0.0117	U	--		0.0151	U
Naphthalene	0.039	--		--		**0.0179**		0.0124	U	0.012	U	--		--		--		--		--		--		--		0.0119	U	--		0.0117	U	--		0.00573	U
Total cPAH TEQ	0.00031	--		--		**0.03649**		**0.01066**		0.00906	U	--		--		--		--		--		--		--		**0.09548**		--		**0.01028**		--		0.0114	U
Polychlorinated Biphenyls (PCBs) (mg/kg)																																			
PCB-Aroclor 1254	NE	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Total PCB Aroclors	0.000011	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																																			
Perfluorohexanesulfonic acid (PFHxS)	0.00041	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Perfluorooctanesulfonic acid (PFOS)	0.00017	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
Perfluorooctanoic acid (PFOA)	0.000063	--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	

Location Identification		HA1	HA2	HA2	HA6	HA7	HA8	HA9	HA10	HA11	HA12	HA26	HA27	HA28	HA29	SB3	SB-20	SB-21
Sample Identification		HA1-1.5	HA2-0.5	HA2-1.5	HA6-0.5	HA7-0.5	HA8-0.5	HA9-0.5	HA10-0.5	HA11-0.5	HA12-0.5	HA26-1	HA27-1	HA28-1	HA29-1	SB3-2	SB-20-2-3	SB-21-3-4
Sample Date		12/15/05	12/15/05	12/15/05	4/18/06	4/18/06	4/18/06	4/19/06	4/19/06	4/19/06	4/19/06	9/22/23	9/22/23	9/22/23	9/22/23	8/8/14	3/8/22	3/7/22
Start Depth (feet)		1.5	0.5	1.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	1	2	2	3
End Depth (feet)		1.5	0.5	1.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.5	1	1	1.5	2	3	4
Analyte	**Soil PCUL - Vadose**																	
Metals (mg/kg)																		
Arsenic	7.3	**2.88 J**	**3.94**	**2.71**	--	--	--	--	--	--	**9**	**9.38**	**7.27**	**9.87**	**3.93**	--	**2.59**	**2.9**
Cadmium	0.77	0.55 U	**0.984**	0.613 U	--	--	--	--	--	--	**0.48 JB**	**0.29**	**0.38**	**0.36**	**0.17**	--	**0.07 J**	**0.12**
Chromium	260	**110**	**206**	**215**	--	--	--	--	--	--	**46 B**	**24.6**	**24.5**	**30.2**	**20.4**	--	**21**	**39.2**
Chromium, Hexavalent	0.018	**6.5 J**	**89 J**	**3.2 J**	**3.33**	**0.22**	**0.26**	**3.4**	**0.074**	**0.45**	--	0.564 UJ	0.529 U	0.574 U	0.53 U	--	0.538 UJ	0.575 UJ
Chromium, Trivalent	548	**103.5 J**	**117 J**	**211.8 J**	--	--	--	--	--	--	--	**24.6**	**24.5**	**30.2**	**20.4**	--	**21**	**39.2**
Copper	36	**16.2 J**	**70.9**	**28.2**	--	--	--	--	--	--	**39 B**	**31.8**	**49.2**	**45.3**	**14.8**	--	**12.5**	**23.8**
Lead	250	**15.3 J**	**81.4**	**36.5**	--	--	--	--	--	--	**220 B**	**78.5**	**71.6**	**82.7**	**12**	--	**2.13**	**3.92**
Mercury	0.07	**0.328**	0.142 U	**0.232**	--	--	--	--	--	--	--	**0.222**	**0.0493**	**0.195**	**0.0855**	--	**0.0163 J**	**0.0292**
Nickel	48	**24.7 J**	**36**	**31**	--	--	--	--	--	--	--	**27.5**	**25.3**	**35.3**	**26.1**	--	**26.7**	**46.8**
Selenium	5.2	0.55 U	0.723 U	0.613 U	--	--	--	--	--	--	--	**0.8**	**0.58**	**0.72**	**0.55**	--	**0.69**	**1.06**
Thallium	0.088	0.55 U	0.723 U	0.613 U	--	--	--	--	--	--	--	--	--	--	--	--	**0.05 J**	**0.1 J**
Zinc	101	**70.8 J**	**341**	**134**	--	--	--	--	--	--	--	**105**	**109**	**111**	**58.3**	--	**32.3**	**60.6**
Total Petroleum Hydrocarbons (mg/kg)																		
Diesel-range hydrocarbons	2,000	**37.6**	**636**	**73.8**	--	--	--	--	--	--	--	28 U	27 U	30 U	27 U	**10000**	27 U	29 U
Lube oil-range hydrocarbons	2,000	**182**	**3170**	**409**	--	--	--	--	--	--	--	56 U	54 U	61 U	54 U	**12000**	54 U	58 U
Total TPH	2,000	**219.6**	**3806**	**482.8**	--	--	--	--	--	--	--	ND	ND	ND	ND	**22000**	ND	ND
Volatile Organic Compounds (VOCs) (mg/kg)																		
Benzene	0.0088	0.00207 U	0.00219 U	0.00138 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	0.079	0.00415 U	0.00438 U	0.00277 U	--	--	--	--	--	--	--	0.00102 U	0.0008 U	0.00095 U	0.00074 U	--	0.00061 U	0.00095 U
Methylene Chloride	0.022	0.00484 U	0.00511 U	0.00323 U	--	--	--	--	--	--	--	**0.00624**	**0.0436**	**0.00479**	**0.0801**	--	--	--
Trichloroethylene	0.0044	0.00346 U	0.00365 U	0.0023 U	--	--	--	--	--	--	--	0.00102 U	0.0008 U	0.00095 U	0.00074 U	--	0.00061 U	0.00095 U
Vinyl Chloride	0.0011	0.00346 U	0.00365 U	0.0023 U	--	--	--	--	--	--	--	0.00102 U	0.0008 U	0.00095 U	0.00074 U	--	0.00061 U	0.00095 U
Semivolatile Compounds (SVOCs) (mg/kg)																		
1,4-Dioxane	0.0018	--	--	--	--	--	--	--	--	--	--	1 U	1 U	1 U	1 U	--	--	--
Bis(2-Ethylhexyl) Phthalate	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																		
1-Methylnaphthalene	0.082	0.0129 U	0.0176 U	0.0125 U	--	--	--	--	--	--	--	**0.00915**	**0.0197**	**0.00809**	**0.00107 J**	--	--	--
Benzo(a)anthracene	NE	0.0129 U	0.0176 U	0.0125 U	--	--	--	--	--	--	--	**0.0185**	**0.0275**	**0.0195**	**0.00296 J**	--	--	--
Benzo(a)pyrene	0.00031	0.0129 U	0.0176 U	0.0125 U	--	--	--	--	--	--	--	**0.0273**	**0.0333**	**0.0224**	**0.00455 J**	--	--	--
Benzo(b)fluoranthene	NE	0.0129 U	**0.0222**	**0.0204**	--	--	--	--	--	--	--	**0.0298**	**0.0352**	**0.0282**	**0.00662**	--	--	--
Benzo(k)fluoranthene	NE	0.0129 U	**0.0205**	**0.0151**	--	--	--	--	--	--	--	**0.0141**	**0.0182**	**0.0147**	**0.00302 J**	--	--	--
Chrysene	NE	0.0129 U	**0.0276**	**0.0179**	--	--	--	--	--	--	--	**0.0333**	**0.045**	**0.0298**	**0.0057**	--	--	--
Dibenzo(a,h)anthracene	NE	0.0129 U	0.0176 U	0.0125 U	--	--	--	--	--	--	--	**0.00753**	**0.00897**	**0.0074**	**0.00133 J**	--	--	--
Indeno(1,2,3-c,d)pyrene	NE	0.0129 U	0.0176 U	0.0125 U	--	--	--	--	--	--	--	**0.0234**	**0.0267**	**0.0198**	**0.00427 J**	--	--	--
Naphthalene	0.039	0.00691 U	0.0073 U	0.00461 U	--	--	--	--	--	--	--	**0.00876**	**0.012**	**0.00567**	0.005 U	--	--	--
Total cPAH TEQ	0.00031	0.00974 U	**0.01599**	**0.01185**	--	--	--	--	--	--	--	**0.04335**	**0.05294**	**0.03793**	**0.00774 J**	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)																		
PCB-Aroclor 1254	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCB Aroclors	0.000011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																		
Perfluorohexanesulfonic acid (PFHxS)	0.00041	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.00017	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.000063	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location Identification		SB-22	SB-23	SB-24	SB-25	SB-26	SB-27	SB-28	SB-29	SB-30	SB-31	SB-33	SB-34	SB-35	SB-36	SB-37	MW-13	MW-14
Sample Identification		SB-22-0.5-1.5	SB-23-1.5-2.5	SB-24-3-4	SB-25-3.5-4.5	SB-26-3-4	SB-27-3-4	SB-28-2.5-3	SB-29-0-2	SB-30-3-4	SB-31-2-3	SB-33-2-3	SB34-2-3	SB35-3-4	SB36-2-3.5	SB37-2-3	MW-13-3-4	MW-14-2-3
Sample Date		3/10/22	3/9/22	3/8/22	3/8/22	3/7/22	3/7/22	3/7/22	3/10/22	3/9/22	3/9/22	3/9/22	6/2/23	6/2/23	6/2/23	6/2/23	3/29/22	3/24/22
Start Depth (feet)		0.5	1.5	3	3.5	3	3	2.5	0	3	2	2	2	3	2	2	3	2
End Depth (feet)		1.5	2.5	4	4.5	4	4	3	2	4	3	3	3	4	3.5	3	4	3
Analyte	**Soil PCUL - Vadose**																	
Metals (mg/kg)																		
Arsenic	7.3	**3.04**	**9.93**	**2.88**	**3.64**	**2.91**	**3.35**	**8.5**	**1.86**	**8.08**	**9.51**	**5.96**	**2.5**	**2.71**	**2.19**	**5.08**	**7.32**	**6.66**
Cadmium	0.77	**0.07 J**	**0.54**	**0.06 J**	**0.07 J**	**0.07 J**	**0.1 J**	**0.39**	**0.05 J**	**0.54**	**0.13**	**0.16**	**0.08 J**	**0.08 J**	**0.07 J**	**0.16**	0.309 U	**0.24**
Chromium	260	**23.5**	**20.3**	**23.4**	**20.2**	**22.6**	**23**	**23.8**	**22.3**	**18.5**	**20.7**	**465**	**21.2**	**20.4**	**20.9**	**30**	**40**	**36.1 J**
Chromium, Hexavalent	0.018	0.576 U	0.624 UJ	0.54 UJ	0.574 UJ	0.524 U	0.569 U	0.627 U	0.557 U	0.575 U	0.591 U	**83.6**	0.527 U	0.541 U	0.518 U	0.579 U	0.618 U	0.618 U
Chromium, Trivalent	548	**23.5**	**20.3**	**23.4**	**20.2**	**22.6**	**23**	**23.8**	**22.3**	**18.5**	**20.7**	**465**	**21.2**	**20.4**	**20.9**	**30**	**40**	**36.1 J**
Copper	36	**14.4**	**29.5**	**11.8**	**12.6**	**12.2**	**14**	**30**	**11.1**	**31.1**	**29.4**	**18.2**	**11.8**	**10.4**	**12.8**	**20.2**	**23.4**	**20.2**
Lead	250	**2.7**	**16.9**	**2.09**	**2.68**	**2.34**	**2.85**	**16.6**	**2.1**	**130**	**17.8**	**3.24**	**2.18**	**1.92**	**2.13**	**9.43**	**5.06**	**13.1**
Mercury	0.07	**0.0253**	**0.0781**	**0.0118 J**	**0.012 J**	**0.00649 J**	**0.0178 J**	**0.095**	**0.022**	**0.0848**	**0.114**	**0.047**	**0.0126 J**	**0.0132 J**	**0.018 J**	**0.042**	**0.0336**	**0.0469**
Nickel	48	**32.1**	**18.2**	**31.9**	**32**	**29.5**	**28.3**	**20.4**	**26.2**	**19.6**	**17.6**	**37.7**	**27.3**	**26.8**	**31**	**35.3**	**36.5**	**38.8**
Selenium	5.2	**0.62**	**0.89**	**0.64**	**0.61**	**0.82**	**0.72**	**0.95**	**0.5 J**	**0.62**	**0.95**	**0.71**	**0.95**	**1.1**	**0.48 J**	**0.68**	**2.21**	**0.75**
Thallium	0.088	**0.07 J**	**0.1 J**	**0.05 J**	**0.07 J**	**0.06 J**	**0.08 J**	**0.1 J**	**0.05 J**	**0.07 J**	**0.08 J**	**0.08 J**	--	--	--	--	**0.129**	**0.12 J**
Zinc	101	**37.9**	**60.7**	**33.2**	**37.3**	**34.8**	**43.1**	**61**	**32.4**	**83.8**	**53.7**	**41.2**	**31.2**	**30.5**	**33.9**	**49.4**	**67**	**72**
Total Petroleum Hydrocarbons (mg/kg)																		
Diesel-range hydrocarbons	2,000	29 U	32 U	28 U	29 U	27 U	28 U	**26**	28 U	**28.1**	**36.2**	28 U	27 U	27 U	27 U	30 U	33 U	28 U
Lube oil-range hydrocarbons	2,000	58 U	63 U	56 U	58 U	54 U	57 U	**129**	56 U	**186**	**161**	55 U	54 U	54 U	54 U	59 U	65 U	57 U
Total TPH	2,000	ND	ND	ND	ND	ND	ND	**155**	ND	**214.1**	**197.2**	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (VOCs) (mg/kg)																		
Benzene	0.0088	--	--	--	--	--	--	--	0.00056 U	--	--	**0.00032 J**	--	--	--	--	--	0.00072 U
cis-1,2-Dichloroethylene	0.079	0.001 U	0.00089 U	**0.00478**	**0.0278**	0.00066 U	0.00068 U	**0.00036 J**	0.00056 U	0.00079 U	0.00077 U	**0.00087**	0.00094 U	0.00098 U	0.00112 U	0.00107 U	0.00072 U	0.00072 U
Methylene Chloride	0.022	--	--	--	--	--	--	--	0.0028 U	--	--	0.00316 U	0.00472 U	0.00491 U	0.00561 U	0.00535 U	--	0.0036 U
Trichloroethylene	0.0044	0.001 U	0.00089 U	**0.00914**	**0.0172**	0.00066 U	0.00068 U	0.00092 U	0.00056 U	0.00079 U	0.00077 U	**0.00973**	0.00094 U	0.00098 U	0.00112 U	0.00107 U	0.00072 U	0.00072 U
Vinyl Chloride	0.0011	0.001 U	0.00089 U	0.00092 U	0.00072 U	0.00066 U	0.00068 U	0.00092 U	0.00056 U	0.00079 U	0.00077 U	0.00063 U	0.00094 U	0.00098 U	0.00112 U	0.00107 U	0.00072 U	0.00072 U
Semivolatile Compounds (SVOCs) (mg/kg)																		
1,4-Dioxane	0.0018	--	--	--	--	--	--	--	0.334 U	--	--	0.0199 U	0.335 U	0.335 U	0.335 U	1 U	--	0.335 U
Bis(2-Ethylhexyl) Phthalate	0.1	--	--	--	--	--	--	--	**0.0591**	--	--	0.0499 U	--	--	--	--	--	0.0499 U
Diethyl Phthalate	0.2	--	--	--	--	--	--	--	0.0499 U	--	--	0.0499 U	--	--	--	--	--	0.0499 U
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																		
1-Methylnaphthalene	0.082	--	**0.0205**	--	--	**0.0091**	--	--	**0.0012 J**	--	--	**0.00054 J**	**0.00052 J**	0.00498 U	0.00497 U	**0.0128**	--	0.005 U
Benzo(a)anthracene	NE	--	**0.0147**	--	--	0.00499 U	--	--	**0.00244 J**	--	--	**0.00379 J**	0.00497 U	0.00498 U	0.00497 U	**0.00614**	--	**0.00184 J**
Benzo(a)pyrene	0.00031	--	**0.0109**	--	--	**0.00085 J**	--	--	**0.00245 J**	--	--	**0.00257 J**	0.00497 U	0.00498 U	0.00497 U	**0.00451 J**	--	**0.00221 J**
Benzo(b)fluoranthene	NE	--	**0.0141**	--	--	0.00499 U	--	--	**0.00349 J**	--	--	**0.00692**	0.00497 U	0.00498 U	0.00497 U	**0.00682**	--	**0.00433 J**
Benzo(k)fluoranthene	NE	--	**0.00715**	--	--	0.00499 U	--	--	**0.00176 J**	--	--	**0.00391 J**	0.00497 U	0.00498 U	0.00497 U	**0.00416 J**	--	**0.00172 J**
Chrysene	NE	--	**0.0231**	--	--	**0.0015 J**	--	--	**0.00476 J**	--	--	**0.00821**	0.00497 U	0.00498 U	0.00497 U	**0.0102**	--	**0.00564**
Dibenzo(a,h)anthracene	NE	--	**0.00251 J**	--	--	**0.0009 J**	--	--	**0.00112 J**	--	--	**0.00168 J**	0.00497 U	0.00498 U	0.00497 U	**0.00113 J**	--	**0.00091 J**
Indeno(1,2,3-c,d)pyrene	NE	--	**0.0103**	--	--	0.00499 U	--	--	**0.00243 J**	--	--	**0.00439 J**	0.00497 U	0.00498 U	0.00497 U	**0.00487 J**	--	**0.0039 J**
Naphthalene	0.039	--	**0.0347**	--	--	**0.00503**	--	--	**0.00179 J**	--	--	0.00499 U	0.00497 U	0.00498 U	0.00497 U	**0.0118**	--	**0.0135**
Total cPAH TEQ	0.00031	--	**0.01879**	--	--	**0.00245**	--	--	**0.00431**	--	--	**0.00616**	0.00425 U	0.00426 U	0.00425 U	**0.0084 J**	--	**0.00438**
Polychlorinated Biphenyls (PCBs) (mg/kg)																		
PCB-Aroclor 1254	NE	--	--	--	--	--	--	--	**0.0148 J**	--	--	0.0199 U	--	--	--	--	--	0.02 U
Total PCB Aroclors	0.000011	--	--	--	--	--	--	--	**0.0148 J**	--	--	0.0199 U	--	--	--	--	--	0.02 U
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																		
Perfluorohexanesulfonic acid (PFHxS)	0.00041	--	--	--	--	--	--	--	0.0011 U	--	--	0.001 U	--	--	--	--	--	0.0012 U
Perfluorooctanesulfonic acid (PFOS)	0.00017	--	--	--	--	--	--	--	0.0011 U	--	--	0.001 U	--	--	--	--	--	0.0012 U
Perfluorooctanoic acid (PFOA)	0.000063	--	--	--	--	--	--	--	0.0011 U	--	--	0.001 U	--	--	--	--	--	0.0012 U

Location Identification		MW-15	MW-16	MW-17	MW-18	MW-19	MW-20	MW-21	MW-22	MW-23
Sample Identification		MW-15-3-4	MW-16-3-4	MW-17-3-4	MW-18-3-4	MW19-6-7.5	MW20-2.5-4	MW21-2.5-4	MW22-2.5-4	MW23-2.5-4
Sample Date		3/23/22	3/22/22	3/21/22	3/28/22	5/26/23	5/25/23	5/31/23	5/30/23	5/24/23
Start Depth (feet)		3	3	3	3	6	2.5	2.5	2.5	2.5
End Depth (feet)		4	4	4	4	7.5	4	4	4	4
Analyte	**Soil PCUL - Vadose**									
Metals (mg/kg)										
Arsenic	7.3	**3.92**	**9.01 J**	**7.27**	**5.72**	**5.96**	**3.84**	**6.31**	**6.1**	**7.34**
Cadmium	0.77	**0.23**	**2.51 J**	**1.04**	0.251 U	**0.04 J**	**0.25**	**0.29**	**0.23**	**0.47**
Chromium	260	**27.2**	**18.1**	**28.7**	**31.8**	**18.2**	**27.2**	**25.4**	**31.9**	**23.5**
Chromium, Hexavalent	0.018	0.612 U	0.641 U	0.6 UJ	0.543 U	0.646 U	0.608 U	0.561 U	0.547 U	0.545 U
Chromium, Trivalent	548	**27.2**	**18.1**	**28.7**	**31.8**	**18.2**	**27.2**	**25.4**	**31.9**	**23.5**
Copper	36	**13.2**	**22.7 J**	**27**	**17.8**	**23.7**	**27.2**	**26.6**	**39.6**	**58.9**
Lead	250	**8.07**	**11.1 J**	**11**	**8.55**	**4.62**	**91.1**	**84.6**	**72**	**104**
Mercury	0.07	**0.0263**	**0.0314**	**0.0974 J**	**0.0423**	**0.0308 J**	**0.0738**	**0.0501**	**0.0293**	**0.106**
Nickel	48	**39.8**	**18.9 J**	**30.1**	**28.7**	**12.3**	**35.1**	**26.6**	**30.3**	**22.6**
Selenium	5.2	**0.25 J**	**0.35 J**	**0.87**	**1.14**	**0.94**	**0.93**	**1.2**	**0.75**	**0.97**
Thallium	0.088	**0.07 J**	**0.12 J**	**0.09 J**	**0.0589**	--	--	--	--	--
Zinc	101	**54**	**88 J**	**64.4**	**41**	**33.8**	**68**	**236**	**102**	**201**
Total Petroleum Hydrocarbons (mg/kg)										
Diesel-range hydrocarbons	2,000	31 U	32 U	30 U	28 U	32 U	31 U	**15.4**	28 U	**83.3**
Lube oil-range hydrocarbons	2,000	61 U	64 U	59 U	55 U	65 U	61 U	**88.7**	55 U	**491**
Total TPH	2,000	ND	ND	ND	ND	ND	ND	**104.1**	ND	**574.3**
Volatile Organic Compounds (VOCs) (mg/kg)										
Benzene	0.0088	**0.00024 J**	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	0.079	**0.00051 J**	0.00075 U	0.00073 U	**0.00195**	0.00114 U	0.00118 U	0.00111 U	0.00093 U	0.00128 U
Methylene Chloride	0.022	0.00371 U	--	--	--	0.00571 U	0.00588 U	0.00557 U	0.00466 U	0.00642 U
Trichloroethylene	0.0044	0.00074 U	0.00075 U	0.00073 U	**0.00111**	0.00114 U	0.00118 U	0.00111 U	0.00093 U	0.00128 U
Vinyl Chloride	0.0011	0.00074 U	0.00075 U	0.00073 U	0.00069 U	0.00114 U	0.00118 U	0.00111 U	0.00093 U	0.00128 U
Semivolatile Compounds (SVOCs) (mg/kg)										
1,4-Dioxane	0.0018	0.334 U	--	--	--	0.335 U	1.67 U	1.67 U	1 U	10 U
Bis(2-Ethylhexyl) Phthalate	0.1	0.0499 U	--	--	--	--	--	--	--	--
Diethyl Phthalate	0.2	0.0499 U	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)										
1-Methylnaphthalene	0.082	0.005 U	--	--	--	**0.00142 J**	0.015 U	**0.00649**	**0.00173**	0.0748 U
Benzo(a)anthracene	NE	**0.00174 J**	--	--	--	**0.00173 J**	**0.0289**	**0.0387**	**0.104**	**0.107**
Benzo(a)pyrene	0.00031	**0.00176 J**	--	--	--	0.00497 U	**0.0431**	**0.0469**	**0.125**	**0.139**
Benzo(b)fluoranthene	NE	**0.0033 J**	--	--	--	**0.00258 J**	**0.0511**	**0.0542**	**0.138**	**0.157**
Benzo(k)fluoranthene	NE	**0.00147 J**	--	--	--	**0.00096 J**	**0.0289**	**0.0307**	**0.0796**	**0.0781**
Chrysene	NE	**0.00513**	--	--	--	**0.00336 J**	**0.0484**	**0.0643**	**0.154**	**0.171**
Dibenzo(a,h)anthracene	NE	0.005 U	--	--	--	0.00497 U	**0.0129**	**0.0112**	**0.0271**	**0.0311**
Indeno(1,2,3-c,d)pyrene	NE	**0.00317 J**	--	--	--	**0.00142 J**	**0.0441**	**0.0459**	**0.112**	**0.121**
Naphthalene	0.039	**0.0159**	--	--	--	**0.0955**	0.015 U	**0.0343**	0.015 U	0.0748 U
Total cPAH TEQ	0.00031	**0.00372**	--	--	--	**0.0039 J**	**0.07077**	**0.07731**	**0.20221**	**0.22233**
Polychlorinated Biphenyls (PCBs) (mg/kg)										
PCB-Aroclor 1254	NE	0.02 U	--	--	--	--	--	--	--	--
Total PCB Aroclors	0.000011	0.02 U	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)										
Perfluorohexanesulfonic acid (PFHxS)	0.00041	0.0012 U	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.00017	0.0012 U	--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.000063	0.0012 U	--	--	--	--	--	--	--	--

Notes:

J = Estimated result
mg/kg = Milligram per kilogram
ND = Not detected (calculated)
PAHs = Polycyclic Aromatic Hydrocarbons
PCBs = Polychlorinated Biphenyls
PCUL = Preliminary Cleanup Level provided to GeoEngineers by Washington State Department of Ecology (Ecology) June 3, 2022 as the PCULs for the Remedial Investigation (PFAS PCULs are from Ecology Publication 22-09-058)
PFAS = Per- and Polyfluoroalkyl Substances
SVOCs = Semivolatile Volatile Organic Compounds
TPH = Total Petroleum Hydrocarbons (NWTPH-Dx where performed, HCID otherwise)
U = Not detected
VOCs = Volatile Organic Compounds

Table 7-2

Evaluation of Cleanup Action Alternatives

Former Precision Engineering Property

Seattle, Washington

Location Identification		GP1	GP1	GP2	GP3	GP3	GP5	GP5	GP6	GP7	GP10	GP11	GP13	GP14	GP15	GP17	GP19
Sample Identification		GP1-S-6.0	GP1-S-10.0	GP2-S-10.0	GP3-S-6.0	GP3-S-14	GP5-S-8.0	GP5-S-14.0	GP6-S-14.5	GP7-S-8.0	GP10-S-13.5	GP11-S-6.5	GP13-S-6.0	GP14-S-6.0	GP15-S-6.0	GP17-S-6.0	GP19-S-7.0
Sample Date		6/7/2005	6/9/2005	6/9/2005	6/9/2005	6/9/2005	6/16/2005	6/16/2005	6/16/2005	6/16/2005	6/17/2005	6/17/2005	12/14/2005	12/13/2005	12/13/2005	12/13/2005	12/13/2005
Start Depth (feet)		6	10	10	6	14	8	14	14.5	8	13.5	6.5	6	6	6	6	7
End Depth (feet)		6	10	10	6	14	8	14	14.5	8	13.5	6.5	6	6	6	6	7
Analyte	**Soil PCUL - Saturated**																
Metals (mg/kg)																	
Arsenic	7.3	4.99 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	0.77	0.499 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	**147**	**73.5**	**24.9**	**1100**	**941**	--	**20.1**	**259**	**21**	**24.1**	**17.3**	**46.6**	**31.4**	**20.2**	**1660**	**27.1**
Chromium, Hexavalent	0.00089	**31.8**	**14.4**	0.109 U	**49.8**	**34.4**	--	0.115 U	**0.181**	0.113 U	0.106 U	**0.37**	1.3 U	**1.2 J**	1.2 U	**60 J**	2.7 U
Chromium, Trivalent	48	**115.2**	**59.1**	**24.9**	**1050.2**	**906.6**	--	**20.1**	**258.819**	**21**	**24.1**	**16.93**	**46.6**	**30.2 J**	**20.2**	**1600 J**	**27.1**
Copper	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	56	2 U		2.11 U		--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	0.0044	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (TPH) (mg/kg)																	
Diesel-range hydrocarbons	2,000	**51.2**	**48.3**	**52.4**	**54.7**	**52.6**	--	**50.3**	**49**	**57**	**53.4**	**48.7**	12.8 U	10.8 U	--	--	14.5 U
Lube oil-range hydrocarbons	2,000	**102**	**96.6**	**105**	**109**	**105**	--	**101**	**98**	**114**	**107**	**97.4**	**56.1**	26.9 U	--	--	**56.7**
Total TPH	2,000	**153.2**	**144.9**	**157.4**	**163.7**	**157.6**	--	**151.3**	**147**	**171**	**160.4**	**146.1**	**56.1**	ND	--	--	**56.7**
Volatile Organic Compounds (VOCs) (mg/kg)																	
Benzene	0.00056	**0.00255**	0.00765 U	0.00881 U	0.00896 U	0.00771 U	0.00703 U	0.0081 U	0.00828 U	0.00884 U	0.00796 U	0.00861 U	--	--	--	--	--
cis-1,2-Dichloroethylene	0.0052	0.00112 U	0.0382 U	0.044 U	0.0448 U	0.0385 U	0.0351 U	0.0405 U	**0.149**	0.0442 U	0.0398 U	**0.0788**	0.00347 U	0.00315 U	0.0126 U	0.00272 U	0.00326 U
Methylene Chloride	0.0015	0.00112 U	0.00765 U	0.00881 U	0.00896 U	0.00771 U	0.00703 U	0.0081 U	0.00828 U	0.00884 U	0.00796 U	0.00861 U	--	--	--	--	--
Trichloroethylene	0.00027	0.00112 U	0.00765 U	0.00881 U	0.00896 U	0.00771 U	0.00703 U	0.0081 U	**1.16**	0.00884 U	0.00796 U	**0.281**	0.00289 U	0.00262 U	0.0105 U	0.00227 U	0.00272 U
Vinyl Chloride	0.000056	0.00112 U	0.00765 U	0.00881 U	0.00896 U	0.00771 U	0.00703 U	0.0081 U	0.00828 U	0.00884 U	0.00796 U	0.00861 U	0.00289 U	0.00262 U	0.0105 U	0.00227 U	0.00272 U
Semivolatile Compounds (SVOCs) (mg/kg)																	
1,4-Dioxane	0.00013	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl) Phthalate	0.0051	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	0.034	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																	
1-Methylnaphthalene	0.0042	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.000016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	0.0021	0.00112 U	0.0382 U	0.044 U	0.0448 U	0.0385 U	0.0351 U	0.0405 U	0.0414 U	0.0442 U	0.0398 U	0.043 U	--	--	--	--	--
Total cPAH TEQ	0.000016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)																	
Total PCB Aroclors	0.00000055	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																	
Perfluorohexanesulfonic acid (PFHxS)	0.000026	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.0000099	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.000004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location Identification		GP20	GP21	GP22	GP23	GP23	GP24	GP25	GP26	GP27	GP28	GP29	GP30	GP31	MW9	MW9	MW9
Sample Identification		GP20-S-6.0	GP21-S-6.5	GP22-S-10.0	GP23-S-7.0	GP23-S-10.5	GP24-S-6.5	GP25-S-7.0	GP26-S-9.5	GP27-S-13.0	GP28-S-7.0	GP29-S-6.0	GP30-S-6.0	GP31-S-6.0	MW9-18-19	MW9-32.5-33.5	MW9-38-39
Sample Date		12/14/2005	12/14/2005	12/13/2005	12/14/2005	12/14/2005	12/14/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	12/12/2005	8/16/2014	8/16/2014	8/16/2014
Start Depth (feet)		6	6.5	10	7	10.5	6.5	7	9.5	13	7	6	6	6	18	32.5	38
End Depth (feet)		6	6.5	10	7	10.5	6.5	7	9.5	13	7	6	6	6	19	33.5	39
Analyte	**Soil PCUL - Saturated**																
Metals (mg/kg)																	
Arsenic	7.3	--	--	--	--	--	--	--	--	--	--	--	--	--	**10**	5 U	5 U
Cadmium	0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	**24.5**	**23**	**32.1**	**23.3**	**979**	**29.3**	**19.8**	**24**	**18.6**	**22.4**	**31.9**	**32.7**	**23.6**	**19**	**17.8**	**32.3**
Chromium, Hexavalent	0.00089	1.5 U	1.3 U	1.3 U	1.1 U	1.2 U	2.4 U	1.7 U	2.1 U	2.1 U	1.8 U	2.6 U	2.4 U	3 U	0.492 U	0.448 U	0.471 U
Chromium, Trivalent	48	**24.5**	**23**	**32.1**	**23.3**	**979**	**29.3**	**19.8**	**24**	**18.6**	**22.4**	**31.9**	**32.7**	**23.6**	**19**	**17.8**	**32.3**
Copper	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	56	--	--	--	--	--	--	--	--	--	--	--	--	--	6 U	2 U	2 U
Mercury	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	10 U	5 U	5 U
Thallium	0.0044	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (TPH) (mg/kg)																	
Diesel-range hydrocarbons	2,000	**75.9**	**5270**	11.3 U	10.8 U	--	--	10.6 U	10.8 U	10.9 U	10.4 U	12.8 U	**39.6**	58.9	6.2 U	5.7 U	**9.3**
Lube oil-range hydrocarbons	2,000	**294**	**19900**	28.2 U	26.9 U	--	--	26.6 U	27.1 U	27.2 U	26 U	32 U	**165**	157	**14**	11 U	**14**
Total TPH	2,000	**369.9**	**25170**	ND	ND	--	--	ND	ND	ND	ND	ND	**204.6**	215.9	**14**	ND	**23.3**
Volatile Organic Compounds (VOCs) (mg/kg)																	
Benzene	0.00056	--	--	--	--	--	--	--	--	--	--	--	--	--	0.001 U	0.0009 U	0.001 U
cis-1,2-Dichloroethylene	0.0052	0.00542 U	0.00335 U	0.00227 U	0.00216 U	0.00272 U	0.0034 U	0.00297 U	0.00318 U	0.00245 U	0.00261 U	**0.00996**	0.00399 U	0.00409 U	0.001 U	0.0009 U	0.001 U
Methylene Chloride	0.0015	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0051 UB	0.0055 UB	0.0055 UB
Trichloroethylene	0.00027	0.00452 U	0.00279 U	0.00189 U	0.0018 U	0.00227 U	0.00283 U	0.00247 U	0.00265 U	0.00205 U	0.00217 U	0.00243 U	0.00332 U	0.00341 U	0.001 U	0.0009 U	0.001 U
Vinyl Chloride	0.000056	0.00452 U	0.00279 U	0.00189 U	0.0018 U	0.00227 U	0.00283 U	0.00247 U	0.00265 U	0.00205 U	0.00217 U	0.00243 U	0.00332 U	0.00341 U	0.001 U	0.0009 U	0.001 U
Semivolatile Compounds (SVOCs) (mg/kg)																	
1,4-Dioxane	0.00013	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl) Phthalate	0.0051	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	0.034	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																	
1-Methylnaphthalene	0.0042	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	0.0146 U	0.0134 U	--	--	--
Benzo(a)anthracene	NE	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	**0.0154**	**0.0211**	--	--	--
Benzo(a)pyrene	0.000016	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	0.0146 U	**0.0176**	--	--	--
Benzo(b)fluoranthene	NE	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	0.0146 U	**0.0261**	--	--	--
Benzo(k)fluoranthene	NE	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	0.0146 U	**0.0178**	--	--	--
Chrysene	NE	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	**0.0334**	**0.0449**	--	--	--
Dibenzo(a,h)anthracene	NE	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	0.0146 U	0.0134 U	--	--	--
Indeno(1,2,3-c,d)pyrene	NE	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	0.0146 U	0.0134 U	--	--	--
Naphthalene	0.0021	0.0139 U	0.0129 U	--	--	--	--	--	--	--	--	--	0.0146 U	0.0134 U	0.0051 U	0.0047 U	0.0048 U
Total cPAH TEQ	0.000016	0.01049 U	0.00974 U	--	--	--	--	--	--	--	--	--	**0.01355**	**0.03021**	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)																	
Total PCB Aroclors	0.00000055	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																	
Perfluorohexanesulfonic acid (PFHxS)	0.000026	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.0000099	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.000004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location Identification		MW11		MW11		MW-13		MW-13		MW-13		MW-14		MW-14		MW-14		MW-15		MW-15		MW-15		MW-16		MW-16		MW-16	
Sample Identification		MW11-18-19		MW100		MW-13-11-12		DUP-2-220329		MW-13-28-29		MW-14-10.5-11.5		MW-14-17-18		MW-14-34-35		MW-14-44-45		MW-15-6-7		MW-15-28-29		MW-15-35-36		MW-16-12-13		MW-16-17.5-18.5		MW-16-48-49	
Sample Date		8/16/2014		8/16/2014		3/29/2022		3/29/2022		3/29/2022		3/24/2022		3/24/2022		3/24/2022		3/24/2022		3/23/2022		3/23/2022		3/23/2022		3/22/2022		3/22/2022		3/22/2022	
Start Depth (feet)		18		18		11		11		28		10.5		17		34		44		6		28		35		12		17.5		48	
End Depth (feet)		19		19		12		12		29		11.5		18		35		45		7		29		36		13		18.5		49	
Analyte	**Soil PCUL - Saturated**																												
Metals (mg/kg)																													
Arsenic	7.3	6	U	5	U	**3.69**		**3.93**		**3.24**		**3.2**		--		--		**3.54**		**1.54**		**1.95**		--		**4.13**		**2.59**		**3.11**	
Cadmium	0.77	--		--		0.25	U	0.24	U	0.3	U	**0.05**	**J**	--		--		**0.11**		**0.05**	**J**	**0.08**	**J**	--		**0.08**	**J**	**0.07**	**J**	**0.08**	**J**
Chromium	260	**38**		**37.8**		**19.4**		**25.9**		**40.1**		**25.3**	**J**	--		--		**27.6**	**J**	**1870**		**27.2**		--		**15.8**		**20.3**		**22.2**	
Chromium, Hexavalent	0.00089	0.455	U	0.448	U	0.532	U	0.521	U	0.612	U	0.517	U	--		--		0.537	U	**175**		0.532	U	--		0.664	U	0.534	U	0.539	U
Chromium, Trivalent	48	**38**		**37.8**		**19.4**		**25.9**		**40.1**		**25.3**	**J**	--		--		**27.6**	**J**	**1695**		**27.2**		--		**15.8**		**20.3**		**22.2**	
Copper	36	--		--		**12.7**		**12.1**		**16.8**		**11.2**		--		--		**19.7**		**8.03**		**14**		--		**25**		**9.99**		**14.1**	
Lead	56	**2**		2	U	**2.24**		**2.93**		**2.86**		**1.52**		--		--		**3.16**		**2.06**		**1.5**		--		**3.04**		**2.25**		**2.43**	
Mercury	0.07	--		--		**0.0148**	**J**	**0.0202**	**J**	**0.0237**	**J**	**0.00777**	**J**	--		--		**0.0317**		0.0289	U	0.0214	U	--		**0.0373**		**0.00879**	**J**	**0.0167**	**J**
Nickel	48	--		--		**24.2**		**26.8**		**47**		**34.9**		--		--		**36.8**		**24.8**		**37.1**		--		**13.2**		**24.7**		**31.3**	
Selenium	0.26	6	U	5	U	**1.46**		**1.2**		**1.16**		**0.37**	**J**	--		--		**0.7**		**0.25**	**J**	**0.51**		--		**0.62**	**J**	**0.35**	**J**	**0.32**	**J**
Thallium	0.0044	--		--		**0.0545**		**0.067**		**0.06**		**0.04**	**J**	--		--		**0.07**	**J**	**0.05**	**J**	**0.03**	**J**	--		**0.08**	**J**	**0.04**	**J**	**0.08**	**J**
Zinc	85	--		--		**40.1**		**38.3**		**38.5**		**27.8**		--		--		**49.7**		**28.1**		**27.2**		--		**31.8**	**J**	**28.8**	**J**	**36.4**	**J**
Total Petroleum Hydrocarbons (TPH) (mg/kg)																													
Diesel-range hydrocarbons	2,000	**6.2**		--		27	U	27	U	32	U	27	U	--		--		28	U	29	U	27	U	--		34	U	25	U	27	U
Lube oil-range hydrocarbons	2,000	11	U	--		54	U	54	U	63	U	54	U	--		--		55	U	58	U	53	U	--		68	U	50	U	54	U
Total TPH	2,000	**6.2**		--		ND		ND		ND		ND		--		--		ND		ND		ND		--		ND		ND		ND	
Volatile Organic Compounds (VOCs) (mg/kg)																													
Benzene	0.00056	0.0009	U	0.0011	U	--		--		--		0.0005	U	--		--		0.00055	U	0.00062	U	0.00054	U	--		--		--		--	
cis-1,2-Dichloroethylene	0.0052	0.0009	U	0.0011	U	0.00065	U	0.00085	U	0.0009	U	**0.00855**		**0.0017**		0.00121	U	0.00055	U	**0.00456**		0.00054	U	0.00063	U	0.00071	U	0.00065	U	0.00056	U
Methylene Chloride	0.0015	0.005	UB	0.0041	UB	--		--		--		0.00249	U	--		--		0.00273	U	0.00308	U	0.0027	U	--		--		--		--	
Trichloroethylene	0.00027	0.0009	U	0.0011	U	0.00065	U	0.00085	U	0.0009	U	**0.018**		**0.00398**		0.00121	U	0.00055	U	**0.0691**		0.00054	U	0.00063	U	0.00071	U	0.00065	U	0.00056	U
Vinyl Chloride	0.000056	0.0009	U	0.0011	U	0.00065	U	0.00085	U	0.0009	U	0.0005	U	0.0005	U	0.00121	U	0.00055	U	0.00062	U	0.00054	U	0.00063	U	0.00071	U	0.00065	U	0.00056	U
Semivolatile Compounds (SVOCs) (mg/kg)																													
1,4-Dioxane	0.00013	--		--		--		--		--		0.335	U	--		--		0.335	U	0.335	U	0.335	U	--		--		--		--	
Bis(2-Ethylhexyl) Phthalate	0.0051	--		--		--		--		--		0.0499	U	--		--		0.0499	U	0.0499	U	0.0498	U	--		--		--		--	
Diethyl Phthalate	0.034	--		--		--		--		--		0.0499	U	--		--		**0.345**		0.0499	U	0.0498	U	--		--		--		--	
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																													
1-Methylnaphthalene	0.0042	--		--		--		--		--		0.005	U	--		--		0.005	U	0.00498	U	0.00499	U	--		--		--		--	
Benzo(a)anthracene	NE	--		--		--		--		--		0.005	U	--		--		0.005	U	0.00498	U	0.00499	U	--		--		--		--	
Benzo(a)pyrene	0.000016	--		--		--		--		--		0.005	U	--		--		0.005	U	0.00498	U	0.00499	U	--		--		--		--	
Benzo(b)fluoranthene	NE	--		--		--		--		--		0.005	U	--		--		0.005	U	0.00498	U	0.00499	U	--		--		--		--	
Benzo(k)fluoranthene	NE	--		--		--		--		--		0.005	U	--		--		0.005	U	0.00498	U	0.00499	U	--		--		--		--	
Chrysene	NE	--		--		--		--		--		0.005	U	--		--		**0.00173**	**J**	0.00498	U	0.00499	U	--		--		--		--	
Dibenzo(a,h)anthracene	NE	--		--		--		--		--		0.005	U	--		--		0.005	U	0.00498	U	0.00499	U	--		--		--		--	
Indeno(1,2,3-c,d)pyrene	NE	--		--		--		--		--		0.005	U	--		--		0.005	U	0.00498	U	0.00499	U	--		--		--		--	
Naphthalene	0.0021	0.0044	U	0.0053	U	--		--		--		0.00249	U	--		--		**0.00128**	**J**	**0.00598**		0.00499	U	--		--		--		--	
Total cPAH TEQ	0.000016	--		--		--		--		--		0.00428	U	--		--		**0.00427**		0.00426	U	0.00427	U	--		--		--		--	
Polychlorinated Biphenyls (PCBs) (mg/kg)																													
Total PCB Aroclors	0.00000055	--		--		--		--		--		0.02	U	--		--		0.0199	U	0.0199	U	0.0198	U	--		--		--		--	
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																													
Perfluorohexanesulfonic acid (PFHxS)	0.000026	--		--		0.00082	U	0.00099	U	--		0.0011	U	--		--		--		--		0.001	U	--		--		--		--	
Perfluorooctanesulfonic acid (PFOS)	0.0000099	--		--		0.00082	U	0.00099	U	--		0.0011	U	--		--		--		--		0.001	U	--		--		--		--	
Perfluorooctanoic acid (PFOA)	0.000004	--		--		0.00082	U	0.00099	U	--		0.0011	U	--		--		--		--		0.001	U	--		--		--		--	

Location Identification		MW-17	MW-17	MW-17	MW-18	MW-19	MW-20	MW-21	MW-22	MW-22	MW-22	MW-23	MW-23	SB1	SB3	SB4
Sample Identification		MW-17-7-8	MW-17-25-26	MW-17-48-49	MW-18-5.5-6.5	MW19-9-10.5	MW20-23-24.5	MW21-15-16.5	MW22-10-11	MW22-30-31	MW22-45-45.5	MW23-5-6.5	MW23-15-16.5	SB1-5	SB3-8	SB4-5
Sample Date		3/21/2022	3/21/2022	3/21/2022	3/28/2022	5/26/2023	5/25/2023	5/31/2023	5/30/2023	5/30/2023	5/30/2023	5/24/2023	5/24/2023	8/8/2014	8/8/2014	8/7/2014
Start Depth (feet)		7	25	48	5.5	9	23	15	10	30	45	5	15	5	8	5
End Depth (feet)		8	26	49	6.5	10.5	24.5	16.5	11	31	45.5	6.5	16.5	5	8	5
Analyte	**Soil PCUL - Saturated**															
Metals (mg/kg)																
Arsenic	7.3	**4.09**	**1.71**	**3.16**	**8.36**	**3.85**	**6.64**	**3.27**	**3.18**	**5.71**	**2.49**	**5.48**	**3.03**	5 U	6 U	**7**
Cadmium	0.77	**0.07 J**	**0.07 J**	**0.08 J**	0.33 U	**0.07 J**	**0.52**	**0.11 J**	**0.04 J**	**0.25**	**0.1 J**	**0.28**	**0.04 J**	--	--	--
Chromium	260	**15.5**	**19.9**	**22.5**	**27.2**	**17.2**	**17.2**	**11.2**	**13.7**	**36.1**	**40**	**14.9**	**9.78**	**48.7**	**67.3**	**22.7**
Chromium, Hexavalent	0.00089	0.709 UJ	0.551 UJ	0.523 UJ	0.791 U	0.66 U	0.798 U	0.667 U	0.631 U	0.612 U	0.553 U	0.657 U	0.632 U	0.44 U	0.452 U	0.572 U
Chromium, Trivalent	48	**15.5**	**19.9**	**22.5**	**27.2**	**17.2**	**17.2**	**11.2**	**13.7**	**36.1**	**40**	**14.9**	**9.78**	**48.7**	**67.3**	**22.7**
Copper	36	**32.1**	**12.6**	**12.5**	**19.7**	**25.9**	**33.9**	**22.6**	**13.3**	**33.4**	**14.9**	**27.8**	**18.8**	--	--	--
Lead	56	**3.99**	**1.86**	**2.37**	**11.7**	**3.41**	**4.64**	**2.48**	**2.97**	**3.8**	**2.25**	**45.6**	**2.15**	2 U	2 U	**11**
Mercury	0.07	**0.0529 J**	**0.0207 J**	**0.0318 J**	**0.0639**	**0.0359**	**0.042**	**0.0396**	**0.0175 J**	**0.0553**	**0.015 J**	**0.0382**	**0.0223 J**	--	--	--
Nickel	48	**13.2**	**32**	**27**	**20.3**	**11.2**	**17.7**	**9.49**	**10.8**	**54.2**	**32.2**	**13.6**	**8.34**	--	--	--
Selenium	0.26	**0.97**	**0.42 J**	**0.57**	**1.31**	**0.86**	**1.7**	**0.83**	**0.42 J**	**0.66**	**0.59**	**0.81**	**1.1**	5 U	6 U	6 U
Thallium	0.0044	**0.09 J**	**0.04 J**	**0.06 J**	**0.083**	--	--	--	--	--	--	--	--	--	--	--
Zinc	85	**40.3**	**30.6**	**35.8**	**34.9**	**31.7**	**38.3**	**27.8**	**19.2**	**54**	**32.8**	**63.1**	**23**	--	--	--
Total Petroleum Hydrocarbons (TPH) (mg/kg)																
Diesel-range hydrocarbons	2,000	34 U	28 U	27 U	34 U	34 U	40 U	34 U	32 U	31 U	28 U	**14.7**	32 U	**7.5**	5.8 U	**65**
Lube oil-range hydrocarbons	2,000	68 U	56 U	53 U	68 U	68 U	80 U	68 U	64 U	62 U	56 U	**89.7**	65 U	**62**	**14**	**220**
Total TPH	2,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**104.4**	ND	**69.5**	**14**	**285**
Volatile Organic Compounds (VOCs) (mg/kg)																
Benzene	0.00056	--	--	--	--	--	--	--	--	--	--	--	--	0.001 U	0.0007 U	0.0018 U
cis-1,2-Dichloroethylene	0.0052	0.00091 U	0.00053 U	0.00084 U	0.00092 U	0.0013 U	0.00146 U	0.00122 U	0.00119 U	0.00123 U	0.00079 U	0.00124 U	0.00141 U	0.001 U	0.0007 U	0.0018 U
Methylene Chloride	0.0015	--	--	--	--	0.00648 U	0.0073 U	0.00609 U	0.00595 U	0.00614 U	0.00397 U	0.0062 U	0.00703 U	0.002 U	**0.0024**	**0.0039**
Trichloroethylene	0.00027	0.00091 U	0.00053 U	0.00084 U	0.00092 U	0.0013 U	0.00146 U	0.00122 U	0.00119 U	0.00123 U	0.00079 U	0.00124 U	0.00141 U	0.001 U	0.0007 U	0.0018 U
Vinyl Chloride	0.000056	0.00091 U	0.00053 U	0.00084 U	0.00092 U	0.0013 U	0.00146 U	0.00122 U	0.00119 U	0.00123 U	0.00079 U	0.00124 U	0.00141 U	0.001 U	0.0007 U	0.0018 U
Semivolatile Compounds (SVOCs) (mg/kg)																
1,4-Dioxane	0.00013	--	--	--	--	0.334 U	1.01 U	0.334 U	**0.601**	0.334 U	0.335 U	1 U	1 U	--	--	--
Bis(2-Ethylhexyl) Phthalate	0.0051	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	0.034	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																
1-Methylnaphthalene	0.0042	--	--	--	--	**0.002 J**	**0.00137 J**	**0.00097 J**	**0.0166**	**0.00067 J**	**0.00064 J**	0.015 U	**0.00098 J**	--	--	--
Benzo(a)anthracene	NE	--	--	--	--	**0.00107 J**	0.005 U	**0.00261 J**	**0.00672**	**0.00291 J**	0.005 U	**0.00904**	**0.00159 J**	--	--	--
Benzo(a)pyrene	0.000016	--	--	--	--	0.00498 U	0.005 U	**0.00568**	**0.00721**	**0.00547**	0.005 U	**0.0113**	0.005 U	--	--	--
Benzo(b)fluoranthene	NE	--	--	--	--	0.00498 U	**0.00148 J**	**0.00423 J**	**0.00874**	**0.00433 J**	0.005 U	**0.0209**	**0.00221 J**	--	--	--
Benzo(k)fluoranthene	NE	--	--	--	--	0.00498 U	0.005 U	**0.00253 J**	**0.00434 J**	**0.00259 J**	0.005 U	**0.0114**	**0.00135 J**	--	--	--
Chrysene	NE	--	--	--	--	**0.00221 J**	**0.00144 J**	**0.00513**	**0.0109**	**0.0053**	**0.00123 J**	**0.0173**	**0.00228 J**	--	--	--
Dibenzo(a,h)anthracene	NE	--	--	--	--	0.00498 U	0.005 U	0.005 U	**0.00095 J**	0.005 U	0.005 U	**0.00963**	0.005 U	--	--	--
Indeno(1,2,3-c,d)pyrene	NE	--	--	--	--	0.00498 U	0.005 U	**0.00527**	**0.00596**	**0.00531**	0.005 U	**0.00934**	**0.00119 J**	--	--	--
Naphthalene	0.0021	--	--	--	--	**0.00462 J**	**0.00232 J**	0.005 U	**0.00405 J**	0.005 U	**0.00146 J**	0.015 U	**0.00134 J**	0.0049 U	0.0037 U	0.0088 U
Total cPAH TEQ	0.000016	--	--	--	--	**0.00411 J**	**0.00416 J**	**0.00837 J**	**0.01181 J**	**0.00827 J**	**0.00426 J**	**0.02194**	**0.0039 J**	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)																
Total PCB Aroclors	0.00000055	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																
Perfluorohexanesulfonic acid (PFHxS)	0.000026	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.0000099	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.000004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location Identification		SB4	SB5	SB6	SB7	SB7	SB8	SB10	SB11	SB11	SB12	SB13	SB14	SB15	SB15	SB16	SB16	SB16
Sample Identification		SB4-20	SB5-11	SB6-16	SB7-11	SB7-19	SB8-16	SB10-7	SB11-10	SB11-30	SB12-12	SB13-9	SB14-6	SB15-26	SB15-41	SB16-26	SB16-40	SB16-46
Sample Date		8/7/2014	8/8/2014	8/8/2014	8/8/2014	8/8/2014	8/8/2014	8/8/2014	8/7/2014	8/7/2014	8/7/2014	8/7/2014	8/7/2014	4/15/2015	4/15/2015	4/16/2015	4/16/2015	4/16/2015
Start Depth (feet)		20	11	16	11	19	16	7	10	30	12	9	6	26	41	26	40	46
End Depth (feet)		20	11	16	11	19	16	7	10	30	12	9	6	26	41	26	40	46
Analyte	**Soil PCUL - Saturated**																	
Metals (mg/kg)																		
Arsenic	7.3	**6**	7 U	7 U	7 U	6 U	7 U	5 U	6 U	**6**	7 U	8 U	5 U	**5.6**	**4.9**	**5.6**	**3.1**	**2.9**
Cadmium	0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	**14.9**	**15.7**	**10**	**17.7**	**24.8**	**23.7**	**30.3**	**11.7**	**20.9**	**17**	**16.8**	**27.6**	**17.9**	**43.4**	**18.6**	**26.1**	**24.5**
Chromium, Hexavalent	0.00089	0.482 U	0.552 U	0.571 U	0.554 U	0.462 U	0.544 U	0.445 U	0.472 U	0.484 U	0.516 U	0.534 U	0.425 U	0.519 U	0.502 U	0.525 U	0.476 U	0.441 U
Chromium, Trivalent	48	**14.9**	**15.7**	**10**	**17.7**	**24.8**	**23.7**	**30.3**	**11.7**	**20.9**	**17**	**16.8**	**27.6**	**17.9**	**43.4**	**18.6**	**26.1**	**24.5**
Copper	36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	56	2 U	3 U	3 U	**4**	2 U	**7**	**2**	**6**	2 U	3 U	3 U	**56**	**2.9**	**4**	**2.6**	**2.3**	**2.4**
Mercury	0.07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	0.26	6 U	7 U	7 U	7 U	6 U	7 U	5 U	6 U	6 U	7 U	8 U	5 U	**0.9**	0.6 U	0.6 U	0.5 U	0.5 U
Thallium	0.0044	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (TPH) (mg/kg)																		
Diesel-range hydrocarbons	2,000	6.2 U	**420**	**15**	**38**	5.9 U	**74**	5.6 U	**9.7**	--	6.5 U	6.7 U	**74**	6.7 U	5.8 U	7.3 U	--	--
Lube oil-range hydrocarbons	2,000	12 U	**1900**	**49**	**440**	12 U	**560**	11 U	**30**	--	**19**	**18**	**730**	13 U	12 U	15 U	--	--
Total TPH	2,000	ND	**2320**	**64**	**478**	ND	**634**	ND	**39.7**	--	**19**	**18**	**804**	ND	ND	ND	--	--
Volatile Organic Compounds (VOCs) (mg/kg)																		
Benzene	0.00056	0.0011 U	0.0014 U	0.0014 U	0.0015 U	0.0006 U	0.0015 U	0.0011 U	0.0013 U	--	0.0012 U	0.0014 U	**0.0021**	0.0013 U	0.0012 U	0.0015 U	--	--
cis-1,2-Dichloroethylene	0.0052	0.0011 U	0.0014 U	0.0014 U	0.0015 U	0.0006 U	0.0015 U	0.0011 U	0.0013 U	--	0.0012 U	0.0014 U	0.0021 U	0.0013 U	0.0012 U	0.0015 U	--	--
Methylene Chloride	0.0015	**0.0028**	**0.0048**	**0.0048**	**0.0094**	**0.0024**	0.003 U	**0.0026**	**0.0083**	--	0.0024 U	**0.0035**	0.0041 U	0.0027 U	0.0024 U	**0.0049**	--	--
Trichloroethylene	0.00027	0.0011 U	0.0014 U	0.0014 U	0.0015 U	0.0006 U	0.0015 U	0.0011 U	0.0013 U	--	0.0012 U	0.0014 U	0.0021 U	0.0013 U	0.0012 U	0.0015 U	--	--
Vinyl Chloride	0.000056	0.0011 U	0.0014 U	0.0014 U	0.0015 U	0.0006 U	0.0015 U	0.0011 U	0.0013 U	--	0.0012 U	0.0014 U	0.0021 U	0.0013 U	0.0012 U	0.0015 U	--	--
Semivolatile Compounds (SVOCs) (mg/kg)																		
1,4-Dioxane	0.00013	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl) Phthalate	0.0051	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	0.034	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																		
1-Methylnaphthalene	0.0042	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	0.000016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-c,d)pyrene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	0.0021	0.0055 U	0.0068 U	0.007 U	0.0077 U	0.0032 U	0.0076 U	0.0055 U	0.0064 U	--	0.006 U	0.0072 U	**0.028**	0.0067 U	0.006 U	0.0073 U	--	--
Total cPAH TEQ	0.000016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs) (mg/kg)																		
Total PCB Aroclors	0.00000055	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																		
Perfluorohexanesulfonic acid (PFHxS)	0.000026	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.0000099	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.000004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location Identification		SB17	SB17	SB17	SB18	SB18	SB18	SB19	SB19	SB19	SB-20	SB-20	SB-21	SB-21	SB-22	SB-23	SB-24	SB-25	SB-26
Sample Identification		SB17-26	SB17-40	SB17-43.5	SB18-26	SB18-36.5	SB18-39.5	SB19-35	SB19-45	SB19-50	SB-20-5-6	SB-20-10-11	SB-21-8-9	SB-21-13-14	SB-22-4-5	SB-23-10-11	SB-24-6.5-7.5	SB-25-6-7	SB-26-11-12
Sample Date		4/16/2015	4/17/2015	4/17/2015	4/17/2015	4/17/2015	4/17/2015	4/20/2015	4/20/2015	4/20/2015	3/8/2022	3/8/2022	3/7/2022	3/7/2022	3/10/2022	3/9/2022	3/8/2022	3/8/2022	3/7/2022
Start Depth (feet)		26	40	43.5	26	36.5	39.5	35	45	50	5	10	8	13	4	10	6.5	6	11
End Depth (feet)		26	40	43.5	26	36.5	39.5	35	45	50	6	11	9	14	5	11	7.5	7	12
Analyte	**Soil PCUL - Saturated**																		
Metals (mg/kg)																			
Arsenic	7.3	**4.8**	**2.5**	**2.8**	**6.4**	**2.3**	**2.1**	**8.5**	**6.2**	**3.7**	**3.12**	**2.79**	**4.2**	**4.05**	**2.71**	**2.62**	**3.92**	**2.84**	**2.79**
Cadmium	0.77	--	--	--	--	--	--	--	--	--	**0.1 J**	**0.07 J**	**0.12 J**	**0.08 J**	**0.09 J**	**0.06 J**	**0.13**	**0.05 J**	**0.08 J**
Chromium	260	**18.4**	**21.2**	**25.3**	**19.5**	**18.1**	**21.9**	**20.4**	**46**	**43.8**	**24.7**	**24.4**	**25**	**19.6 J**	**35**	**21.1**	**20.7**	**25.9**	**25.6**
Chromium, Hexavalent	0.00089	0.499 U	0.426 U	**1.78**	0.51 U	0.459 U	0.426 U	0.5 U	0.469 U	0.508 U	0.538 UJ	0.545 UJ	0.593 UJ	0.546 UJ	0.58 U	0.562 UJ	0.536 UJ	0.545 UJ	0.551 U
Chromium, Trivalent	48	**18.4**	**21.2**	**25.3**	**19.5**	**18.1**	**21.9**	**20.4**	**46**	**43.8**	**24.7**	**24.4**	**25**	**19.6 J**	**35**	**21.1**	**20.7**	**25.9**	**25.6**
Copper	36	--	--	--	--	--	--	--	--	--	**13.4**	**11**	**17.9**	**16.3**	**13.7**	**10.9**	**13.5**	**12.8**	**12.2**
Lead	56	**2.1**	**1.7**	**1.9**	**2.9**	**1.8**	**1.7**	**2.5**	**4.6**	**3.9**	**2.62**	**2.05**	**3.59**	**3.05**	**2.76**	**3.23**	**2.54**	**2.24**	**2.25**
Mercury	0.07	--	--	--	--	--	--	--	--	--	**0.0218 J**	**0.0185 J**	**0.0302**	**0.0108 J**	**0.0277**	**0.018 J**	**0.0136 J**	**0.0124 J**	**0.0118 J**
Nickel	48	--	--	--	--	--	--	--	--	--	**30.4**	**29.9**	**30.1**	**24.4**	**37.8**	**23.8**	**32.2**	**31.7**	**29.8**
Selenium	0.26	0.6 U	0.5 U	0.6 U	0.6 U	0.5 U	0.5 U	0.6 U	1 U	0.6 U	**0.74**	**0.73**	**0.93**	**0.96**	**0.52 J**	**0.26 J**	**0.82**	**0.62**	**0.64**
Thallium	0.0044	--	--	--	--	--	--	--	--	--	**0.1 J**	**0.06 J**	**0.1 J**	**0.09 J**	**0.07 J**	**0.05 J**	**0.11 J**	**0.05 J**	**0.09 J**
Zinc	85	--	--	--	--	--	--	--	--	--	**37.2**	**30.6**	**48.3**	**41.2**	**41.6**	**29**	**39.3**	**33.5**	**37.2**
Total Petroleum Hydrocarbons (TPH) (mg/kg)																			
Diesel-range hydrocarbons	2,000	6.5 U	6.2 U	--	6.7 U	5.5 U	--	6.4 U	6 U	6.3 U	27 U	27 U	29 U	28 U	30 U	29 U	28 U	27 U	28 U
Lube oil-range hydrocarbons	2,000	13 U	12 U	--	13 U	11 U	--	13 U	12 U	13 U	55 U	54 U	57 U	56 U	59 U	59 U	55 U	55 U	57 U
Total TPH	2,000	ND	ND	--	ND	ND	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (VOCs) (mg/kg)																			
Benzene	0.00056	0.0015 U	0.001 U	0.0009 U	0.0014 U	0.0008 U	--	0.0015 U	0.001 U	0.0011 U	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethylene	0.0052	0.0015 U	0.001 U	0.0009 U	0.0014 U	0.0008 U	--	0.0015 U	0.001 U	0.0011 U	0.0009 U	0.0009 U	0.0007 U	0.0007 U	0.0006 U	0.0008 U	**0.0547**	**0.00115**	0.00061 U
Methylene Chloride	0.0015	**0.003**	**0.0028**	**0.0024**	**0.0031**	**0.0019**	--	0.0031 U	**0.0024**	**0.0026**	--	--	--	--	--	--	--	--	--
Trichloroethylene	0.00027	0.0015 U	0.001 U	0.0009 U	0.0014 U	0.0008 U	--	0.0015 U	0.001 U	0.0011 U	0.0009 U	0.0009 U	0.0007 U	0.0007 U	0.0006 U	0.0008 U	**0.0284**	**0.00311**	0.00061 U
Vinyl Chloride	0.000056	0.0015 U	0.001 U	0.0009 U	0.0014 U	0.0008 U	--	0.0015 U	0.001 U	0.0011 U	0.0009 U	0.0009 U	0.0007 U	0.0007 U	0.0006 U	0.0008 U	0.00078 U	0.00064 U	0.00061 U
Semivolatile Compounds (SVOCs) (mg/kg)																			
1,4-Dioxane	0.00013	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-Ethylhexyl) Phthalate	0.0051	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	0.034	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																			
1-Methylnaphthalene	0.0042	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.0046 J**	--	--	0.00499 U
Benzo(a)anthracene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.0037 J**	--	--	0.00499 U
Benzo(a)pyrene	0.000016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.003 J**	--	--	0.00499 U
Benzo(b)fluoranthene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.0043 J**	--	--	0.00499 U
Benzo(k)fluoranthene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.0019 J**	--	--	0.00499 U
Chrysene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.0059**	--	--	**0.00174 J**
Dibenzo(a,h)anthracene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.005 U	--	--	0.00499 U
Indeno(1,2,3-c,d)pyrene	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.0032 J**	--	--	0.00499 U
Naphthalene	0.0021	0.0075 U	0.0051 U	0.0047 U	0.0069 U	0.0041 U	--	0.0077 U	0.0048 U	0.0054 U	--	--	--	--	--	**0.0084**	--	--	0.00499 U
Total cPAH TEQ	0.000016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.0054**	--	--	**0.00426**
Polychlorinated Biphenyls (PCBs) (mg/kg)																			
Total PCB Aroclors	0.00000055	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																			
Perfluorohexanesulfonic acid (PFHxS)	0.000026	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.0000099	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.000004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location Identification		SB-27		SB-28		SB-30		SB-30		SB-31		SB-32		SB-32		SB-33		SB-34		SB-35		SB-36		SB-37	
Sample Identification		SB-27-10-11		SB-28-8.5-9		SB-30-7.5-8.5		SB-30-17-18		SB-31-8-9		SB-32-4-5		SB-32-13-14		SB-33-4-5		SB34-13-14		SB35-8-9		SB36-10-11.5		SB37-12.5-13.5	
Sample Date		3/7/2022		3/7/2022		3/9/2022		3/9/2022		3/9/2022		3/9/2022		3/9/2022		3/9/2022		6/2/2023		6/2/2023		6/2/2023		6/2/2023	
Start Depth (feet)		10		8.5		7.5		17		8		4		13		4		13		8		10		12.5	
End Depth (feet)		11		9		8.5		18		9		5		14		5		14		9		11.5		13.5	
Analyte	**Soil PCUL - Saturated**																								
Metals (mg/kg)																									
Arsenic	7.3	**3.62**		**4.62**		**5.16**		**3.02**		**6.61**		**14.7**		**3.73**		**2.89**		**3.62**		**2.35**		**2.27**		**5.48**	
Cadmium	0.77	**0.1**	J	0.14	U	**0.2**		**0.06**	J	**0.14**		**0.41**		**0.04**	J	**0.1**	J	**0.1**	J	**0.07**	J	**0.07**	J	**0.07**	J
Chromium	260	**26.2**		**14.6**		**27.5**		**21.7**		**13.8**		**20.4**		**13**		**598**		**23.2**		**20.8**		**27.2**		**20.2**	
Chromium, Hexavalent	0.00089	0.552	U	0.68	U	3.06	U	0.538	U	3.57	U	0.678	U	0.701	U	**28.4**		0.546	U	0.531	U	0.537	U	0.648	U
Chromium, Trivalent	48	**26.2**		**14.6**		**27.5**		**21.7**		**13.8**		**20.4**		**13**		**598**		**23.2**		**20.8**		**27.2**		**20.2**	
Copper	36	**31.6**		**23.1**		**14.9**		**10.7**		**28.5**		**32.6**		**23.6**		**15.6**		**15**		**10.1**		**11**		**18.5**	
Lead	56	**5.06**		**3.7**		**18**		**2.08**		**14.5**		**16.6**		**2.72**		**2.29**		**2.48**		**1.79**		**1.75**		**2.72**	
Mercury	0.07	**0.0212**		**0.0398**		**0.0998**		**0.0228**	J	**0.0611**		**0.108**		**0.0347**		**0.0228**		**0.00685**	J	**0.0101**	J	**0.00619**	J	**0.00819**	J
Nickel	48	**26.4**		**15.6**		**31.8**		**28.9**		**15.1**		**17.2**		**8.46**		**30.5**		**32.6**		**26.7**		**27.7**		**14.8**	
Selenium	0.26	**0.76**		**1.17**		**0.42**	J	**0.46**	J	**0.75**		**0.85**		**0.5**	J	**0.68**		**1.25**		**0.77**		**0.69**		**0.85**	
Thallium	0.0044	**0.08**	J	**0.08**	J	**0.06**	J	**0.05**	J	**0.08**	J	**0.07**	J	**0.05**	J	**0.06**	J	--		--		--		--	
Zinc	85	**36.5**		**40.5**		**44.8**		**31.8**		**42.8**		**52.3**		**27.8**		**36.7**		**39.1**		**30.1**		**31.7**		**28.2**	
Total Petroleum Hydrocarbons (TPH) (mg/kg)																									
Diesel-range hydrocarbons	2,000	28	U	38	U	**59.8**		5.49	U	6.64	U	**65.2**		**7.81**		27	U	28	U	27	U	28	U	34	U
Lube oil-range hydrocarbons	2,000	56	U	77	U	**177**		11	U	**43.2**		**200**		**34**		54	U	55	U	55	U	57	U	67	U
Total TPH	2,000	ND		ND		**236.8**		ND		**43.2**		**265.2**		**41.81**		ND		ND		ND		ND		ND	
Volatile Organic Compounds (VOCs) (mg/kg)																									
Benzene	0.00056	--		--		--		--		--		--		--		**0.0003**	J	--		--		--		--	
cis-1,2-Dichloroethylene	0.0052	0.00062	U	0.00101	U	0.0013	U	0.00061	U	0.00089	U	**0.00032**	J	0.0009	U	**0.0024**		0.00096	U	0.00097	U	0.00111	U	0.00145	U
Methylene Chloride	0.0015	--		--		--		--		--		--		--		0.0033	U	0.00479	U	0.00485	U	0.00553	U	0.00724	U
Trichloroethylene	0.00027	0.00062	U	0.00101	U	0.0013	U	0.00061	U	0.00089	U	0.00085	U	0.0009	U	**0.0993**		0.00096	U	0.00097	U	0.00111	U	0.00145	U
Vinyl Chloride	0.000056	0.00062	U	0.00101	U	0.0013	U	0.00061	U	0.00089	U	0.00085	U	0.0009	U	0.00066	U	0.00096	U	0.00097	U	0.00111	U	0.00145	U
Semivolatile Compounds (SVOCs) (mg/kg)																									
1,4-Dioxane	0.00013	--		--		--		--		--		--		--		--		0.335	U	0.335	U	0.335	U	1	U
Bis(2-Ethylhexyl) Phthalate	0.0051	--		--		--		--		--		--		--		**0.0122**	J	--		--		--		--	
Diethyl Phthalate	0.034	--		--		--		--		--		--		--		0.0499	U	--		--		--		--	
Polycyclic Aromatic Hydrocarbons (PAHs) (mg/kg)																									
1-Methylnaphthalene	0.0042	--		--		--		--		--		--		--		**0.00068**	J	0.005	U	0.00497	U	0.00497	U	0.005	U
Benzo(a)anthracene	NE	--		--		--		--		--		--		--		0.00499	U	0.005	U	0.00497	U	0.00497	U	0.005	U
Benzo(a)pyrene	0.000016	--		--		--		--		--		--		--		0.00499	U	0.005	U	0.00497	U	0.00497	U	0.005	U
Benzo(b)fluoranthene	NE	--		--		--		--		--		--		--		0.00499	U	0.005	U	0.00497	U	0.00497	U	0.005	U
Benzo(k)fluoranthene	NE	--		--		--		--		--		--		--		0.00499	U	0.005	U	0.00497	U	0.00497	U	0.005	U
Chrysene	NE	--		--		--		--		--		--		--		0.00499	U	0.005	U	0.00497	U	0.00497	U	**0.0021**	J
Dibenzo(a,h)anthracene	NE	--		--		--		--		--		--		--		0.00499	U	0.005	U	0.00497	U	0.00497	U	0.005	U
Indeno(1,2,3-c,d)pyrene	NE	--		--		--		--		--		--		--		0.00499	U	0.005	U	0.00497	U	0.00497	U	0.005	U
Naphthalene	0.0021	--		--		--		--		--		--		--		0.00499	U	0.005	U	0.00497	U	**0.00318**	J	0.005	U
Total cPAH TEQ	0.000016	--		--		--		--		--		--		--		0.00427	U	0.004275	U	0.00425	U	0.00425	U	**0.00427**	J
Polychlorinated Biphenyls (PCBs) (mg/kg)																									
Total PCB Aroclors	0.00000055	--		--		--		--		--		--		--		0.0198	U	--		--		--		--	
Per- and Polyfluoroalkyl Substances (PFAS) (mg/kg)																									
Perfluorohexanesulfonic acid (PFHxS)	0.000026	--		--		--		--		--		--		--		0.001	U	--		--		--		--	
Perfluorooctanesulfonic acid (PFOS)	0.0000099	--		--		--		--		--		--		--		0.001	U	--		--		--		--	
Perfluorooctanoic acid (PFOA)	0.000004	--		--		--		--		--		--		--		0.001	U	--		--		--		--	

Notes:

B = Blank detection
J = Estimated result
mg/kg = Milligram per kilogram
ND = Not detected (calculated)
PAHs = Polycyclic Aromatic Hydrocarbons
PCBs = Polychlorinated Biphenyls
PCUL = Preliminary Cleanup Level provided to GeoEngineers by
PCULs for the Remedial Investigation (PFAS PCULs are from Ecology Publication 22-09-058)
Washington State Department of Ecology (Ecology) June 3, 2022 as the
PFAS = Per- and Polyfluoroalkyl Substances
SVOCs = Semivolatile Volatile Organic Compounds
Total cPAH TEQ = Total toxic equivalency of cPAHs per WAC 173-340-708(8)(e)
Gray shading = Detected exceedance of PCUL
Blue shading = Not detected at a reporting limit above the PCUL

Table 7-3

Summary of Groundwater Exceedances

Precision Engineering, Inc.

Seattle, Washington

	Location Identification	MW1	MW1	MW1	MW1	MW1	MW1	MW1	MW2	MW2	MW2	MW2
	Sample Identification	MW1-W-35.0-20190723	MW1-W-32.0	MW1-W-35.0-20200129	MW1-W-35.0-20200428	MW-1-220427	MW1-230713	MW1-20231205	MW2-W-19.0	MW2-W-15.0-20191216	MW2-W-15.0-20200129	MW2-W-15.0-20200427
	Sample Date	7/23/2019	12/18/2019	1/29/2020	4/28/2020	4/27/2022	7/13/2023	12/5/2023	7/24/2019	12/16/2019	1/29/2020	4/27/2020
	WBZ	Deep	Deep	Deep	Deep	Deep	Deep	Deep	Shallow	Shallow	Shallow	Shallow
Analyte	**Water PCUL**											
Total Metals (µg/L)												
Arsenic	8.0	**33.3**	**29.7**	**30.8**	**27.7**	**33.7**	**30.6**	**30.6**	**7.54**	**9.05**	**6.46**	**5.9**
Cadmium	1.2	--	--	--	--	0.1 U	0.1 U	0.2 U	--	--	--	--
Chromium	100	1 U	1 U	1 U	1 U	0.5 U	1 U	1 U	**9.19**	**8.42**	**7.82**	**8.18**
Copper	3.1	5 U	5 U	5 U	5 U	0.5 U	0.5 U	1 U	10 U	5 U	5 U	5 U
Lead	5.6	--	--	--	--	0.1 U	0.1 U	0.2 U	--	--	--	--
Mercury	0.025	--	--	--	--	0.00041 U	**0.00034 J**	**0.00175**	--	--	--	--
Nickel	8.2	--	--	--	--	**0.38 J**	**0.172 J**	**0.166 J**	--	--	--	--
Selenium	50	1 U	1 U	1 U	1 U	0.5 U	1 U	1 U	**9.02**	**10.8**	5 U	**3.53**
Thallium	0.062	--	--	--	--	0.2 U	0.4 U	0.4 U	--	--	--	--
Zinc	81	--	--	--	--	6 U	6 U	12 U	--	--	--	--
Dissolved Metals (µg/L)												
Arsenic	8.0	--	--	--	--	**31.4**	**30.7**	**30.2**	--	--	--	--
Cadmium	1.2	--	--	--	--	0.1 U	0.1 U	0.1 U	--	--	--	--
Chromium	100	--	--	--	--	0.5 U	1 U	2.5 U	--	--	--	--
Chromium, Hexavalent	0.046	45 U	45 U	45 U	45 U	13 U	13 U	13 UJ	45 U	135 U	90 U	45 U
Chromium, Trivalent	27	1 U	1 U	1 U	1 U	0.5 U	1 U	1 U	--	--	--	--
Copper	3.1	--	--	--	--	0.5 U	0.5 U	**0.468 J**	--	--	--	--
Lead	5.6	--	--	--	--	0.1 U	0.1 U	0.1 U	--	--	--	--
Mercury	0.025	--	--	--	--	0.00041 U	**0.00015 J**	0.00041 U	--	--	--	--
Nickel	8.2	--	--	--	--	**0.15 J**	**0.135 J**	**0.25 J**	--	--	--	--
Selenium	50	--	--	--	--	--	0.5 U	1 U	--	--	--	--
Thallium	0.062	--	--	--	--	--	0.2 U	0.2 U	--	--	--	--
Zinc	81	--	--	--	--	--	6 U	12 U	--	--	--	--
Total Petroleum Hydrocarbons (µg/L)												
Diesel-range hydrocarbons	500	50 U	50 U	50 U	50 U	100 U	500 U	500 U	**250**	**450**	**240**	**470**
Lube oil-range hydrocarbons	500	250 U	250 U	250 U	250 U	200 U	1000 U	1000 U	250 U	**790**	**460**	**660**
Total TPH	500	ND	ND	ND	ND	ND	ND	ND	**250**	**1240**	**700**	**1130**
Volatile Organic Compounds (VOCs) (µg/L)												
Benzene	1.1	0.35 U	0.35 U	0.35 U	0.35 U	0.2 U			3.5 U	3.5 U	3.5 U	3.5 U
cis-1,2-Dichloroethylene	16	1 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	10 U	10 U	10 U	10 U
Methylene Chloride	5.0	5 U	5 U	5 U	5 U	1 U	1 U	1 U	50 U	50 U	50 U	50 U
Trichloroethylene	0.70	1 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	10 U	10 U	10 U	10 U
Vinyl Chloride	0.18	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U
Semivolatile Compounds (SVOCs) (µg/L)												
1,4-Dioxane	0.44	--	--	--	--	0.2 U	0.2 U	0.2 UJ	--	--	--	--
Bis(2-Ethylhexyl) Phthalate	0.046	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	93	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)												
1-Methylnaphthalene	1.5	--	--	--	--	--	0.01 U	0.01 U	--	--	--	--
Benzo(a)anthracene	0.00016	0.04 U	0.04 U	0.04 U	0.04 U	--	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U
Benzo(a)pyrene	0.000016	0.04 U	0.04 U	0.04 U	0.04 U	--	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U
Benzo(b)fluoranthene	0.00016	0.04 U	0.04 U	0.04 U	0.04 U	--	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U
Benzo(k)fluoranthene	0.0016	0.04 U	0.04 U	0.04 U	0.04 U	--	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U
Chrysene	0.016	0.04 U	0.04 U	0.04 U	0.04 U	--	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U
Dibenzo(a,h)anthracene	0.000016	0.04 U	0.04 U	0.04 U	0.04 U	--	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U
Indeno(1,2,3-c,d)pyrene	0.00016	0.04 U	0.04 U	0.04 U	0.04 U	--	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U
Naphthalene	1.4	0.4 U	0.4 U	0.4 U	0.4 U	--	0.01 U	0.01 U	0.4 U	0.4 U	0.4 U	0.4 U
Total cPAH TEQ	0.0097	0.0302 U	0.0302 U	0.0302 U	0.0302 U		0.00855 U	0.00855 U	0.0302 U	0.0302 U	0.0302 U	0.0302 U
Polychlorinated Biphenyls (PCBs) (µg/L)												
Total PCB Aroclors	0.000007	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)												
Perfluorohexanesulfonic acid (PFHxS)	0.065	--	--	--	--	0.004 U	--	--	--	--	--	--
Perfluorooctanesulfonic acid (PFOS)	0.015	--	--	--	--	**0.00092 J**	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	0.01					**0.00065 J**						

Location Identification		MW2	MW2	MW2	MW3	MW3	MW3	MW3	MW3	MW3	MW3	MW4	MW4
Sample Identification		MW-2-220422	MW2-230714	MW2-20231206	MW3-W-15.0-20190722	MW3-W-15.0-20191216	MW3-W-15.0-20200129	MW3-W-15.0-20200427	MW3-220420	MW3-230713	MW3-20231205	MW4-W-20.0-20190723	MW4-W-20.0-20191217
Sample Date		4/22/2022	7/14/2023	12/6/2023	7/22/2019	12/16/2019	1/29/2020	4/27/2020	4/20/2022	7/13/2023	12/5/2023	7/23/2019	12/17/2019
WBZ		Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Analyte	**Water PCUL**												
Total Metals (µg/L)													
Arsenic	8.0	**5.45**	**6.6**	**8.14**	**13.6**	**8.81**	**10.7**	**7.33**	**11.3**	**10.9**	**11.3**	**12.6**	**13.5**
Cadmium	1.2	0.2 U	1 U	**0.038 J**	–	–	–	–	0.1 U	0.5 U	**0.064 J**	–	–
Chromium	100	**9.51**	**11.3**	5 U	10 U	1 U	**1.03**	1 U	**1.09**	**1.14**	**0.862 J**	1 U	1 U
Copper	3.1	**0.674 J**	5 U	**0.553**	50 U	5 U	5 U	5 U	0.5 U	0.5 U	1 U	5 U	5 U
Lead	5.6	**0.158 J**	1 U	**0.103**	–	–	–	–	0.1 U	0.1 U	0.2 U	–	–
Mercury	0.025	**0.00371**	**0.00174**	**0.00368**	–	–	–	–	0.00042 U	0.00042 U	**0.00024 J**	–	–
Nickel	8.2	**2.82**	**1.93 J**	**1.75**	–	–	–	–	**3.55**	**2.53**	**3.38**	–	–
Selenium	50	**1.06**	5 U	**1.46**	1 U	2 U	1 U	1 U	0.5 U	1 U	1 U	1 U	2 U
Thallium	0.062	0.4 U	2 U	0.4 U	–	–	–	–	0.2 U	0.4 U	0.4 U	–	–
Zinc	81	12 U	60 U	6 U	–	–	–	–	6 U	6 U	**57.4**	–	–
Dissolved Metals (µg/L)													
Arsenic	8.0	**4.72**	**7.15**	**3.61**	–	–	–	–	**10.7**	**11.7**	**10.3**	–	–
Cadmium	1.2	0.2 U	1 U	0.2 U	–	–	–	–	0.1 U	0.1 U	0.2 U	–	–
Chromium	100	**8.92**	**11.2**	**8.18**					**1.24**	**1.81 J**	2.5 U	–	–
Chromium, Hexavalent	0.046	13 U	13 U	13 U	45 U	90 U	45 U	45 U	13 UJ	13 U	13 U	45 U	45 U
Chromium, Trivalent	27	–	–	5 U	10 U	1 U		1 U	–	–	–	1 U	1 U
Copper	3.1	**0.556 J**	5 U	1 U	–	–	–	–	0.5 U	0.5 U	**0.738 J**	–	–
Lead	5.6	0.2 U	1 U	0.1 U	–	–	–	–	0.1 U	0.1 U	0.5 U	–	–
Mercury	0.025	**0.00051**	**0.00071**		–	–	–	–	0.00041 U	0.00042 U	0.00105 U	–	–
Nickel	8.2	**2.61**	**2.25 J**	**1.64**	–	–	–	–	**2.31**	**2.9**	**2.86**	–	–
Selenium	50	–	**4.71 J**	**1.55**	–	–	–	–	–	0.5 U	1 U	–	–
Thallium	0.062	–	2 U	0.4 U	–	–	–	–	–	0.2 U	1 U	–	–
Zinc	81	–	60 U	12 U	–	–	–	–	–	6 U	12 U	–	–
Total Petroleum Hydrocarbons (µg/L)													
Diesel-range hydrocarbons	500	**241**	500 U	**119**	**82**	**65**	50 U	**92**	100 U	500 U	500 U	50 U	50 U
Lube oil-range hydrocarbons	500	200 U	1000 U	200 U	250 U	250 U	250 U	250 U	200 U	1000 U	1000 U	250 U	250 U
Total TPH	500	**241**	ND	**119**	**82**	**65**	ND	**92**	ND	ND	ND	ND	ND
Volatile Organic Compounds (VOCs) (µg/L)													
Benzene	1.1	0.4 U	–	–	0.35 U	0.35 U	0.35 U	0.35 U	0.2 U	–	–	0.35 U	0.35 U
cis-1,2-Dichloroethylene	16	0.4 U	1 U	2 U	1 U	1 U	1 U	1 U	0.2 U	**0.08 J**	0.2 U	1 U	1 U
Methylene Chloride	5.0	2 U	5 U	**5.8 J**	5 U	5 U	5 U	5 U	1 U	1 U	1 U	5 U	5 U
Trichloroethylene	0.70	0.4 U	1 U	2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U
Vinyl Chloride	0.18	0.4 U	1 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Semivolatile Compounds (SVOCs) (µg/L)													
1,4-Dioxane	0.44	**0.9**	**0.3**	**0.3 J**	–	–	–	–	**0.3**	**0.2**	**0.3**	–	–
Bis(2-Ethylhexyl) Phthalate	0.046	0.2 U	–	–	–	–	–	–	–	–	–	–	–
Diethyl Phthalate	93	**0.3**	–	–	–	–	–	–	–	–	–	–	–
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)													
1-Methylnaphthalene	1.5	**0.014**	0.01 U	0.01 U	–	–	–	–	**0.002 J**	0.01 U	0.01 U	–	–
Benzo(a)anthracene	0.00016	**0.0009 J**	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Benzo(a)pyrene	0.000016	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Benzo(b)fluoranthene	0.00016	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Benzo(k)fluoranthene	0.0016	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Chrysene	0.016	**0.002 J**	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Dibenzo(a,h)anthracene	0.000016	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Indeno(1,2,3-c,d)pyrene	0.00016	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Naphthalene	1.4	**0.042**	0.01 U	**0.019**	0.4 U	0.4 U	0.4 U	0.4 U	**0.008 J**	0.01 U	0.01 U	0.4 U	0.4 U
Total cPAH TEQ	0.0097	**0.00761 J**	0.00855 U	0.00855 U	0.0302 U	0.0302 U	0.0302 U	0.0302 U	0.00805 U	0.00855 U	0.00855 U	0.0302 U	0.0302 U
Polychlorinated Biphenyls (PCBs) (µg/L)													
Total PCB Aroclors	0.000007	0.1 U	–	–	–	–	–	–	–	–	–	–	–
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)													
Perfluorohexanesulfonic acid (PFHxS)	0.065	–	–	0.0049 U	–	–	–	–	–	**0.0022 J**	**0.0018 J**	–	–
Perfluorooctanesulfonic acid (PFOS)	0.015	–	–	0.0049 U	–	–	–	–	–	**0.008**	**0.0091**	–	–
Perfluorooctanoic acid (PFOA)	0.01			**0.0045**						**0.015**	**0.016**		

Location Identification		MW4	MW4	MW4	MW4	MW4	MW5	MW5	MW5	MW5	MW5	MW5
Sample Identification		MW4-W-50.0	MW4-W-20.0-20200428	MW-4-220422	MW4-230721	MW4-20231206	MW5-W-15.0-20190723	MW5-W-15.0-20191217	MW5-W-15.0-20200130	MW5-W-15.0-20200428	MW-5-220422	MW5-230720
Sample Date		1/30/2020	4/28/2020	4/22/2022	7/21/2023	12/6/2023	7/23/2019	12/17/2019	1/30/2020	4/28/2020	4/22/2022	7/20/2023
WBZ		Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Analyte	**Water PCUL**											
Total Metals (µg/L)												
Arsenic	8.0	**12**	**10.6**	**12.2**	**11.9**	**11.7**	10 U	**6.19**	10 U	**5.37**	**3.48**	**4.16**
Cadmium	1.2	–	–	0.1 U	0.1 U	**0.037 J**	–	–	–	–	100 U	0.1 U
Chromium	100	1 U	1 U	0.5 U	2.5 U	1 U	**132000**	**38900**	**42200**	**44600**	**133000**	**115000**
Copper	3.1	5 U	5 U	**0.707**	**0.295 J**	**0.34 J**	1000 U	5 U	50 U	25 U	**1.4**	**1.1**
Lead	5.6	–	–	0.1 U	0.1 U	**0.072 J**	–	–	–	–	0.1 U	10 U
Mercury	0.025	–	–	**0.00038 J**	0.00041 U	**0.00032 J**	–	–	–	–	**0.0283**	**0.0182**
Nickel	8.2	–	–	**1.26**	**0.647**	**0.497 J**	–	–	–	–	**12.5 J**	**7.46**
Selenium	50	1 U	1 U	0.5 U	**0.187 J**	0.5 U	200 U	1 U	10 U	5 U	0.5 U	0.5 U
Thallium	0.062	–	–	0.2 U	0.2 U	0.4 U	–	–	–	–	200 U	20 U
Zinc	81	–	–	6 U	6 U	6 U	–	–	–	–	6 U	6 U
Dissolved Metals (µg/L)												
Arsenic	8.0	–	–	**11.8**	**11.2**	**11.7**	–	–	–	–	200 U	**4.9**
Cadmium	1.2	–	–	0.1 U	0.1 U	0.2 U	–	–	–	–	100 U	**0.061 J**
Chromium	100	–	–	0.5 U	0.5 U	1 UJ	–	–	–	–	**134000**	**115000 J**
Chromium, Hexavalent	0.046	45 U	45 U	13 U	13 U	13 U	**117000 J**	**31600**	**36200**	**38500**	**136000**	**163000 J**
Chromium, Trivalent	27	1 U	1 U	0.5 U	2.5 U	1 U	–	–	–	–	ND	ND
Copper	3.1	–	–	**0.503**	**0.896**	**1.3**	–	–	–	–	500 U	**0.863**
Lead	5.6	–	–	0.1 U	0.1 U	0.2 U	–	–	–	–	100 U	10 U
Mercury	0.025	–	–	0.00041 U	0.00041 U	**0.00018 J**	–	–	–	–	**0.0252**	**0.0127**
Nickel	8.2	–	–	**0.246 J**	**0.227 J**	**0.376 J**	–	–	–	–	500 U	**4.84**
Selenium	50	–	–	–	0.5 U	1 U	–	–	–	–	–	**0.642**
Thallium	0.062	–	–	–	0.2 U	0.4 U	–	–	–	–	–	20 U
Zinc	81	–	–	–	6 U	12 U	–	–	–	–	–	6 U
Total Petroleum Hydrocarbons (µg/L)												
Diesel-range hydrocarbons	500	50 U	50 U	100 U	500 U	500 U	**93**	**58**	**94**	**130**	**101**	500 U
Lube oil-range hydrocarbons	500	200 U	250 U	200 U	1000 U	1000 U	250 U	250 U	250 U	250 U	200 U	1000 U
Total TPH	500	ND	ND	ND	ND	ND	**93**	**58**	**94**	**130**	**101**	ND
Volatile Organic Compounds (VOCs) (µg/L)												
Benzene	1.1	0.35 U	0.35 U	0.2 U	–	–	3.5 U	1.7 U	0.35 U	0.35 U	0.2 U	–
cis-1,2-Dichloroethylene	16	1 U	1 U	0.2 U	0.2 U	0.2 U	10 U	5 U	1 U	1 U	**0.46**	**0.61**
Methylene Chloride	5.0	5 U	5 U	1 U	1 U	1 U	50 U	25 U	5 U	5 U	1 U	1 U
Trichloroethylene	0.70	1 U	1 U	0.2 U	0.2 U	0.2 U	10 U	5 U	**3.3**	**3.3**	**6.85**	**9.26**
Vinyl Chloride	0.18	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2 U	1 U	0.2 U	0.2 U	0.2 U	0.2 U
Semivolatile Compounds (SVOCs) (µg/L)												
1,4-Dioxane	0.44	–	–	**0.1 J**	0.2 U	0.2 UJ	–	–	–	–	**1.3**	**1.1**
Bis(2-Ethylhexyl) Phthalate	0.046	–	–	–	–	–	–	–	–	–	0.2 U	–
Diethyl Phthalate	93	–	–	–	–	–	–	–	–	–	**0.3**	–
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)												
1-Methylnaphthalene	1.5	–	–	**0.002 J**	0.01 U	0.01 U	–	–	–	–	**0.012**	**0.011**
Benzo(a)anthracene	0.00016	0.04 U	0.04 U	**0.001 J**	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.002 J**	0.01 U
Benzo(a)pyrene	0.000016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U
Benzo(b)fluoranthene	0.00016	0.04 U	0.04 U	**0.002 J**	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.003 J**	0.01 U
Benzo(k)fluoranthene	0.0016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U
Chrysene	0.016	0.04 U	0.04 U	**0.002 J**	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.001 J**	0.01 U
Dibenzo(a,h)anthracene	0.000016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.002 J**	0.01 U
Indeno(1,2,3-c,d)pyrene	0.00016	0.04 U	0.04 U	**0.002 J**	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.002 J**	0.01 U
Naphthalene	1.4	0.4 U	0.4 U	0.01 U	0.01 U	0.01 U	0.4 U	0.4 U	0.4 U	0.4 U	**0.115**	**0.104**
Total cPAH TEQ	0.0097	0.0302 U	0.0302 U	**0.00692 J**	0.00855 U	0.00855 U	0.0302 U	0.0302 U	0.0302 U	0.0302 U	**0.00701 J**	0.00855 U
Polychlorinated Biphenyls (PCBs) (µg/L)												
Total PCB Aroclors	0.000007	–	–	–	–	–	–	–	–	–	0.1 U	–
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)												
Perfluorohexanesulfonic acid (PFHxS)	0.065	–	–	–	–	–	–	–	–	–	**0.0037 J**	**0.004 J**
Perfluorooctanesulfonic acid (PFOS)	0.015	–	–	–	–	–	–	–	–	–	**0.045**	**0.013**
Perfluorooctanoic acid (PFOA)	0.01										**0.021**	**0.02**

Location Identification		MW5	MW6	MW6	MW6	MW6	MW6	MW6	MW6	MW7	MW7	MW7	MW7	MW7	MW7	MW7
Sample Identification		MW5-20231205	MW-6-W-15.0	MW6-W-15.0-20191216	MW6-W-15.0-20200429	MW6-W-15.0-20200427	MW-6-042022	MW6-230721	MW6-20231207	MW7-W-20.0	MW7-W-27.5-20191217	MW7-W-27.5-20200427	MW7-W-28.5	MW7-7-04202022	MW7-230724	MW7-20231207
Sample Date		12/5/2023	7/23/2019	12/16/2019	1/29/2020	4/27/2020	4/20/2022	7/21/2023	12/7/2023	7/24/2019	12/17/2019	4/27/2020	1/29/2020	4/20/2022	7/24/2023	12/7/2023
WBZ		Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Deep	Deep	Deep	Deep	Deep	Deep	Deep
Analyte	**Water PCUL**															
Total Metals (µg/L)																
Arsenic	8.0	20 U	**42.8**	**46.4**	**48.7**	**48.1**	**42.3**	**38.5**	**45.9**	**8.59**	**9.03**	**8.62**	**8.51**	**7.82**	**8.22**	**8.65**
Cadmium	1.2	10 U	--	--	--	--	0.5 U	2 U	2 U	--	--	--	--	0.1 U	0.1 U	0.5 U
Chromium	100	**105000**	**34.5**	**17.4**	**20.3**	**25.9**	**38.5**	**20.2**	**23.4**	**3.01**	**1.75**	5 U	**1.73**	**0.976**	**1.07 J**	2.5 U
Copper	3.1	50 U	**210**	5 U	5 U	25 U	**3.4**	10 U	**4.38 J**	10 U	5 U	25 U	**5.87**	**5.06**	**4.35**	**4.83**
Lead	5.6	10 U	--	--	--	--	**0.645**	2 U	**1.12 J**	--	--	--	--	**0.067 J**	0.1 U	0.5 U
Mercury	0.025	**0.0173**	--	--	--	--	**0.00512**	**0.00674**	**0.0105**	--	--	--	--	**0.217**	**0.133**	**0.141**
Nickel	8.2	50 U	--	--	--	--	**31.3**	**3.16 J**	**3.24 J**	--	--	--	--	**11.7**	**11**	**10.8**
Selenium	50	**18.3 J**	**11.8**	**13.5**	**14.3**	**6.15**	**3.75**	**12.4**	**5.82 J**	**6.24**	**8.21**	5 U	5 U	**0.226 J**	1 U	**1.3 J**
Thallium	0.062	20 U	--	--	--	--	1 U	4 U	4 U	--	--	--	--	0.2 U	0.2 U	1 U
Zinc	81	U	--	--	--	--	30 U	120 U	120 U	--	--	--	--	6 U	12 U	30 U
Dissolved Metals (µg/L)																
Arsenic	8.0	20 U	--	--	--	--	**36.5**	**41**	**41.2**	--	--	--	--	**7.79**	**8.32**	**7.93**
Cadmium	1.2	10 U	--	--	--	--	0.2 U	2 U	2 U	--	--	--	--	0.1 U	0.1 U	0.2 U
Chromium	100	**99900**	--	--	--	--	**22.6**	**20.2**	**21.2**	--	--	--	--	**0.943**	**1.09**	**0.694 J**
Chromium, Hexavalent	0.046	**89800 J**	45 U	450 U	45 U	225 U	13 UJ	13 U	13 U	45 U	45 U	45 U	45 U	13 UJ	13 U	13 U
Chromium, Trivalent	27	**10,100**	--	--	--	--	--	--	--	--	--	5 U		--	--	2.5 U
Copper	3.1	50 U	--	--	--	--	1 U	10 U	10 U	--	--	--	--	**5.2**	**4.21**	**5.59**
Lead	5.6	10 U	--	--	--	--	0.2 U	2 U	2 U	--	--	--	--	0.1 U	0.1 U	0.2 U
Mercury	0.025	0.00105 U	--	--	--	--	**0.00235**		**0.0039**	--	--	--	--	**0.127**	**0.111**	**0.127**
Nickel	8.2	**13.9 J**	--	--	--	--	**11.3**	**2.24 J**	**2.1 J**	--	--	--	--	**11.8**	**11.2**	**11.2**
Selenium	50	50 U	--	--	--	--	--	**10.2**	**4.26 J**	--	--	--	--	--	**0.408 J**	**1.14**
Thallium	0.062	20 U	--	--	--	--	--	4 U	4 U	--	--	--	--	--	0.2 U	0.4 U
Zinc	81	600 U	--	--	--	--	--	120 U	120 U	--	--	--	--	--	6 U	12 U
Total Petroleum Hydrocarbons (µg/L)																
Diesel-range hydrocarbons	500	500 U	**550**	**410**	**370**	**590**	**471**	500 U	**282**	**80**	**99**	**170**	**88**	100 U	500 U	500 U
Lube oil-range hydrocarbons	500	1000 U	**580**	**700**	**810**	**550**	**256**	1000 U	**241**	250 U	250 U	250 U	250 U	200 U	1000 U	1000 U
Total TPH	500	ND	**1130**	**1110**	**1180**	**1140**	**727**	ND	**523**	**80**	**99**	**170**	**88**	ND	ND	ND
Volatile Organic Compounds (VOCs) (µg/L)																
Benzene	1.1	--	3.5 U	3.5 U	3.5 U	3.5 U	2 U	--	--	0.35 U	0.35 U	0.35 U	0.35 U	0.2 U	--	--
cis-1,2-Dichloroethylene	16	**0.68**	10 U	10 U	10 U	10 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U
Methylene Chloride	5.0	1 U	50 U	50 U	50 U	50 U	**27.7**	10 U	10 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U
Trichloroethylene	0.70	**14.1**	10 U	10 U	10 U	10 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U
Vinyl Chloride	0.18	0.2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Semivolatile Compounds (SVOCs) (µg/L)																
1,4-Dioxane	0.44	**1.1**	--	--	--	--	**0.2**	**0.2 J**	**0.2 J**	--	--	--	--	**0.5**	**0.4**	**0.3 J**
Bis(2-Ethylhexyl) Phthalate	0.046	--	--	--	--	--	0.2 U	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	93	--	--	--	--	--	**0.3**	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)																
1-Methylnaphthalene	1.5	**0.008 J**	--	--	--	--	**0.002 J**	0.01 U	0.01 U	--	--	--	--	**0.001 J**	0.01 U	0.01 U
Benzo(a)anthracene	0.00016	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U
Benzo(a)pyrene	0.000016	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U
Benzo(b)fluoranthene	0.00016	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	**0.007 J**	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U
Benzo(k)fluoranthene	0.0016	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U
Chrysene	0.016	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U
Dibenzo(a,h)anthracene	0.000016	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U
Indeno(1,2,3-c,d)pyrene	0.00016	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U
Naphthalene	1.4	**0.069**	0.4 U	0.4 U	0.4 U	0.4 U	**0.006 J**	0.01 U	**0.007 J**	0.4 U	0.4 U	0.4 U	0.4 U	**0.006 J**	0.01 U	0.01 U
Total cPAH TEQ	0.0097	0.00855 U	0.0302 U	0.0302 U	0.0302 U	0.0302 U	0.00805 U	0.00855 U	**0.00875 J**	0.0302 U	0.0302 U	0.0302 U	0.0302 U	0.00805 U	0.00855 U	0.00855 U
Polychlorinated Biphenyls (PCBs) (µg/L)																
Total PCB Aroclors	0.000007	--	--	--	--	--	0.1 U	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)																
Perfluorohexanesulfonic acid (PFHxS)	0.065	--	--	--	--	--	--	0.05 U	0.0044 U	--	--	--	--	--	0.0049 U	0.0045 U
Perfluorooctanesulfonic acid (PFOS)	0.015	--	--	--	--	--	--	0.05 U	0.0044 U	--	--	--	--	--	0.0049 U	0.0045 U
Perfluorooctanoic acid (PFOA)	0.01							**0.012 J**	**0.007**						**0.0019 J**	**0.0016 J**

Location Identification		MW8	MW8	MW8	MW8	MW8	MW8	MW8	MW9	MW9
Sample Identification		MW-8-W-19.0	MW8-W-15.0-20191217	MW8-W-15.0-20200129	MW8-W-15.0-20200427	MW-8-220421	MW8-230714	MW8-20231206	MW-9-W-33.0	MW9-W-33.5-20191216
Sample Date		7/23/2019	12/17/2019	1/29/2020	4/27/2020	4/21/2022	7/14/2023	12/6/2023	7/23/2019	12/16/2019
WBZ		Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Deep	Deep
Analyte	**Water PCUL**									
Total Metals (µg/L)										
Arsenic	8.0	**20.4**	**22.2**	**18.6**	**6.38**	**11.2**	**6.54**	**10.2**	**9.26**	**11.5**
Cadmium	1.2		–	–	–	0.1 U	0.2 U	0.1 U	–	–
Chromium	100	**8.82**	10 U	10 U	**6.3**	**9.98**	**8.5**	5 U	**1.56**	**21.6**
Copper	3.1	**44.7**	50 U	5 U	5 U	**0.206 J**	**2.37**	**0.234 J**	**5.87**	5 U
Lead	5.6	–	–	–	–	0.1 U	**0.536**	0.1 U	–	–
Mercury	0.025	–	–	–	–	**0.00239**	**0.00243**	**0.00313 J**	–	–
Nickel	8.2	–	–	–	–	**5.46**	**6.75**	**4.99**	–	–
Selenium	50	**2.99**	**3.44**	5 U	1 U	**0.254 J**	**1.39**	**0.391 J**	**2.7**	**4.66**
Thallium	0.062	–	–	–	–	0.2 U	0.4 U	0.4 U	–	–
Zinc	81	–	–	–	–	6 U	**27.6**	6 U	–	–
Dissolved Metals (µg/L)										
Arsenic	8.0	–	–	–	–	**10.9**	**6.05**	**11.4**	–	–
Cadmium	1.2	–	–	–	–	0.1 U	0.2 U	0.5 U	–	–
Chromium	100	–	–	–	–	**7.67**	**7.91**	**7.43**	–	–
Chromium, Hexavalent	0.046	45 U	135 U	45 U	45 U	13 UJ	**16 J**	13 U	45 U	45 U
Chromium, Trivalent	27	–	10 U	10 U	–	–	ND	5 U	–	–
Copper	3.1	–	–	–	–	0.5 U	1 U	2.5 U	–	–
Lead	5.6	–	–	–	–	0.1 U	0.2 U	0.5 U	–	–
Mercury	0.025	–	–	–	–	**0.00035 J**	**0.00126**	**0.00192**	–	–
Nickel	8.2	–	–	–	–	**4.96**	**6.97**	**5.34**	–	–
Selenium	50	–	–	–	–	–	1 U	**1.08 J**	–	–
Thallium	0.062	–	–	–	–	–	0.4 U	1 U	–	–
Zinc	81	–	–	–	–	–	12 U	30 U	–	–
Total Petroleum Hydrocarbons (µg/L)										
Diesel-range hydrocarbons	500	**370**	**430**	**300**	**340**	**210**	500 U	500 U	**110**	**200**
Lube oil-range hydrocarbons	500	250 U	**260**	250 U	250 U	200 U	1000 U	1000 U	250 U	**330**
Total TPH	500	**370**	**690**	**300**	**340**	**210**	ND	ND	**110**	**530**
Volatile Organic Compounds (VOCs) (µg/L)										
Benzene	1.1	0.35 U	3.5 U	0.35 U	0.35 U	**0.05 J**	–	–	0.35 U	0.35 U
cis-1,2-Dichloroethylene	16	1 U	10 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U
Methylene Chloride	5.0	5 U	50 U	5 U	5 U	1 U	1 U	1 U	5 U	5 U
Trichloroethylene	0.70	1 U	10 U	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	1 U
Vinyl Chloride	0.18	0.2 U	2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Semivolatile Compounds (SVOCs) (µg/L)										
1,4-Dioxane	0.44	–	–	–	–	**13.3**	**20.4**	**6 J**	–	–
Bis(2-Ethylhexyl) Phthalate	0.046	–	–	–	–	–	–	–	–	–
Diethyl Phthalate	93	–	–	–	–	–	–	–	–	–
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)										
1-Methylnaphthalene	1.5	–	–	–	–	0.01 U	0.01 U	0.01 U	–	–
Benzo(a)anthracene	0.00016	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Benzo(a)pyrene	0.000016	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Benzo(b)fluoranthene	0.00016	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Benzo(k)fluoranthene	0.0016	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Chrysene	0.016	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Dibenzo(a,h)anthracene	0.000016	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Indeno(1,2,3-c,d)pyrene	0.00016	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U
Naphthalene	1.4	0.4 U	0.4 U	0.4 U	0.4 U	0.01 U	0.01 U	0.01 U	0.4 U	0.4 U
Total cPAH TEQ	0.0097	0.0302 U	0.0302 U	0.0302 U	0.0302 U	0.00805 U	0.00855 U	0.00855 U	0.0302 U	0.0302 U
Polychlorinated Biphenyls (PCBs) (µg/L)										
Total PCB Aroclors	0.000007	–	–	–	–	–	–	–	–	–
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)										
Perfluorohexanesulfonic acid (PFHxS)	0.065	–	–	–	–	–	**0.0095**	–	–	–
Perfluorooctanesulfonic acid (PFOS)	0.015	–	–	–	–	–	**0.0051 J**	–	–	–
Perfluorooctanoic acid (PFOA)	0.01						**0.035**			

Location Identification		MW9	MW9	MW9	MW9	MW9	MW10	MW10	MW10	MW10	MW10	MW10
Sample Identification		MW9-W-33.5-20200129	MW9-W-32.5	MW-9-04192022	MW9-230714	MW9-20231207	MW-10-W-15.0	MW10-W-15.0-20191217	MW10-W-15.0-20200129	MW10-W-15.0-20200427	MW-10-04192022	MW10-230714
Sample Date		1/29/2020	4/28/2020	4/19/2022	7/14/2023	12/7/2023	7/23/2019	12/17/2019	1/29/2020	4/27/2020	4/19/2022	7/14/2023
WBZ		Deep	Deep	Deep	Deep	Deep	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow
Analyte	**Water PCUL**											
Total Metals (µg/L)												
Arsenic	8.0	**10.9**	**8.24**	**10.8**	**10.3**	**10.3**	**16.2**	**13.2**	**25.5**	**14.9**	**29.9**	**22.4**
Cadmium	1.2	–	–	**0.058 J**	0.1 U	**0.1 J**	–	–	–	–	0.2 U	**0.43 J**
Chromium	100	**2.2**	**2.02**	**1.4**	**1.57**	2.5 U	**7.96**	**7.67**	**10.5**	**11.5**	**15.7**	**12.1**
Copper	3.1	5 U	5 U	**2.86**	**1.62**	**2.53**	5 U	5 U	5 U	5 U	**0.794 J**	5 U
Lead	5.6	–	–	**0.113**	**0.11**	0.2 U	–	–	–	–	**0.278**	1 U
Mercury	0.025	–	–	**0.0477**	**0.0189**	**0.0337**	–	–	–	–	**0.00445**	**0.00127**
Nickel	8.2	–	–	**58.5**	**46.2**	**46.9**	–	–	–	–	**7.51**	**5.24**
Selenium	50	5 U	1 U	**0.549**	**0.931**	**1**	**4.34**	**10.4**	5 U	**3.68**	**1.26**	**2.94 J**
Thallium	0.062	–	–	0.2 U	0.2 U	1 U	–	–	–	–	0.4 U	2 U
Zinc	81	–	–	6 U	6 U	12 U	–	–	–	–	12 U	60 U
Dissolved Metals (µg/L)												
Arsenic	8.0	–	–	**9.92**	**10.2**	**9.64**	–	–	–	–	**28.4**	**19.1**
Cadmium	1.2	–	–	**0.042 J**	0.1 U	**0.062 J**	–	–	–	–	0.2 U	**0.53 J**
Chromium	100	–	–	**1.32**	**1.44**	**0.934 J**	–	–	–	–	**14.3**	**11**
Chromium, Hexavalent	0.046	45 U	45 U	13 UJ	13 U	13 U	45 U	135 U	90 U	45 U	13 UJ	13 U
Chromium, Trivalent	27	–	–	–	–	2.5 U	–	–	–	–	–	–
Copper	3.1	–	–	**5.47**	**1.09**	**2.88**	–	–	–	–	1 U	5 U
Lead	5.6	–	–	**0.084 J**	0.1 U	0.2 U	–	–	–	–	0.2 U	1 U
Mercury	0.025	–	–	**0.00303**	**0.00869**	**0.0199**	–	–	–	–	**0.001**	**0.00073**
Nickel	8.2	–	–	**55.7**	**42.1**	**52**	–	–	–	–	**7.2**	**4.47 J**
Selenium	50	–	–	**0.697**	1 U	**0.808 J**	–	–	–	–	**1.73**	5 U
Thallium	0.062	–	–	0.2 U	0.2 U	0.4 U	–	–	–	–	0.4 U	2 U
Zinc	81	–	–	6 U	6 U	12 U	–	–	–	–	12 U	60 U
Total Petroleum Hydrocarbons (µg/L)												
Diesel-range hydrocarbons	500	**100**	**140**	100 U	500 U	500 U	**370**	**440**	**410**	**650**	**335**	500 U
Lube oil-range hydrocarbons	500	250 U	250 U	200 U	1000 U	1000 U	250 U	**360**	**690**	**640**	200 U	1000 U
Total TPH	500	**100**	**140**	ND	ND	ND	**370**	**800**	**1100**	**1290**	**335**	ND
Volatile Organic Compounds (VOCs) (µg/L)												
Benzene	1.1	0.35 U	0.35 U	0.2 U	–		0.35 U	3.5 U	3.5 U	3.5 U	2 U	–
cis-1,2-Dichloroethylene	16	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	10 U	10 U	10 U	2 U	1 U
Methylene Chloride	5.0	5 U	5 U	1 U	1 U	1 U	5 U	50 U	50 U	50 U	**26.2**	5 U
Trichloroethylene	0.70	1 U	1 U	0.2 U	0.2 U	0.2 U	1 U	10 U	10 U	10 U	2 U	1 U
Vinyl Chloride	0.18	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2 U	2 U	2 U	2 U	1 U
Semivolatile Compounds (SVOCs) (µg/L)												
1,4-Dioxane	0.44	–	–	**2.7**	**2.4**	**1.9**	–	–	–	–	**2.7**	**1.3**
Bis(2-Ethylhexyl) Phthalate	0.046	–	–	–	–	–	–	–	–	–	–	–
Diethyl Phthalate	93	–	–	–	–	–	–	–	–	–	–	–
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)												
1-Methylnaphthalene	1.5	–	–	**0.002 J**	0.01 U	0.01 U		–	–	–	**0.003 J**	0.01 U
Benzo(a)anthracene	0.00016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U
Benzo(a)pyrene	0.000016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U
Benzo(b)fluoranthene	0.00016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U
Benzo(k)fluoranthene	0.0016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U
Chrysene	0.016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	**0.002 J**	0.01 U
Dibenzo(a,h)anthracene	0.000016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U
Indeno(1,2,3-c,d)pyrene	0.00016	0.04 U	0.04 U	0.01 U	0.01 U	0.01 U	0.04 U	0.04 U	0.04 U	0.04 U	0.01 U	0.01 U
Naphthalene	1.4	0.4 U	0.4 U	0.01 U	0.01 U	0.01 U	0.4 U	0.4 U	0.4 U	0.4 U	0.01 U	0.01 U
Total cPAH TEQ	0.0097	0.0302 U	0.0302 U	0.00805 U	0.00855 U	0.00855 U	0.0302 U	0.0302 U	0.0302 U	0.0302 U	**0.00802 J**	0.00855 U
Polychlorinated Biphenyls (PCBs) (µg/L)												
Total PCB Aroclors	0.000007	–	–	–	–	–	–	–	–	–	–	–
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)												
Perfluorohexanesulfonic acid (PFHxS)	0.065	–	–	–	**0.0017 J**	**0.0016 J**	–	–	–	–	–	0.0049 U
Perfluorooctanesulfonic acid (PFOS)	0.015	–	–	–	**0.0014 J**	**0.0014 J**	–	–	–	–	–	0.0049 U
Perfluorooctanoic acid (PFOA)	0.01				**0.0049**	**0.0041**						**0.011**

Location Identification		MW10	MW11	MW11	MW11	MW11	MW11	MW11	MW11	MW-12	MW-12	MW-12	MW-13
Sample Identification		MW10-20231207	MW11-W-15.0-20190722	MW11-W-15.0-20191216	MW11-W-15.0-20200129	MW11-W-15.0-20200427	MW11-220421	MW11-230720	MW11-20231205	MW-12-220425	MW12-230724	MW12-20231204	MW-13-220427
Sample Date		12/7/2023	7/22/2019	12/16/2019	1/29/2020	4/27/2020	4/21/2022	7/20/2023	12/5/2023	4/25/2022	7/24/2023	12/4/2023	4/27/2022
WBZ		Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Deep
Analyte	**Water PCUL**												
Total Metals (µg/L)													
Arsenic	8.0	**26.1**	10 U	**6.16**	**7.16**	**4.1**	**5.37**	**5.27**	**5.74**	**30.8**	**19.2**	**21.7**	**9.39**
Cadmium	1.2	0.5 U	--	--	--	--	0.1 U	**0.47 J**	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Chromium	100	**10.2**	10 U	**2.48**	**3.42**	**3.1**	**14.4**	**3.22 J**	**2.98**	0.5 U	0.5 U	2.5 U	0.5 U
Copper	3.1	2.5 U	50 U	5 U	5 U	5 U	**0.354 J**	5 U	1 U	**1.36**	**0.187 J**	**0.378 J**	0.5 U
Lead	5.6	0.5 U	--	--	--	--	0.1 U	1 U	0.2 U	**0.073 J**	**0.069 J**	**0.128**	0.1 U
Mercury	0.025	**0.00194**	--	--	--	--	0.00042 U	0.00042 U	**0.00228**	**0.00111**	**0.00055**	**0.00187**	0.00041 U
Nickel	8.2	**9.76**	--	--	--	--	**0.845**	5 U	**0.646 J**	**0.777**	**0.302 J**	**0.362 J**	**0.198 J**
Selenium	50	**2.63**	10 U	**2.66**	**1.76**	1 U	**0.378 J**	5 U	1 U	0.5 U	0.5 U	1 U	0.5 U
Thallium	0.062	1 U	--	--	--	--	0.2 U	2 U	1 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	81	30 U	--	--	--	--	6 U	60 U	12 U	6 U	6 U	12 U	6 U
Dissolved Metals (µg/L)													
Arsenic	8.0	**21.8**	--	--	--	--	**5.42**	**4.52**	**5.94**	**27.6**	**19.3**	**22.4**	**9.69**
Cadmium	1.2	0.1 U	--	--	--	--	0.1 U	1 U	0.2 U	0.1 U	0.1 U	0.2 U	0.1 U
Chromium	100	**10.2**	--	--	--	--	**3.2**	**3.15 J**	2.5 U	0.5 U	1 U	2.5 U	0.5 U
Chromium, Hexavalent	0.046	13 U	45 U	45 U	45 U	45 U	13 UJ	13 U	13 U	13 U	13 U	13 U	13 U
Chromium, Trivalent	27	--	10 U	--	--	--	--	--	--	0.5 U	0.5 U	2.5 U	0.5 U
Copper	3.1	1 U	--	--	--	--	**0.202 J**	5 U	1 U	**1.75**	0.5 U	**0.604 J**	0.5 U
Lead	5.6	0.1 U	--	--	--	--	0.1 U	1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U
Mercury	0.025	--	--	--	--	--	0.00042 U	0.00042 U	0.00042 U	0.00041 U	**0.00024 J**	**0.00099**	0.00041 U
Nickel	8.2	**6.76**	--	--	--	--	**0.643**	5 U	**0.706 J**	**0.631**	**0.096 J**	**0.356 J**	**0.159 J**
Selenium	50	**1.65**	--	--	--	--	--	5 U	1 U	--	0.5 U	1 U	--
Thallium	0.062	2 U	--	--	--	--	--	2 U	0.4 U	--	0.2 U	0.4 U	--
Zinc	81	12 U	--	--	--	--	--	60 U	12 U	--	6 U	12 U	--
Total Petroleum Hydrocarbons (µg/L)													
Diesel-range hydrocarbons	500	**108**	**200**	**250**	**150**	**260**	**136**	500 U	500 U	100 U	500 U	500 U	100 U
Lube oil-range hydrocarbons	500	200 U	250 U	**430**	250 U	250 U	200 U	1000 U	1000 U	200 U	1000 U	1000 U	200 U
Total TPH	500	**108**	**200**	**680**	**150**	**260**	**136**	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (VOCs) (µg/L)													
Benzene	1.1	--	0.35 U	0.35 U	0.35 U	0.35 U	0.2 U	--	--	0.2 U	--	--	0.2 U
cis-1,2-Dichloroethylene	16	2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Methylene Chloride	5.0	10 U	5 U	5 U	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethylene	0.70	2 U	1 U	1 U	1 U	1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Chloride	0.18	2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Semivolatile Compounds (SVOCs) (µg/L)													
1,4-Dioxane	0.44	**2**	--	--	--	--	**0.9**	**0.6**	**0.6**	0.2 U	0.2 U	0.2 U	0.2 U
Bis(2-Ethylhexyl) Phthalate	0.046	--	--	--	--	--	--	--	--	--	--	--	--
Diethyl Phthalate	93	--	--	--	--	--	--	--	--	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)													
1-Methylnaphthalene	1.5	0.01 UJ	--	--	--	--	**0.017**	0.1 U	**0.011**	**0.003 J**	0.01 U	0.005 U	**0.002 J**
Benzo(a)anthracene	0.00016	0.01 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.015 U	0.1 U	0.01 U	0.01 U	0.01 U	0.005 U	0.01 U
Benzo(a)pyrene	0.000016	0.01 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.015 U	0.1 U	0.01 U	0.01 U	0.01 U	0.005 U	0.01 U
Benzo(b)fluoranthene	0.00016	0.01 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.015 U	0.1 U	0.01 U	0.01 U	0.01 U	0.005 U	0.01 U
Benzo(k)fluoranthene	0.0016	0.01 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.015 U	0.1 U	0.01 U	0.01 U	0.01 U	0.005 U	0.01 U
Chrysene	0.016	0.01 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.015 U	0.1 U	0.01 U	**0.001 J**	0.01 U	0.005 U	0.01 U
Dibenzo(a,h)anthracene	0.000016	0.01 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.015 U	0.1 U	0.01 U	0.01 U	0.01 U	0.005 U	0.01 U
Indeno(1,2,3-c,d)pyrene	0.00016	0.01 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.015 U	0.1 U	0.01 U	0.01 U	0.01 U	0.005 U	0.01 U
Naphthalene	1.4	0.01 UJ	0.4 U	0.4 U	0.4 U	0.4 U	0.015 U	0.1 U	**0.027**	0.01 U	0.01 U	0.005 U	**0.03**
Total cPAH TEQ	0.0097	0.00855 UJ	0.0302 U	0.0302 U	0.0302 U	0.0302 U	0.01208 U	0.0855 U	0.00855 U	**0.00801 J**	0.00855 U	0.00428 U	0.00805 U
Polychlorinated Biphenyls (PCBs) (µg/L)													
Total PCB Aroclors	0.000007	--	--	--	--	--	--	--	--	--	--	--	--
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)													
Perfluorohexanesulfonic acid (PFHxS)	0.065	0.0045 U	--	--	--	--	--	0.025 U	--	0.004 U	--	--	0.004 U
Perfluorooctanesulfonic acid (PFOS)	0.015	0.0045 U	--	--	--	--	--	**0.0042 J**	--	**0.00066 J**	--	--	**0.00077 J**
Perfluorooctanoic acid (PFOA)	0.01	**0.015**						**0.01**		**0.00043 J**			**0.00092 J**

Location Identification		MW-13	MW-13	MW-14	MW-14	MW-14	MW-15	MW-15	MW-15	MW-16	MW-16	MW-16	MW-17	MW-17	MW-17
Sample Identification		MW13-230724	MW13-20231204	MW-14-220425	MW14-230724	MW14-20231204	MW-15-220422	MW15-230720	MW15-20231204	MW-16-04192022	MW16-230721	MW16-20231205	MW17-220420	MW17-230720	MW17-20231205
Sample Date		7/24/2023	12/4/2023	4/25/2022	7/24/2023	12/4/2023	4/22/2022	7/20/2023	12/4/2023	4/19/2022	7/21/2023	12/5/2023	4/20/2022	7/20/2023	12/5/2023
WBZ		Deep	Deep	Shallow	Shallow	Shallow	Deep	Deep	Deep	Deep	Deep	Deep	Deep	Deep	Deep
Analyte	**Water PCUL**														
Total Metals (µg/L)															
Arsenic	8.0	**9.75**	**11.9**	**10.7**	**11.9**	**14.4**	**8.79**	**13.9**	**16.4**	**13.6**	**10.7**	**13.4**	**7.15**	**4.46**	**3.53**
Cadmium	1.2	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U
Chromium	100	0.5 U	2.5 U	**0.89**	**0.897**	2.5 U	**0.306 J**	0.5 U	2.5 U	**1.09**	**0.955**	**0.946 J**	**0.352 J**	0.5 U	1 U
Copper	3.1	0.5 U	1 U	**0.336 J**	0.5 U	1 U	**0.484 J**	**0.261 J**	1 U	**0.235 J**	0.5 U	**0.47 J**	**0.278 J**	**0.276 J**	**0.728 J**
Lead	5.6	0.1 U	0.1 U	0.1 U	0.1 U	**0.101**	**0.155**	0.1 U	0.1 U	0.1 U	0.1 U	0.2 U	**0.155**	**0.09 J**	**0.218**
Mercury	0.025	0.00041 U	**0.00015 J**	**0.00151**	**0.00056**	**0.00217**	**0.00031 J**	0.00041 U	**0.00119**	**0.00121**	**0.00046**	**0.00085**	**0.00137**	**0.00031 J**	**0.00045**
Nickel	8.2	**0.222 J**	**0.308 J**	**1.32**	**0.662**	**0.898 J**	**0.527**	**0.471 J**	**0.3 J**	**2.24**	**1.34**	**1.76**	**1.39**	**0.818**	**0.846 J**
Selenium	50	0.5 U	1 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U	1 U	**0.203 J**	**0.854**	1 U	0.5 U	0.5 U	1 U
Thallium	0.062	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	0.2 U	0.4 U
Zinc	81	6 U	12 U	**4.14 J**	6 U	12 U	6 U	**13.1**	12 U	6 U	6 U	**13.2**	6 U	**4.56 J**	**6.01 J**
Dissolved Metals (µg/L)															
Arsenic	8.0	**9.53**	**11.3**	**7.94**	**12.1**	**13.5**	**9.23**	**13.6**	**16.4**	**13.7**	**6.66**	**16**	**7.28**	**3.39**	**6.85**
Cadmium	1.2	0.1 U	0.2 U	0.1 U	0.1 U	0.2 U	0.2 U	0.1 U	0.2 U	0.1 U	**0.041 J**	0.2 U	0.1 U	0.1 U	0.2 U
Chromium	100	1 U	2.5 U	**0.781**	**0.742 J**	**0.67 J**	1 U	0.5 U	1 U	**0.695**	**0.893**	2.5 U	0.5 U	0.5 U	2.5 U
Chromium, Hexavalent	0.046	13 U	13 UJ	13 U	13 U	13 U	13 U	13 U	13 U	13 UJ	13 U	13 U	13 UJ	13 U	13 U
Chromium, Trivalent	27	0.5 U	2.5 U	–	–	2.5 U	–	0.5 U	2.5 U	–	–	–	–	0.5 U	1 U
Copper	3.1	0.5 U	**0.396 J**	**0.377 J**	**0.342 J**	**0.67 J**	1 U	0.5 U	1 U	0.5 U	0.5 U	**0.544 J**	0.5 U	0.5 U	**0.556 J**
Lead	5.6	0.1 U	0.1 U	**0.071 J**	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.5 U	0.1 U	0.1 U	0.5 U
Mercury	0.025	0.00041 U	**0.00115**	**0.0004 J**	**0.00029 J**	**0.0006**	0.00041 U	0.00041 U	**0.00155**	0.00041 U	**0.00035 J**	0.00105 U	0.00041 U	0.00041 U	0.00042 U
Nickel	8.2	**0.192 J**	**0.302 J**	**1.24**	**0.637**	**0.804 J**	**0.192 J**	**0.156 J**	**0.22 J**	**1.72**	**1.12**	**1.4**	**0.487 J**	**0.561**	**0.676 J**
Selenium	50	0.5 U	1 U	–	0.5 U	1 U	–	0.5 U	1 U	**0.272 J**	**0.616**	1 U	–	**0.239 J**	1 U
Thallium	0.062	0.2 U	0.4 U	–	0.2 U	0.4 U	–	0.2 U	0.4 U	0.2 U	0.2 U	1 U	–	0.2 U	1 U
Zinc	81	6 U	12 U	–	6 U	12 U	–	6 U	12 U	6 U	6 U	12 U	–	6 U	12 U
Total Petroleum Hydrocarbons (µg/L)															
Diesel-range hydrocarbons	500	500 U	500 U	100 U	500 U	500 U	100 U	500 U	500 U	100 U	500 U	500 U	100 U	500 U	500 U
Lube oil-range hydrocarbons	500	1000 U	1000 U	200 U	1000 U	1000 U	200 U	1000 U	1000 U	200 U	1000 U	1000 U	200 U	1000 U	1000 U
Total TPH	500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (VOCs) (µg/L)															
Benzene	1.1	–	–	0.2 U	–	–	0.2 U	–	–	0.2 U	–	–	0.2 U	–	–
cis-1,2-Dichloroethylene	16	0.2 U	0.2 U	**26.3**	**24.8**	**22.6**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Methylene Chloride	5.0	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethylene	0.70	0.2 U	0.2 U	**40.3**	**23.2**	**24.3**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Chloride	0.18	0.2 U	0.2 U	**0.32**	**1.56**	**0.96**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Semivolatile Compounds (SVOCs) (µg/L)															
1,4-Dioxane	0.44	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.3**	**0.2**	**0.3**	0.2 U	0.2 U	0.2 U
Bis(2-Ethylhexyl) Phthalate	0.046	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Diethyl Phthalate	93	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)															
1-Methylnaphthalene	1.5	0.01 U	0.005 U	**0.003 J**	0.01 U	0.01 U	**0.002 J**	0.01 U	0.01 U	**0.006 J**	0.01 U	0.01 U	**0.005 J**	0.01 U	0.01 U
Benzo(a)anthracene	0.00016	0.01 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzo(a)pyrene	0.000016	0.01 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzo(b)fluoranthene	0.00016	0.01 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Benzo(k)fluoranthene	0.0016	0.01 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Chrysene	0.016	0.01 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Dibenzo(a,h)anthracene	0.000016	0.01 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Indeno(1,2,3-c,d)pyrene	0.00016	0.01 U	0.005 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Naphthalene	1.4	0.01 U	0.005 U	**0.012**	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	**0.006 J**	**0.013**	0.01 U	0.01 U
Total cPAH TEQ	0.0097	0.00855 U	0.00428 U	0.00805 U	0.00855 U	0.00855 U	0.00805 U	0.00855 U	0.00855 U	0.00805 U	0.00855 U	0.00855 U	0.00805 U	0.00855 U	0.00855 U
Polychlorinated Biphenyls (PCBs) (µg/L)															
Total PCB Aroclors	0.000007	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)															
Perfluorohexanesulfonic acid (PFHxS)	0.065	–	–	0.0042 U	–	–	0.004 U	–	–	–	0.0049 U	–	–	**0.0019 J**	–
Perfluorooctanesulfonic acid (PFOS)	0.015	–	–	**0.002 J**	–	–	0.004 U	–	–	–	0.0049 U	–	–	**0.0018 J**	–
Perfluorooctanoic acid (PFOA)	0.01			**0.0019**			0.0016 U				**0.002**			0.002 U	

Location Identification		MW-18	MW-18	MW-18	MW-19	MW-19	MW-20	MW-20	MW-21	MW-21	MW-22	MW-22	MW-23	MW-23
Sample Identification		MW-18-220421	MW18-230713	MW18-20231205	MW19-230725	MW19-20231206	MW20-230725	MW20-20231206	MW21-230725	MW21-20231207	MW22-230725	MW22-20231206	MW23-230724	MW23-20231206
Sample Date		4/21/2022	7/13/2023	12/5/2023	7/25/2023	12/6/2023	7/25/2023	12/6/2023	7/25/2023	12/6/2023	7/25/2023	12/6/2023	7/24/2023	12/6/2023
WBZ		Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Shallow	Deep	Deep	Shallow	Shallow
Analyte	**Water PCUL**													
Total Metals (µg/L)														
Arsenic	8.0	**44.3**	**25.6**	**34.9**	**7.49**	**37.1**	**1.9**	**5.16**	**6.1**	**9.36**	**6.07**	**4.54**	**72.5**	**98.6**
Cadmium	1.2	**0.048 J**	1 U	0.2 U	**0.099 J**	**0.05 J**	**0.202**	**0.065 J**	0.2 U	0.5 U	**0.031 J**	**0.186**	0.5 U	0.1 U
Chromium	100	**36.5**	**70.1**	**24.2**	2.5 U	5 U	**1.11**	5 U	**0.764 J**	2.5 U	**1.61**	1 U	**3.51**	5 U
Copper	3.1	**27.8**	**29.6**	**1.22**	**1.28**	**0.74**	**2.1**	**0.375 J**	1 U	2.5 U	**0.471 J**	**0.311 J**	**1.85 J**	**0.191 J**
Lead	5.6	**6.43**	**9.07**	**0.502**	**0.196**	**0.115**	**0.2**	**0.056 J**	**0.198 J**	0.5 U	**0.126**	**0.145**	**0.3 J**	**0.06 J**
Mercury	0.025	**0.801**	**0.147**	**0.0307**	**0.00293**	**0.00361**	**0.00411**	**0.00267**	0.00042 U	**0.00026 J**	**0.00153**	**0.00118**	**0.00078**	**0.00234**
Nickel	8.2	**65.6**	**66.2**	**46.7**	**5.92**	**4.05**	**8.89**	**5.3**	**1.27**	**0.81 J**	**0.779**	**0.766**	**2.71**	**1.97**
Selenium	50	**0.514**	5 U	1 U	**0.259 J**	**0.295 J**	**0.486 J**	**0.392 J**	1 U	2.5 U	**0.355 J**	**0.272 J**	**1.29 J**	**0.566**
Thallium	0.062	0.2 U	2 U	1 U	0.2 U	0.4 U	0.4 U	0.4 U	0.4 U	1 U	0.2 U	0.4 U	1 U	0.4 U
Zinc	81	**8.89**	60 U	**11.9 J**	6 U	**4.79 J**	12 U	**3.74 J**	12 U	30 U	6 U	**3.09 J**	30 U	**3.41 J**
Dissolved Metals (µg/L)														
Arsenic	8.0	**48.8**	**37.6**	**30.7**	**16.6**	**35.4**	**1.54**	**5.94**	**6.38**	**8.1**	**5.96**	**4.46**	**72**	**92.8**
Cadmium	1.2	0.1 U	0.1 U	0.2 U	**0.077 J**	**0.185 J**	**0.153**	0.5 U	0.1 U	0.5 U	0.1 U	0.2 U	0.2 U	**0.165 J**
Chromium	100	**31.7**	**52.6**	**22.8**	**0.686 J**	2.5 U	**1.1**	2.5 U	**0.958 J**	2.5 U	1 U	**0.61 J**	**2.27 J**	**1.76 J**
Chromium, Hexavalent	0.046	**19**	13 U	13 UJ	13 UJ	13 U	13 U	13 U	13 U	13 U	13 U	13 U	**13**	13 U
Chromium, Trivalent	27	–	–	–	2.5 U	5 U	–	5 U	–	2.5 U	–	1 U	–	5 U
Copper	3.1	**0.249 J**	0.5 U	**0.564 J**	**0.505**	**1.06 J**	**1.77**	2.5 U	0.5 U	**1.37 J**	**0.378 J**	**0.4 J**	1 U	**1.49 J**
Lead	5.6	0.1 U	**0.092 J**	0.2 U	0.1 U	0.5 U	**0.101**	0.5 U	0.1 U	0.5 U	0.1 U	0.2 U	0.2 U	0.5 U
Mercury	0.025	**0.00792**	**0.00247**	0.00105 U	**0.00039 J**	**0.00169**	**0.00305**	**0.00363**	0.00042 U	0.00042 U	**0.00076**	**0.00065**	**0.00026 J**	**0.00261**
Nickel	8.2	**60.2**	**55.9**	**48.4**	**6.38**	**3.92**	**9.69**	**6.11**	**1.16**	**0.735 J**	**0.485 J**	**1.29**	**2.47**	**1.82 J**
Selenium	50	–	0.5 U	1 U	**0.193 J**	2.5 U	**0.328 J**	2.5 U	0.5 U	2.5 U	**0.247 J**	**1.46**	**0.5 J**	2.5 U
Thallium	0.062	–	0.2 U	0.4 U	0.2 U	1 U	0.2 U	1 U	0.2 U	1 U	0.2 U	0.4 U	0.4 U	1 U
Zinc	81	–	6 U	12 U	**3.05 J**	30 U	6 U	**17.2 J**	6 U	30 U	6 U	12 U	12 U	30 U
Total Petroleum Hydrocarbons (µg/L)														
Diesel-range hydrocarbons	500	**754**	**876**	**338**	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Lube oil-range hydrocarbons	500	200 U	**234**	200 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
Total TPH	500	**754**	**1110**	**338**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Volatile Organic Compounds (VOCs) (µg/L)														
Benzene	1.1	**0.06 J**	–	–	–	–	–	–	–	–	–	–	–	–
cis-1,2-Dichloroethylene	16	**0.36**	**0.33**	**0.29**	**0.14 J**	**0.14 J**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Methylene Chloride	5.0	1 U	1 U	1 U	1 U	**0.58 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethylene	0.70	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Vinyl Chloride	0.18	**0.22**	0.2 U	**0.15 J**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Semivolatile Compounds (SVOCs) (µg/L)														
1,4-Dioxane	0.44	**0.4**	**0.4**	**0.3**	0.2 U	0.2 UJ	**0.2**	**0.2 J**	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 U	**0.2 J**
Bis(2-Ethylhexyl) Phthalate	0.046	–	–	–	–	–	–	–	–	–	–	–	–	–
Diethyl Phthalate	93	–	–	–	–	–	–	–	–	–	–	–	–	–
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)														
1-Methylnaphthalene	1.5	**0.333**	**0.292**	**0.072**	0.01 UJ	0.01 U	0.01 U	0.01 U	**0.104**	**0.11**	–	0.01 U	**0.014**	0.01 U
Benzo(a)anthracene	0.00016	**0.013**	0.05 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	–	0.01 U	0.01 U	0.01 U
Benzo(a)pyrene	0.000016	**0.009 J**	0.05 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	–	0.01 U	0.01 U	0.01 U
Benzo(b)fluoranthene	0.00016	**0.011**	0.05 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	–	0.01 U	0.01 U	0.01 U
Benzo(k)fluoranthene	0.0016	**0.007 J**	0.05 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	–	0.01 U	0.01 U	0.01 U
Chrysene	0.016	**0.023**	0.05 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	–	0.01 U	0.01 U	0.01 U
Dibenzo(a,h)anthracene	0.000016	0.01 U	0.05 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	–	0.01 U	0.01 U	0.01 U
Indeno(1,2,3-c,d)pyrene	0.00016	**0.004 J**	0.05 U	0.01 U	0.01 UJ	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	–	0.01 U	0.01 U	0.01 U
Naphthalene	1.4	**1.11**	**1.06**	**0.239**	**0.058 J**	**0.04**	**0.009 J**	0.01 U	**0.015 J**	0.01 U	–	0.01 U	0.01 U	0.01 U
Total cPAH TEQ	0.0097	**0.0132 J**	0.04275 U	0.00855 U	0.00855 UJ	0.00855 U	0.00855 U	0.00855 U	0.00855 U	0.00855 U	–	0.00855 U	0.00855 U	0.00855 U
Polychlorinated Biphenyls (PCBs) (µg/L)														
Total PCB Aroclors	0.000007	–	–	–	–	–	–	–	–	–	–	–	–	–
Per- and Polyfluoroalkyl Substances (PFAS) (µg/L)														
Perfluorohexanesulfonic acid (PFHxS)	0.065	–	**0.24**	–	**0.0034 J**	–	**0.0051**	–	**0.0019 J**	–	–	–	–	–
Perfluorooctanesulfonic acid (PFOS)	0.015	–	**0.07**	–	**0.0019 J**	–	**0.017**	–	**0.012**	–	–	–	–	–
Perfluorooctanoic acid (PFOA)	0.01		**0.75**		**0.0095**		**0.014**		**0.0073**					

Table 7-4

Summary of Ditch Water Sample Exceedances

Precision Engineering, Inc.

Seattle, Washington

	Location Identification	SW1	SW1	SW2
	Sample Identification	SW1-230328	SW1-20231204	SW2-20231204
	Sample Date	3/28/2023	12/4/2023	12/4/2023
Analyte	**Water PCUL for Reference**			
Total Metals (µg/L)				
Arsenic	8.0	**4.33**	**0.342 J**	**0.286 J**
Cadmium	1.2	**0.824**	**0.158 J**	**0.222**
Chromium	100	**47.1**	**2.22**	**0.61 J**
Copper	3.1	**142**	**7.67**	**6.8**
Lead	5.6	**60.3**	**0.974**	**0.782**
Mercury	0.025	**0.118**	**0.00841**	**0.00795**
Nickel	8.2	**18.7**	**3.38**	**7.52**
Selenium	50	1 U	1 U	1 U
Thallium	0.062	0.4 U	0.4 U	0.2 U
Zinc	81	**274**	**134**	**301**
Dissolved Metals (µg/L)				
Arsenic	8.0	**0.536**	**0.396 J**	**0.354 J**
Cadmium	1.2	**0.189**	**0.112 J**	**0.242**
Chromium	100	**5.35**	**2.28**	**0.85 J**
Chromium, Hexavalent	0.046	13 U	13 U	13 U
Chromium, Trivalent	27	**5.35**	**2.28**	**0.85 J**
Copper	3.1	**14.4**	**8.3**	**7.38**
Lead	5.6	**0.976**	**0.598**	**0.442**
Mercury	0.025	**0.026 J**	**0.00668**	**0.00681**
Nickel	8.2	**7.4**	**3.5**	**6.95**
Selenium	50	0.5 U	1 U	1 U
Thallium	0.062	0.2 U	0.4 U	0.4 U
Zinc	81	**143**	**132**	**289**
Total Petroleum Hydrocarbons (TPH) (µg/L)				
Gasoline-range hydrocarbons - HCID	800	250 U	250 U	250 U
Diesel-range hydrocarbons - HCID	500	500 U	500 U	500 U
Lube oil-range hydrocarbons - HCID	500	1,000 U	1,000 U	1,000 U
Total TPH - HCID	500	ND	ND	ND
Volatile Organic Compounds (VOCs)(µg/L)				
1,1-Dichloroethylene	7.0	**0.11 J**	0.2 U	0.2 U
cis-1,2-Dichloroethylene	16	**8.97**	0.2 U	0.2 U
Methylene Chloride	5.0	1 U	1 U	1 U
trans-1,2-Dichloroethylene	77	**0.08 J**	0.2 U	0.2 U
Trichloroethylene	0.70	**0.2 J**	0.2 U	0.2 U
Vinyl Chloride	0.18	0.2 U	0.2 U	0.2 U
Semivolatile Compounds (SVOCs) (µg/L)				
1,4-Dioxane	0.44	**0.2 J**	0.2 U	0.2 U
Polycyclic Aromatic Hydrocarbons (PAHs) (µg/L)				
1-Methylnaphthalene	1.5	**0.003 J**	**0.013**	0.01 U
Benzo(a)anthracene	0.00016	**0.012**	0.01 U	0.01 U
Benzo(a)pyrene	0.000016	**0.015**	0.01 U	0.01 U
Benzo(b)fluoranthene	0.00016	**0.017**	0.01 U	0.01 U
Benzo(k)fluoranthene	0.0016	**0.009 J**	0.01 U	0.01 U
Chrysene	0.016	**0.018**	0.01 U	0.01 U
Dibenzo(a,h)anthracene	0.000016	**0.003 J**	0.01 U	0.01 U
Indeno(1,2,3-c,d)pyrene	0.00016	**0.012**	0.01 U	0.01 U
Naphthalene	1.4	**0.044**	**0.006 J**	0.01 U
Total cPAH TEQ	0.0097	**0.02048 J**	0.00855 U	0.00855 U

Notes:

B = Blank detection

HCID = Hydrocarbon Identification

J = Estimated result

ND = Not detected (calculated)

PAHs = Polycyclic Aromatic Hydrocarbons

PCBs = Polychlorinated Biphenyls

PCUL = Preliminary Cleanup Level provided to GeoEngineers by Washington State Department of Ecology (Ecology) June 3, 2022 as the PCULs for the Remedial Investigation (PFAS PCULs are from Ecology Publication 22-09-058)

PFAS = Per- and Polyfluoroalkyl Substances

SVOCs = Semivolatile Volatile Organic Compounds

Total cPAH TEQ = Total toxic equivalency of cPAHs per WAC 173-340-708(8)(e)

TPH = Total Petroleum Hydrocarbons

U = Not detected

VOCs = Volatile Organic Compounds

µg/L = Microgram per liter

Bold font indicates a detection

Gray shading = Detected exceedance of PCUL

Blue shading = Not detected at a reporting limit above the PCUL

Table 7-5

Contaminants of Concern Evaluation

Precision Engineering, Inc.
Seattle, Washington

Analyte	Soil					Groundwater			COC Evaluation	
	Soil Sample Exceedance Frequency	Maximum Vadose Soil Detection	Vadose Soil PCUL	Maximum Saturated Soil Detection	Saturated Soil PCUL	Groundwater Sample Exceedance Frequency	Maximum Groundwater Detection[1]	Groundwater PCUL	COC	Notes
Metals[1]	%	mg/kg	mg/kg	mg/kg	mg/kg	%	µg/L	µg/L		
Arsenic	17 / 126 = 13%	11.3	7.3	14.7	7.3	76 / 108 = 70%	98.6	8.0	No	Only 13% of soil samples exceed, and only by up to about 2x PCUL. Arsenic in groundwater is elevated in most wells including upgradient wells MW1 (deep), MW12 (shallow), and MW13 (deep). Arsenic in groundwater is lowest in MW5 (typically the "most contaminated" well that is closest to the former chromic acid tanks area), and highest in MW23 that is distant from the property. These data indicate arsenic is generally elevated as a "background" condition and is not elevated due to Precision Engineering operations.
Cadmium	4 / 48 = 8%	2.51	0.77	0.52	0.77	0 / 64 = 0%	0.47 J	1.2	No	Only 8% of soil samples exceed, and only in vadose soil (i.e. there are no soil exceedances in saturated soil). Cadmium did not exceed groundwater PCUL in any of 64 samples collected from 23 monitoring wells.
Chromium	13 / 175 = 7%	6,750	260	1,870	260	8 / 66 = 12%	133,000	100	Yes	Chromium is a COC.
Chromium, Hexavalent	34 / 180 = 19%	3,500	0.018	175	0.00089	10 / 108 = 9%	163,000 J	0.046	Yes	Hexavalent chromium is a COC.
Chromium, Trivalent	17 / 173 = 10%	3,250	548	1,695	48	1 / 43 = 2%	10,100 J	27	No	Total chromium and/or hexavalent chromium exceed in every sample where trivalent chromium exceeds with only two exceptions, so chromium and hexavalent chromium can serve as indicator hazardous substances for trivalent chromium.
Copper	8 / 90 = 9%	113	36	33.9	36	11 / 108 = 10%	44.7[2]	3.1	No	Only 8 soil samples exceed, and only in vadose soil. Only 4 out of 8 of those exceedances are located near Precision's former operational areas. The other 4 samples are in vadose soil in MW22, MW23, HA27, and HA28, which are located in the ditch and likely to be impacted by stormwater runoff from adjacent roadways. Furthermore, wherever copper exceeds in vadose soil, chromium usually exceeds as well, indicating that chromium can serve as an indicator hazardous substance for copper. Finally, only 10% of groundwater samples exceed groundwater PCUL, and with no clear pattern: Exceedances include occasional exceedances in two shallow monitoring wells (MW6 and MW18) and two deep wells (MW7 and MW9).
Lead	0 / 129 = 0%	220	250	56	56	2 / 64 = 3.1%	9.07	5.6	No	No soil exceedances. Only exceeds groundwater in two out of 64 samples (MW18 only), and by less than 2x the PCUL.
Mercury	15 / 89 = 17%	1.1	0.07	0.108	0.07	9 / 64 = 14%	0.801	0.025	Yes	Mercury is a COC.
Nickel	0 / 89 = 0%	46.8	48	47	48	13 / 64 = 20%	66.2	8.2	No	No soil exceedances. Only 20% of groundwater samples exceed PCUL.
Selenium	42 / 123 = 34%	2.21	5.2	1.7	0.26	0 / 108 = 0%	12.4	50	No	No vadose soil exceedances, and no groundwater exceedances. Only saturated soil samples exceed. There is no source for selenium based on historical site use.
Thallium	38 / 64 = 59%	0.129	0.088	0.11 J	0.0044	0 / 64 = 0%	ND	0.062	No	No groundwater exceedances. There is no source for thallium based on historical site use.
Zinc	9 / 89 = 10%	341	101	63.1	85	0 / 64 = 0%	ND	0.062	No	No saturated soil exceedances, and only 10% of vadose samples exceed. All but two soil sample exceedances are less than 2x PCUL (Appendix K). There are no groundwater exceedances.
Total Petroleum Hydrocarbons										
Diesel-range hydrocarbons	2 / 133 = 1.5%	10,000	2,000	5,270	2,000	5 / 108 = 5%	876	500	Yes	Diesel-range hydrocarbons is a COC.
Lube oil-range hydrocarbons	3 / 133 = 2%	12,000	2,000	19,900	2,000	8 / 108 = 7%	810	500	Yes	Lube oil-range hydrocarbons is a COC.
Total TPH	4 / 133 = 3%	22,000	2,000	25,170	2,000	17 / 108 =16%	1290	500	Yes	Total TPH is a COC.

Analyte	Soil					Groundwater			COC Evaluation	
	Soil Sample Exceedance Frequency	Maximum Vadose Soil Detection	Vadose Soil PCUL	Maximum Saturated Soil Detection	Saturated Soil PCUL	Groundwater Sample Exceedance Frequency	Maximum Groundwater Detection[1]	Groundwater PCUL	COC	Notes
Volatile Organic Compounds (VOCs)										
Benzene	2 / 65 = 3%	0.0003 J	0.0088	0.0026	0.00056	0 / 62 = 0%	0.06 J	1.1	No	Only two saturated soil exceedances. No groundwater exceedances.
cis-1,2-Dichloroethylene	5 / 174 = 2.9%	0.0278	0.079	0.149	0.0052	3 / 108 = 2.8%	26.3	16	No	No vadose soil exceedances. Only exceeds in 5 out of 174 saturated soil samples. Only exceeds in 3 out of 108 groundwater samples, and by less than 2x the groundwater PCUL. Cis-1,2-DCE is a breakdown product of TCE, and TCE is a COC that will serve as an indicator hazardous substance.
Methylene Chloride	18 / 90 = 20%	0.0801	0.0052	0.0094	0.0015	3 / 108 = 2.8%	27.7	5.0	No	Only exceeds in 1 vadose soil sample. Does not exceed in any vadose or saturated soil samples inside the Precision Engineering building. MC is a common laboratory contaminant and was present in numerous soil samples at very low concentrations in samples submitted on two days during the 2014/2015 investigation, all from borings outside the building. Method blank contamination was reported for numerous soil samples during the 2014 investigation. Methylene chloride was only detected in 3 out of 108 water samples. The exceedances occurred in different wells during one sampling event only and methylene chloride did not exceed in those wells during any other sampling events.
Trichloroethylene	14 / 173 = 8%	0.0872	0.0044	1.16	0.0021	8 / 108 = 7%	40.3	0.70	Yes	TCE is a COC
Vinyl Chloride	0 / 173 = 0%	ND	0.0011	ND	0.000056	4 / 108 = 3.7%	1.56	0.18	No	No vadose or saturated soil exceedances. Only exceeds in 4 out of 108 groundwater samples. VC is a breakdown product of TCE, and TCE is a COC that can serve as an indicator hazardous substance.
Semivolatile Compounds (SVOCs)										
1,4-Dioxane	1 / 33 = 3%	ND	0.11	0.601	0.00013	17 / 64 = 27%	20.4	0.44	Yes	1,4-Dioxane is a COC.
Bis(2-Ethylhexyl) Phthalate	1 / 9 = 11%	0.0591	0.1	0.0122 J	0.0051	0 / 3 = 0%	ND	0.046	No	Only 1 saturated soil sample exceeds. Phthalates are ubiquitous in the environment and Precision Engineering is not likely the source of the single exceedance.
Diethyl Phthalate	1 / 9 = 11%	ND	0.2	0.345	0.034	0 / 3 = 0%	0.3	93	No	Only 1 saturated soil sample exceeds. Phthalates are ubiquitous in the environment and Precision Engineering is not likely the source of the single exceedance.
Polycyclic Aromatic Hydrocarbons (PAHs)										
1-Methylnaphthalene	2 / 51 = 4%	0.0205	0.082	0.0166	0.0042	0 / 82 = 0%	0.333	1.5	No	No vadose soil exceedances, and no groundwater exceedances. Only two saturated soil samples exceed.
Benzo(a)anthracene	0 / 51 = 0%	0.107	NE	0.0211	NE	4 / 106 = 4%	0.013	0.00016	No	No soil exceedances, and only four groundwater exceedances. The highest groundwater concentration was in MW18, which is far from the Precision contaminant source. Finally, total cPAH TEQ is used as the COC as an indicator hazardous substance.
Benzo(a)pyrene	22 / 51 = 43%	0.139	0.00031	0.0176	0.000016	1 / 106 = 0.9%	0.009	0.000016	No	Total cPAH TEQ is used as the COC as an indicator hazardous substance.
Benzo(b)fluoranthene	0 / 51 = 0%	0.157	NE	0.0261	NE	4 / 106 = 4%	0.011	0.00016	No	No soil exceedances, and only four groundwater exceedances. The highest groundwater concentration was in MW18, which is far from the Precision contaminant source. Total cPAH TEQ is used as the COC as an indicator hazardous substance.
Benzo(k)fluoranthene	0 / 47 = 0%	0.0796	NE	0.0178	NE	1 / 106 = 0.9%	0.007 J	0.0016	No	No soil exceedances, and only one groundwater exceedance. The single groundwater exceedance was in MW18, which is far from the Precision contaminant source. Total cPAH TEQ is used as the COC as an indicator hazardous substance.
Chrysene	0 / 51 = 0%	0.171	NE	0.0449	NE	1 / 106 = 0.9%	0.023	0.016	No	No soil exceedances, and only one groundwater exceedance. The single groundwater exceedance was in MW18, which is far from the Precision contaminant source. Total cPAH TEQ is used as the COC as an indicator hazardous substance.
Dibenzo(a,h)anthracene	0 / 51 = 0%	0.0311	NE	0.001 J	NE	1 / 106 = 1%	0.002 J	0.000016	No	No soil exceedances, and only one groundwater exceedance. Total cPAH TEQ is used as the COC as an indicator hazardous substance.
Indeno(1,2,3-c,d)pyrene	0 / 51 = 0%	0.121	NE	0.0093	NE	3 / 106 = 3%	0.004 J	0.00016	No	No soil exceedances, and only one groundwater exceedance. Total cPAH TEQ is used as the PCOC as an indicator hazardous substance.
Naphthalene	8 / 102 = 8%	0.0955	0.039	0.0084	0.0021	0 / 106 = 0%	1.11	1.4	No	Only 1 vadose soil exceedance, and 7 saturated soil sample exceedances. The majority of vadose soil exceedances are not near Precision's former operational areas but in the ditch, which is likely influenced by stormwater runoff from adjacent roadways. There are no groundwater exceedances.
Total cPAH TEQ (ND=0.5RL)	36 / 51 = 71%	0.2223	0.00031	0.0302	0.000016	1 / 106 = 1%	0.01563 J	0.0097	Yes	Total cPAH TEQ is a COC.

Analyte	Soil					Groundwater			COC Evaluation	
	Soil Sample Exceedance Frequency	Maximum Vadose Soil Detection	Vadose Soil PCUL	Maximum Saturated Soil Detection	Saturated Soil PCUL	Groundwater Sample Exceedance Frequency	Maximum Groundwater Detection[1]	Groundwater PCUL	COC	Notes
Polychlorinated Biphenyls (PCBs)										
Total PCB Aroclors	1 / 9 = 11%	0.0148 J	0.000011	ND	0.00000055	0 / 3 = 0%	0.1 U	0.000007	No	Only detected in one vadose soil sample. Not detected in saturated soil or groundwater.
Per- and Polyfluoroalkyl Substances (PFAS)										
Perfluorohexanesulfonic acid (PFHxS)	0 / 9 = 0%	ND	0.00041	ND	0.000026	1 / 26 = 3.8%	0.24	0.065	No	No soil exceedances. Only 1 groundwater exceedance out of 26 samples. The exceedance was in MW18 which is not near Precision Engineering's former operational areas, suggesting an off site / background source.
Perfluorooctanesulfonic acid (PFOS)	0 / 9 = 0%	ND	0.00017	ND	0.0000099	3 / 26 = 12%	0.07	0.015	No	No soil exceedances. Only 3 groundwater exceedance out of 26 samples. The two of the exceedances were in MW18 and MW20 which are not near Precision Engineering's former operational areas, suggesting an off site / background source.
Perfluorooctanoic acid (PFOA)	0 / 9 = 0%	ND	0.000063	ND	0.000004	10 / 26 = 38%	0.75	0.01	No	No soil exceedances. In groundwater, the highest concentration (0.75 µg/L) is in MW18, away from Precision's operational areas. All other groundwater exceedances were only several times higher than the PCUL.

Notes:

[1] The total (i.e., unfiltered) metals data are used, except for hexavalent chromium and trivalent chromium which are dissolved (filtered) only.

[2] The copper concentration in MW-6 on 7/23/19 was 210 µg/L, however the data point is suspected to be nonrepresentative. The copper concentrations in MW6 during six subsequent sampling events ranged from non-detect to a maximum of 4.38 µg/L. Therefore the next highest copper result of 44.7 µg/L (in MW8 on 7/23/19) is shown in this table.

Cis-1,2-DCE = cis-1,2-Dichloroethylene

COC = Contaminant of concern

ND = Not detected

NE = Not established

PAHs = Polycyclic Aromatic Hydrocarbons

PCBs = Polychlorinated Biphenyls

PCUL = Preliminary Cleanup Level provided to GeoEngineers by Washington State Department of Ecology (Ecology) June 3, 2022 as the PCULs for the Remedial Investigation (PFAS PCULs are from Ecology Publication 22-09-058)

PFAS = Per- and Polyfluoroalkyl Substances

SVOCs = Semivolatile Volatile Organic Compounds

TCE = Trichloroethylene

Total cPAH TEQ = Total toxic equivalency of cPAHs per WAC 173-340-708(8)(e)

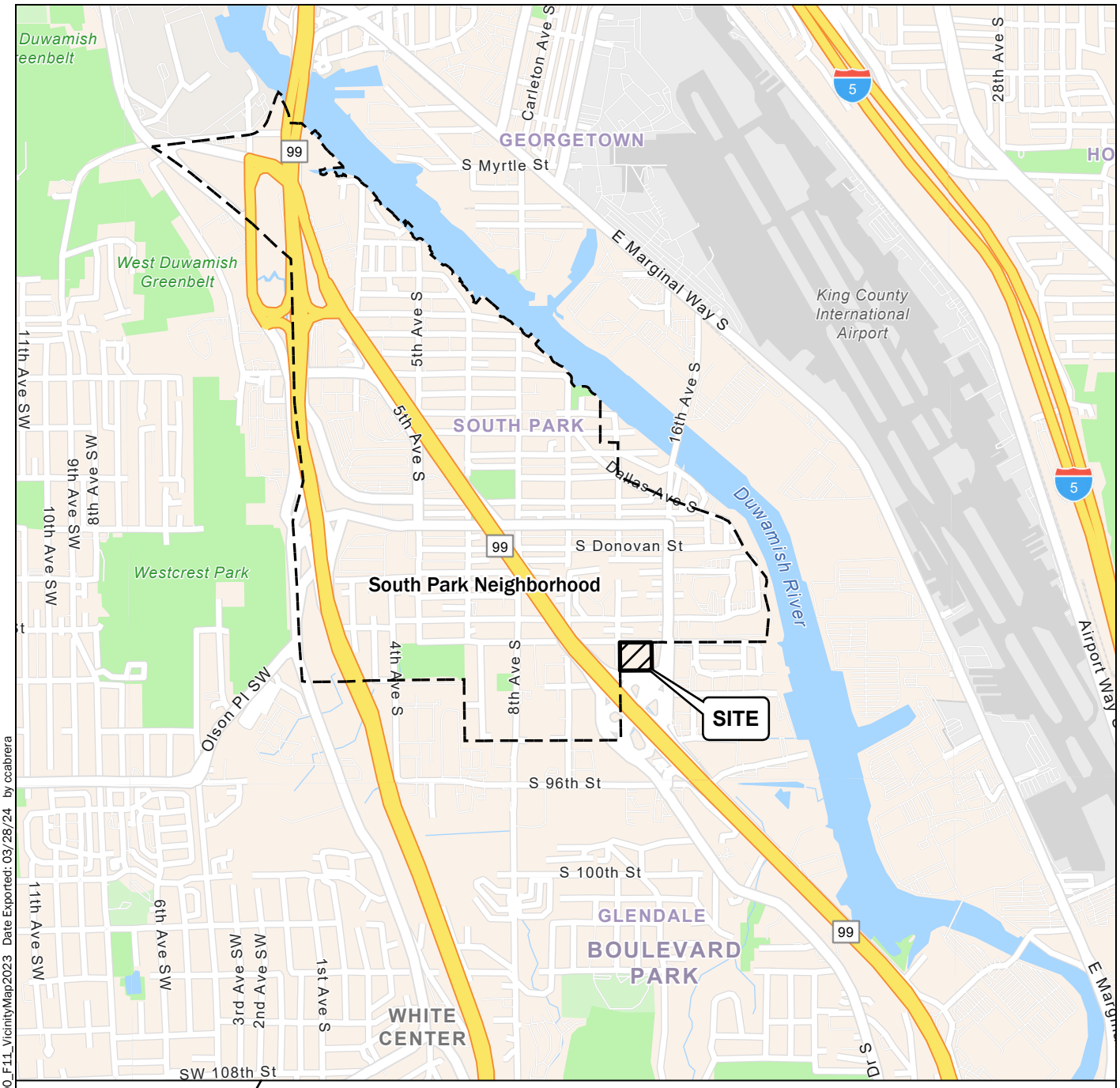
TPH = Total Petroleum Hydrocarbons

VOCs = Volatile Organic Compounds

µg/L = Microgram per liter

mg/kg = Milligram per kilogram

Figures



Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI

Projection: NAD 1983 UTM Zone 10N

Vicinity Map

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 1-1

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Legend

- Former Precision Engineering Property
- Nearby Current and/or Former Contaminated Sites
- King County Parcels

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: 2021 image and GIS data from King County GIS.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

N W E S

200 0 200

Feet

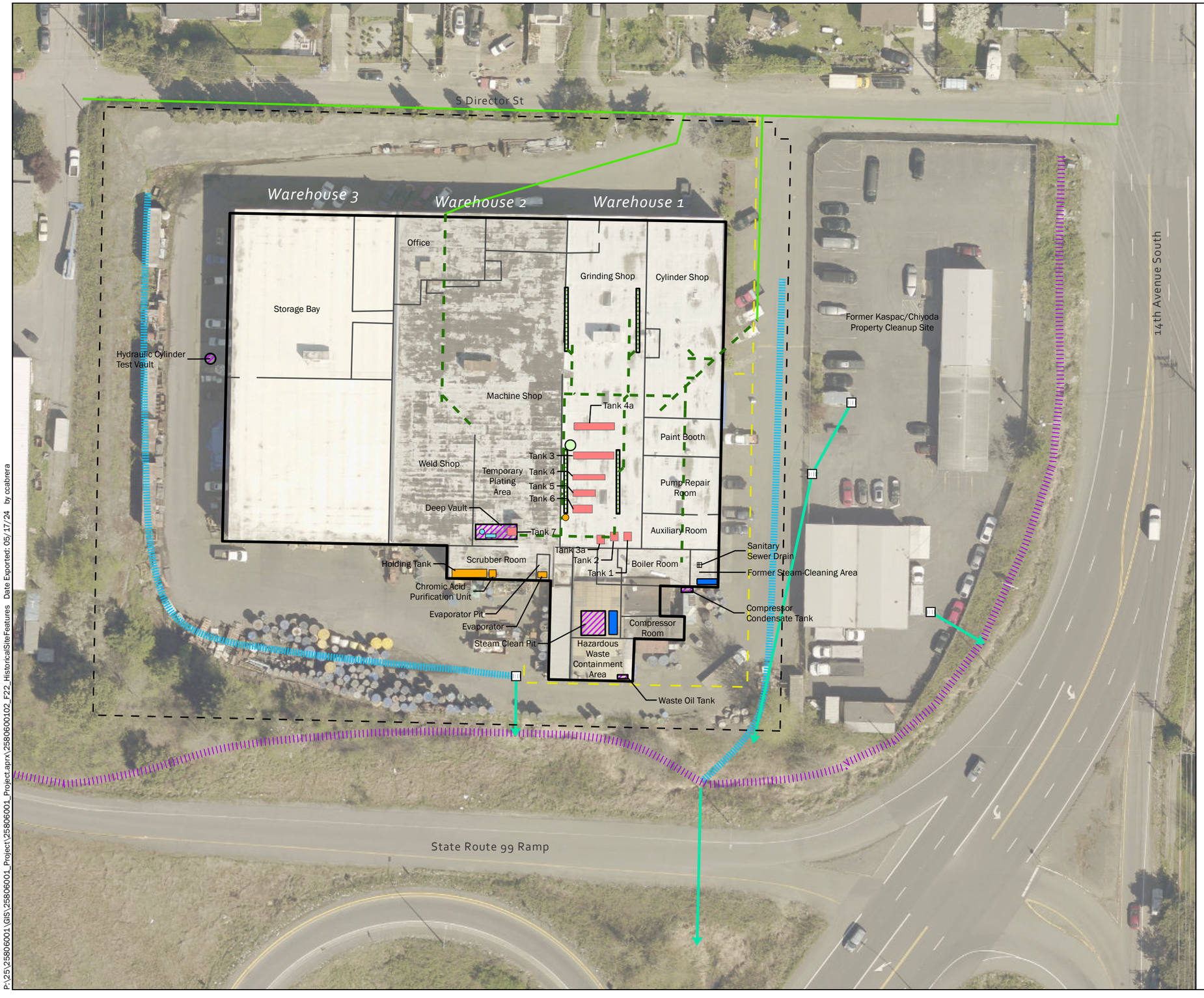
Site and Surroundings

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 2-1

P:\25\25806001\GIS\25806001_Project\25806001_Project.aprx\25806000102_F21_SiteSurroundings Date Exported: 05/17/24 by crabrera



Legend

- Chromic Acid Plating Tank
- Other Tanks/Equipment Containing Chromic Acid
- Sodium Hydroxide Tank
- Sodium Carbonate Tank
- Trichloroethene Tank
- Other Site Features
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Sanitary Sewer
- Former Sanitary Sewer
- Sanitary Sewer Drain
- Natural Gas
- Trench Drain
- Property Parcel

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: 2021 image from King County GIS.
MFA and Kennedy Jenks report figures 2005 to 2021 (see report text).

Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet

N
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60 0 60
Feet

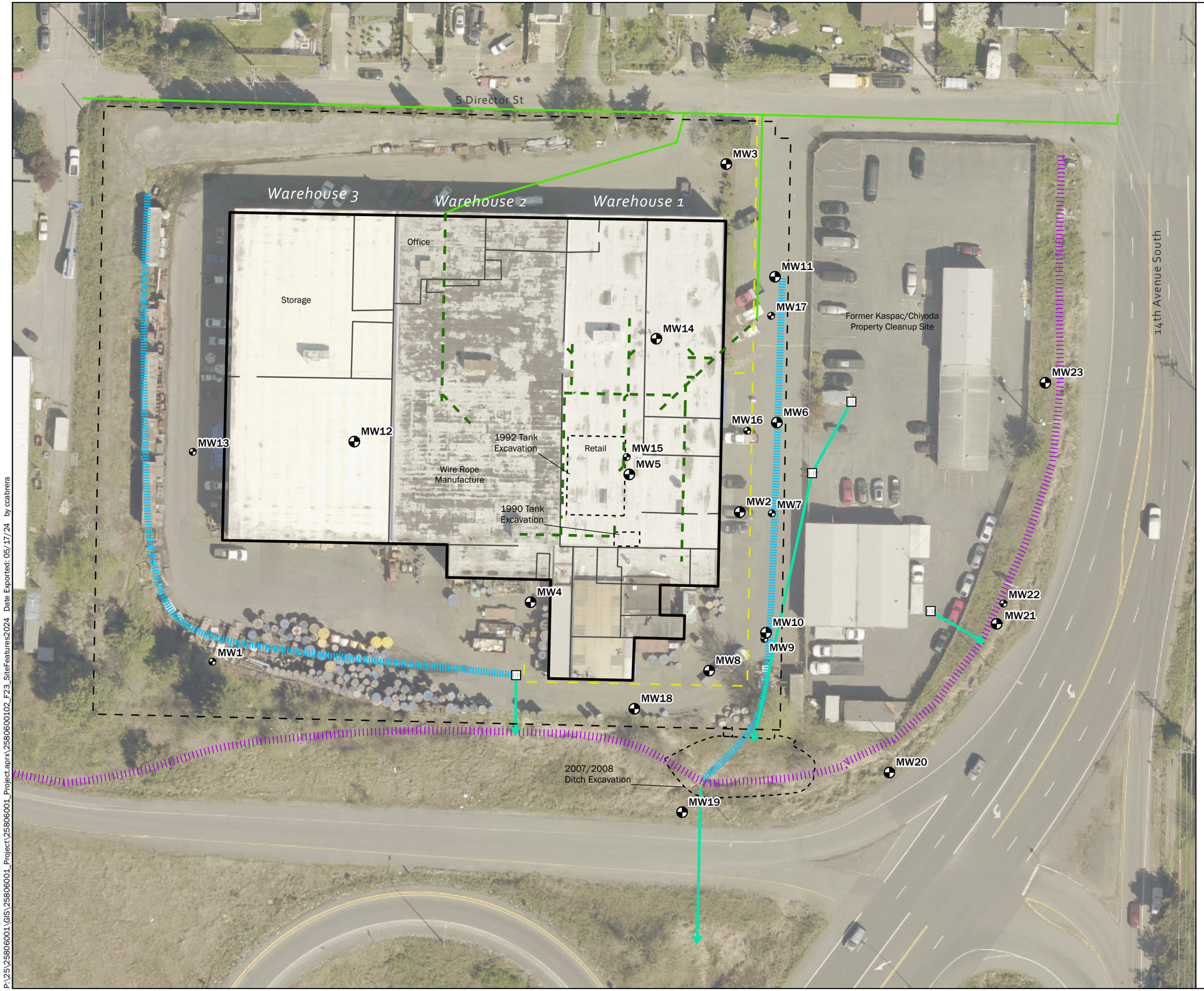
Historical Site Features

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 2-2

P:\25\25806001\GIS\25806001_Project\25806001_Project.aprx\25806001_F22_HistoricalSiteFeatures Date Exported: 05/17/24 by ccabrera



Legend

- Deep Monitoring Well
- Shallow Monitoring Well
- Former Sanitary Sewer
- Former Tank/Ditch Excavation Area
- Drainage Ditch
- Stormwater Runoff
- Catch Basin
- Stormwater Piping with Outfall
- Sanitary Sewer
- Natural Gas
- Property Parcel

Notes:

1. The locations of all features shown are approximate.
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Data Source: 2021 image from King County GIS.

Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet

N W E S

60 0 60

Feet

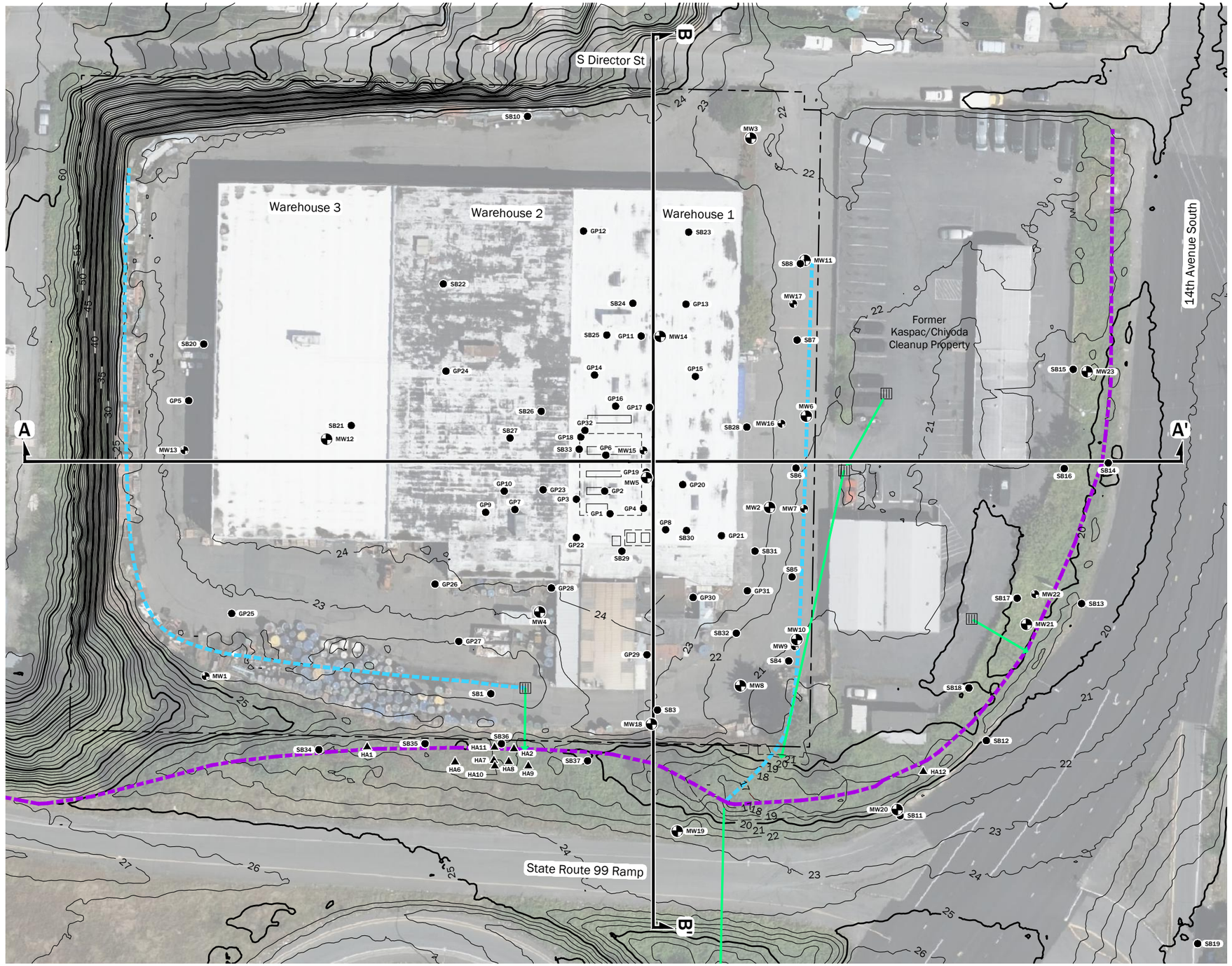
Site Features - 2024

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 2-3

P:\25\25806001\GIS\25806001_Project\25806001_Project.aprx\25806102_F23_SiteFeatures2024 Date Exported: 05/17/24 by ccabrera



Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- A — A' Cross Section Location (see Figures 3-2 and 3-3)
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Source(s):

- Aerial from Microsoft Bing, 2022
- Lidar from King County, collected 2021

Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 60

Feet

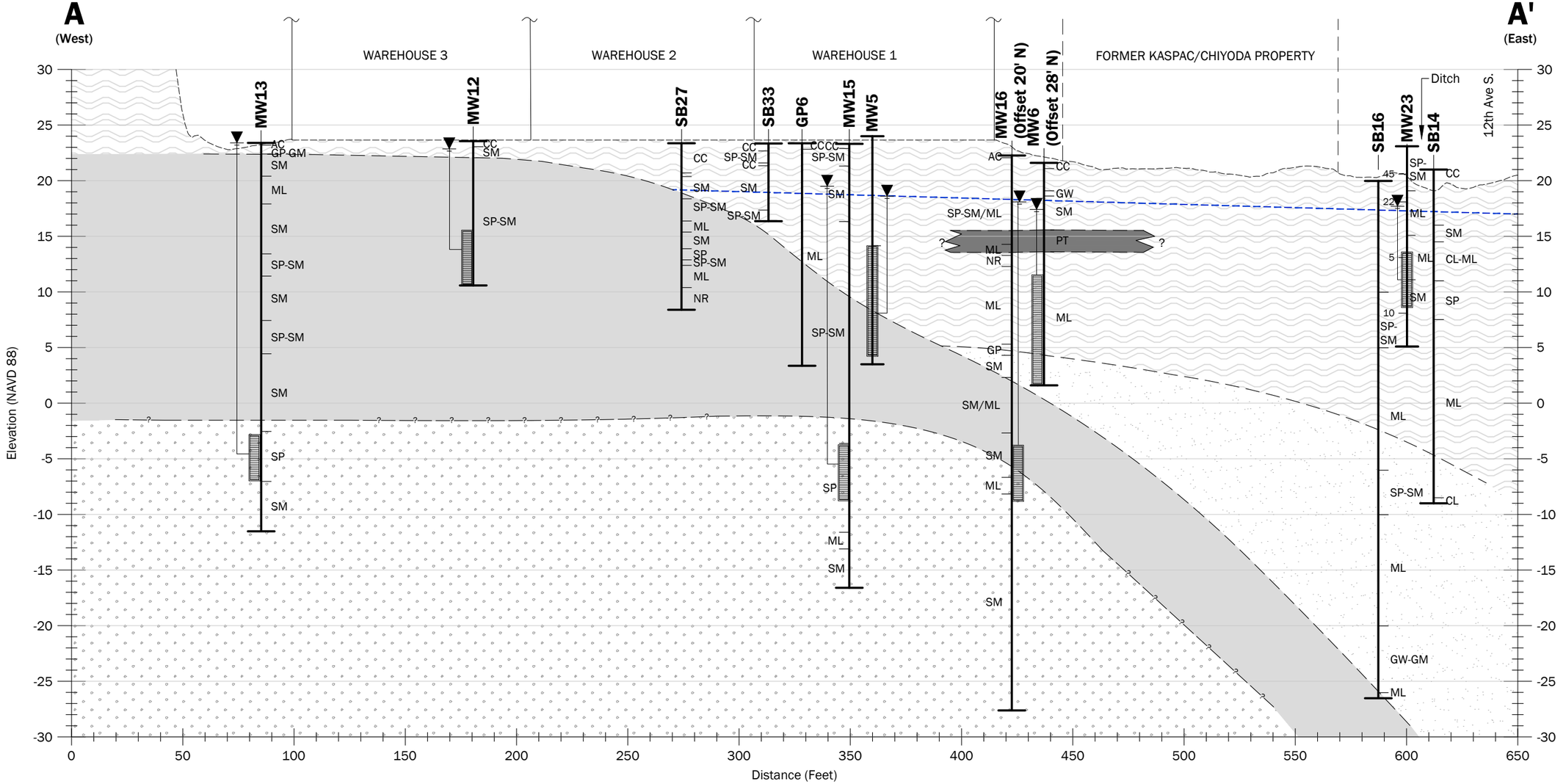
Borings and Monitoring Wells Used for Geology/Hydrogeology

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-1

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\25806001002_F3-1_Site Plan.dwg 3-1 Date Exported:5/30/2024 3:48 PM - by Michael R. Woods



Notes:

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.
3. Borings are located within 15 feet of cross section unless noted otherwise.
4. Ground surface from from King County West Lidar 2021.

Datum: NAVD 88

Legend

Boring ID (Offset)

Inferred Soil Contact

SM Soil Classification

Shallow WBZ Seasonal High Groundwater Elevation

Groundwater Elevation December 2023

Well Screen

Silts, Clays, Silt with Sand (Inferred Recessional Outwash and Recent Alluvium and Fill)

Wood, Peat, Woody Organic Material

Sand and Silt with Shell Fragments

Dense to Very Dense Silt, Sand and Gravel (Inferred Glacial Till)

Sand and Gravel with Some Fines (Inferred Advance Outwash Deposits or Lens/Interbed Within the Glacial Sequence)

50 0 50
Horizontal Scale in Feet

10 0 10
Vertical Scale in Feet
Vertical Exaggeration = 5X

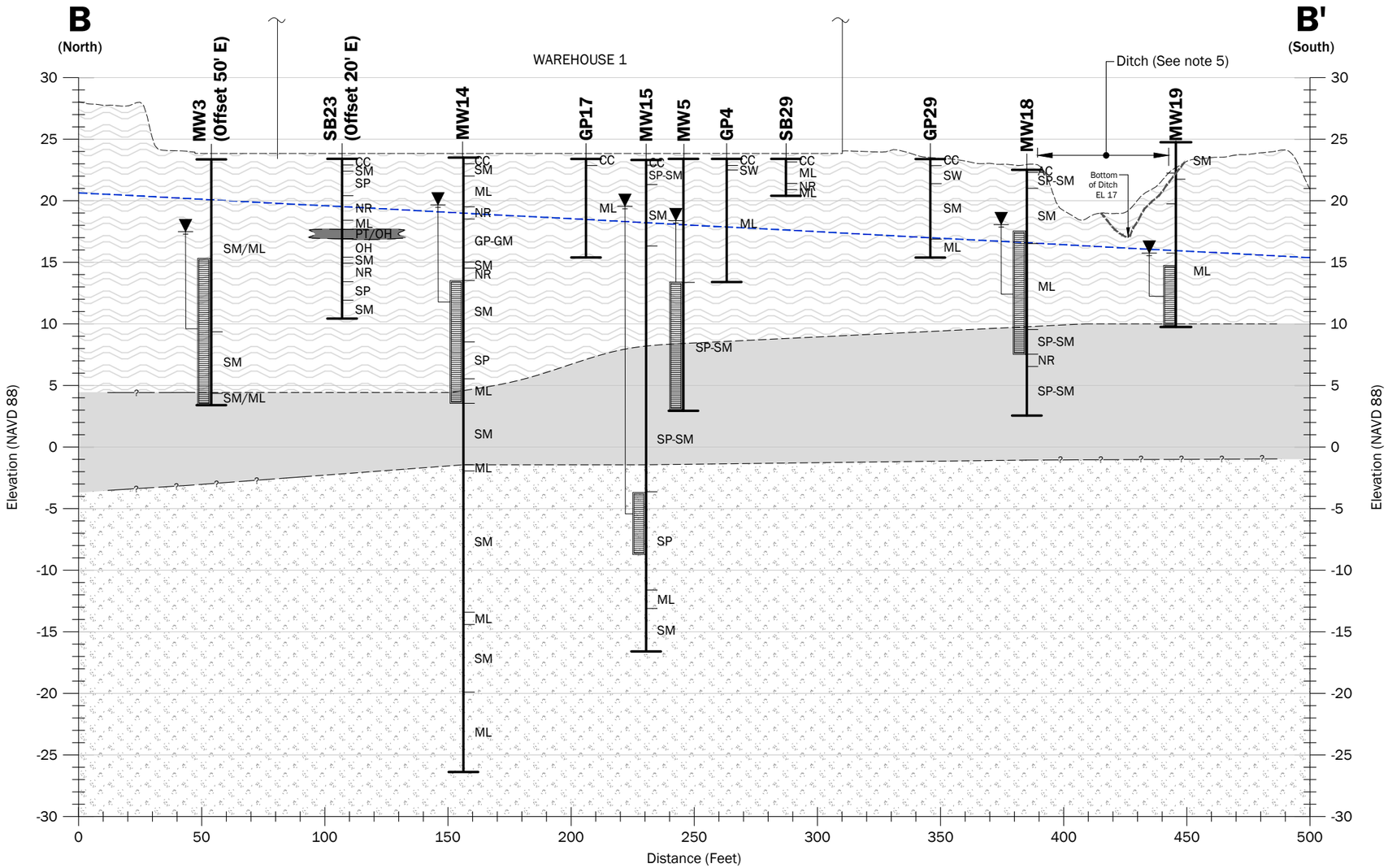
Cross Section A-A'

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-2

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\25806001O2_F3-2_F3-3_Cross Sections.dwg 3-2 Date Exported\5/24/2024 2:40 PM - by Michael R. Woods

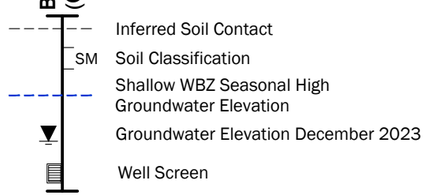


Notes:

1. The subsurface conditions shown are based on interpolation between widely spaced explorations and should be considered approximate; actual subsurface conditions may vary from those shown.
2. This figure is for informational purposes only. It is intended to assist in the identification of features discussed in a related document. Data were compiled from sources as listed in this figure. The data sources do not guarantee these data are accurate or complete. There may have been updates to the data since the publication of this figure. This figure is a copy of a master document. The hard copy is stored by GeoEngineers, Inc. and will serve as the official document of record.
3. Borings are located within 15 feet of cross section unless noted otherwise.
4. Ground surface from from King County West Lidar 2021.
5. Lowest point of ditch is elevation 17', offset 54' east.

Datum: NAVD 88

Legend



Inferred Soil Contact

Soil Classification

Shallow WBZ Seasonal High Groundwater Elevation

Groundwater Elevation December 2023

Well Screen

Silts, Clays, Silt with Sand (Inferred Recessional Outwash and Recent Alluvium and Fill)

Wood, Peat, Woody Organic Material

Dense to Very Dense Silt, Sand and Gravel (Inferred Glacial Till)

Sand and Gravel with Some Fines (Inferred Advance Outwash Deposits or Lens/Interbed Within the Glacial Sequence)

50 0 50
Horizontal Scale in Feet

10 0 10
Vertical Scale in Feet
Vertical Exaggeration = 5X

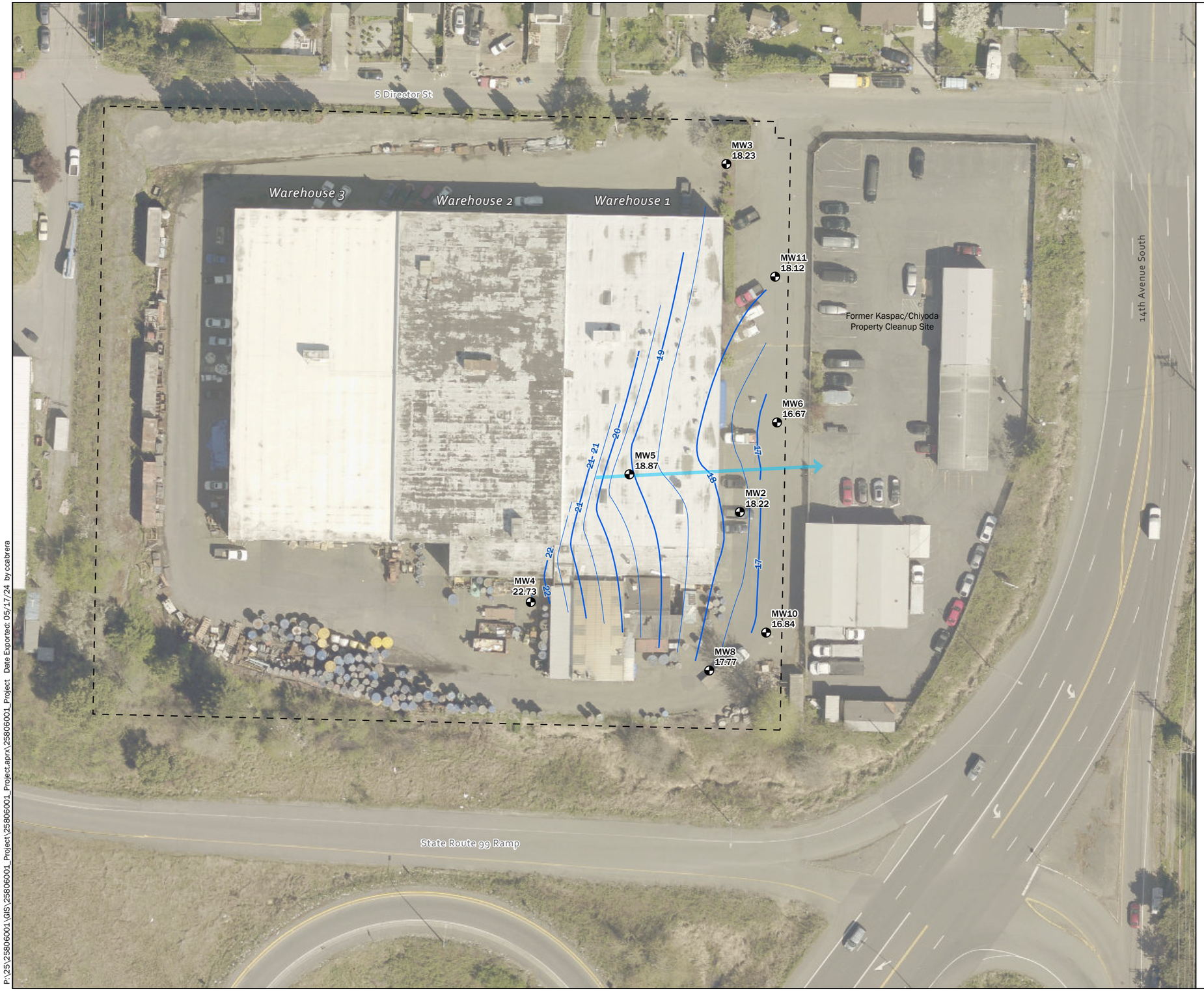
Cross Section B-B'

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-3

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\25806001_02_F3-2 - F3-3_Cross Sections.dwg 3-3 Date Exported5/24/2024 3:10 PM - by Michael R. Woods



Legend

- Shallow Monitoring Well
- Shallow Groundwater Elevation Contours (NAVD88)
- Inferred Groundwater Flow Direction
- Property Parcel

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. Contours generated by Natural Neighbors method with selected contours smoothed by hand.
4. Depth to water measured in all wells on January 29th 2020.

Data Source: 2021 image from King County GIS.
Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet

N
W E
S

60 0 60
Feet

Shallow Groundwater Contours - January 2020

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-4

P:\25\25806001\GIS\25806001_Project\25806001_Project.aprx\25806001_Project Date Exported: 05/17/24 by ccabrera



Deep Monitoring Well

Deep Groundwater Elevation Contours (NAVD88)

Inferred Groundwater Flow Direction

Property Parcel

Data Source: 2021 image from King County GIS.

N
W E
S

60 0 60

Feet

Deep Groundwater Contours - January 2020

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-5

P:\25\258060001\GIS\258060001_Project\258060001_Project.aprx\258060001_Project Date Exported: 05/17/24 by ccabrera

end

Notes:



Legend

- Shallow Monitoring Well
- Shallow Groundwater Elevation Contours (NAVD88)
- Inferred Groundwater Flow Direction
- Property Parcel

Notes:

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3. Contours generated by Natural Neighbors method with selected contours smoothed by hand.
4. Depth to water measured in all wells on April 28th 2020.

Data Source: 2021 image from King County GIS.
Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet

N
W E
S

60 0 60
Feet

Shallow Groundwater Contours - April 2020

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-6

P:\25\25806001\GIS\25806001_Project\25806001_Project.aprx\25806001_Project Date Exported: 05/17/24 by:ccabrera



Deep Monitoring Well

Deep Groundwater Elevation Contours (NAVD88)

Inferred Groundwater Flow Direction

Property Parcel

Data Source: 2021 image from King County GIS.

N
W E
S

60 0 60

Feet

Deep Groundwater Contours - April 2000

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-7

P:\25\258060001\GIS\258060001_Project\258060001_Project.aprx\258060001_Project Date Exported: 05/17/24 by ccabrera

end

Notes:



Legend

- Shallow Monitoring Well
- Shallow Groundwater Elevation Contours (NAVD88)
- Inferred Groundwater Flow Direction
- Property Parcel

Notes:

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3. Contours generated by Natural Neighbors method with selected contours smoothed by hand.
4. Depth to water measured in all wells on May 31nd 2022.

Data Source: 2021 image from King County GIS.

Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet

N
W E
S

60 0 60
Feet

Shallow Groundwater Contours - May 2022

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-8

P:\25\25806001\GIS\25806001_Project\25806001_Project.aprx\25806001_Project Date Exported: 05/17/24 by ccabrera



Deep Monitoring Well

Deep Groundwater Elevation Contours (NAVD88)

Inferred Groundwater Flow Direction

Property Parcel

Data Source: 2021 image from King County GIS.

N
W E
S

60 0 60

Feet

Deep Groundwater Contours - May 2022

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-9

P:\25\258060001\GIS\258060001_Project\258060001_Project.aprx\258060001_Project Date Exported: 05/17/24 by ccabrera

end

Notes:



Legend

- Shallow Monitoring Well
- Shallow Groundwater Elevation Contours (NAVD88)
- Inferred Groundwater Flow Direction
- Property Parcel

Notes:

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3. Contours generated by Natural Neighbors method with selected contours smoothed by hand.
4. Depth to water measured in all wells on May 31nd 2022.

Data Source: 2021 image from King County GIS.

Projection: NAD 1983 HARN StatePlane Washington North FIPS 4601 Feet

N W E S

60 0 60

Feet

Shallow Groundwater Contours - July 2023

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-10

P:\25\258060001\GIS\258060001_Project\258060001_Project.aprx\258060001_Project Date Exported: 05/17/24 by ccabrera



Deep Monitoring Well

Deep Groundwater Elevation Contours (NAVD88)

Inferred Groundwater Flow Direction

Property Parcel

Data Source: 2021 image from King County GIS.

N
W E
S

60 0 60

Feet

Deep Groundwater Contours - July 2023

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 3-11

P:\25\258060001\GIS\258060001_Project\258060001_Project.aprx\258060001_Project Date Exported: 05/17/24 by ccabrera

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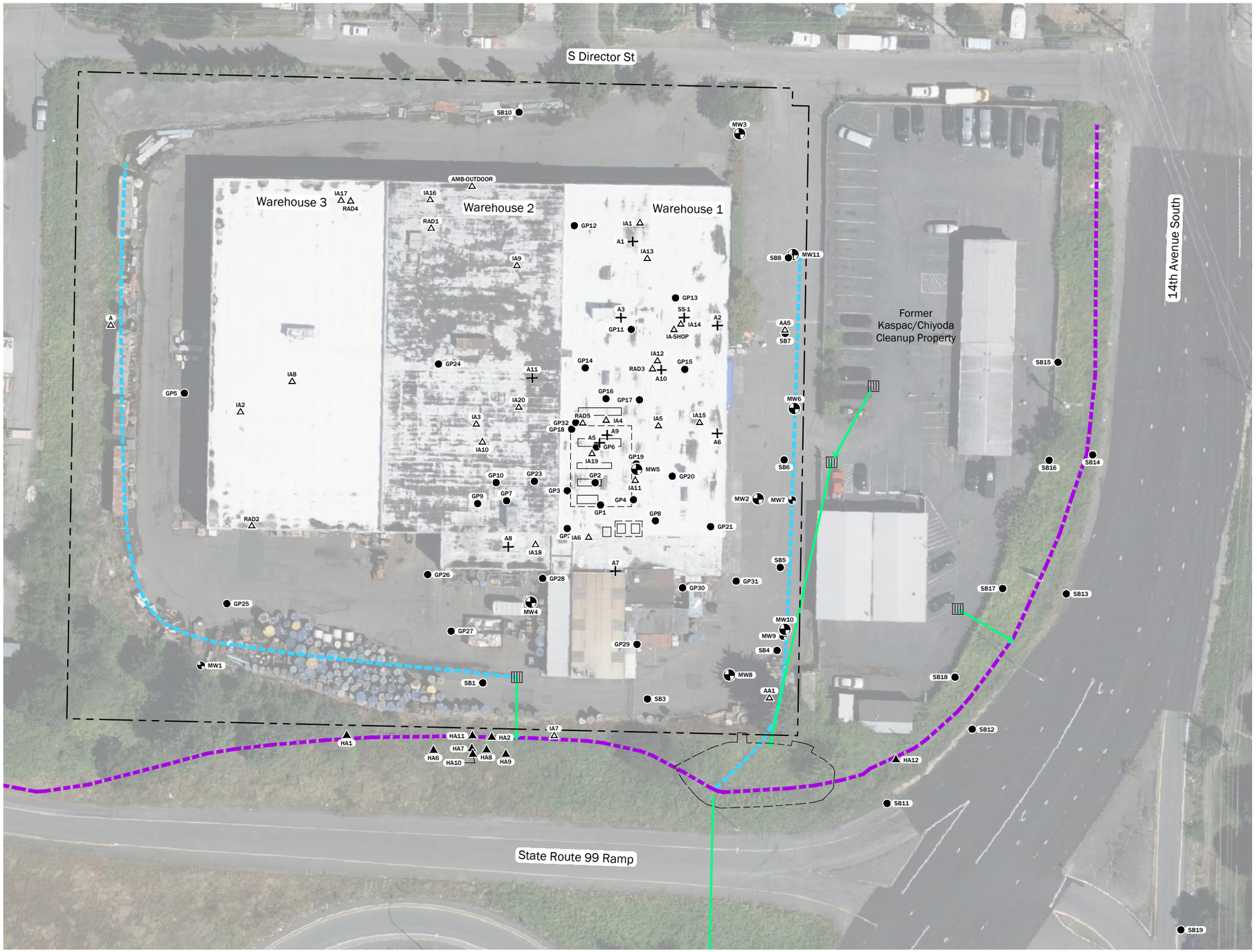
Notes:



Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Sub-slab soil gas sample
- Indoor/outdoor air sample
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Source(s):

- Aerial from Microsoft Bing, 2022

Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 60

Feet

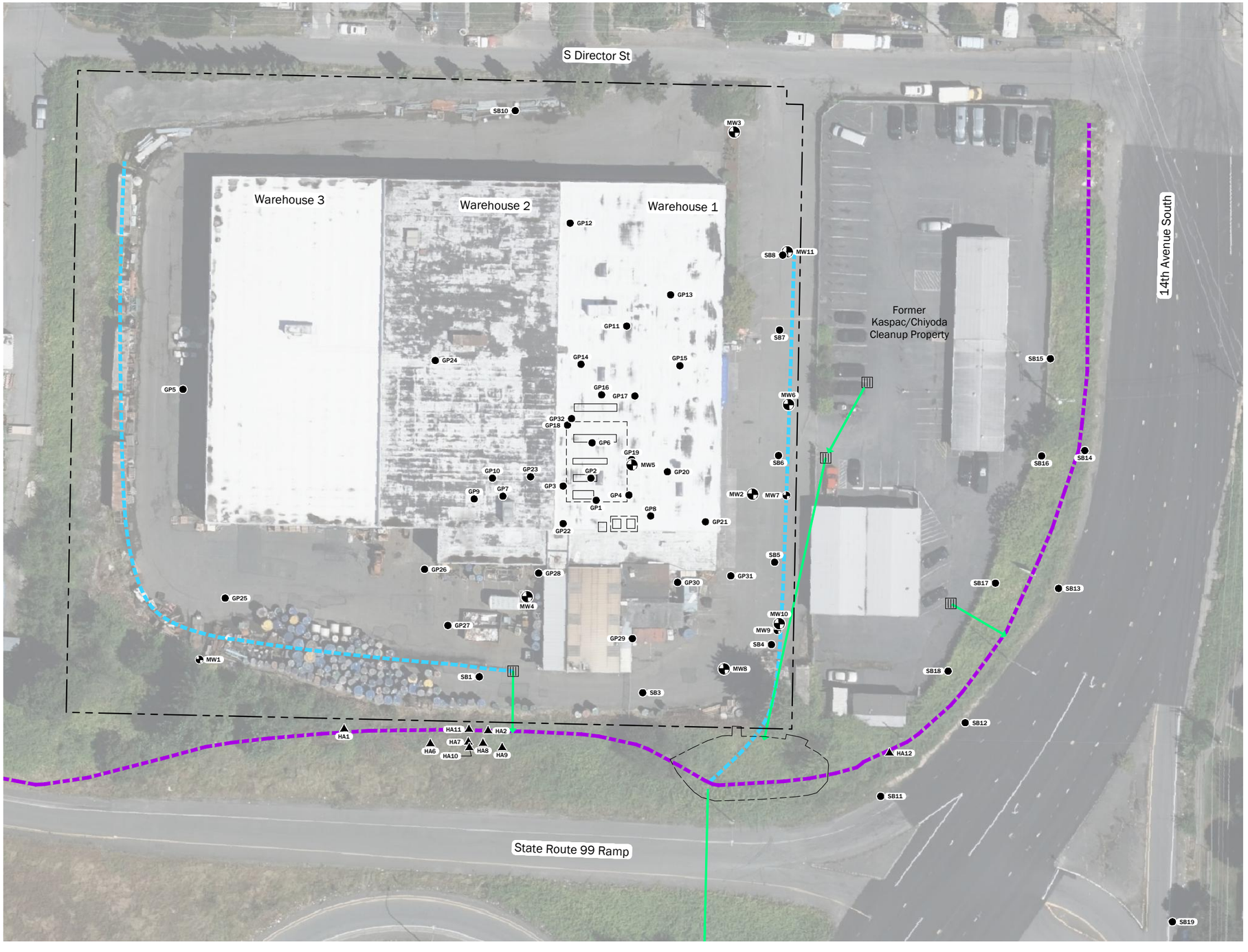
Investigation Locations 2005 – 2021

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 4-1

\\geoengineers.com\WAN Projects\25\25806001\CAD\02\RI Report\25806001_02_F4-1 - F4-3_Site Plans.dwg 4-1 Date Exported:5/30/2024 3:42 PM - by Michael R. Woods



Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Source(s):

- Aerial from Microsoft Bing, 2022

Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 60

Feet

Soil and Groundwater Investigation Locations 2005 – 2021

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 4-2

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\2580600102_F4-1 - F4-3_Site Plans.dwg 4-2 Date Exported:5/30/2024 3:42 PM - by Michael R. Woods



Legend

- Sub-slab soil gas sample
- Indoor/outdoor air sample
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Source(s):

- Aerial from Microsoft Bing, 2022

Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 60

Feet

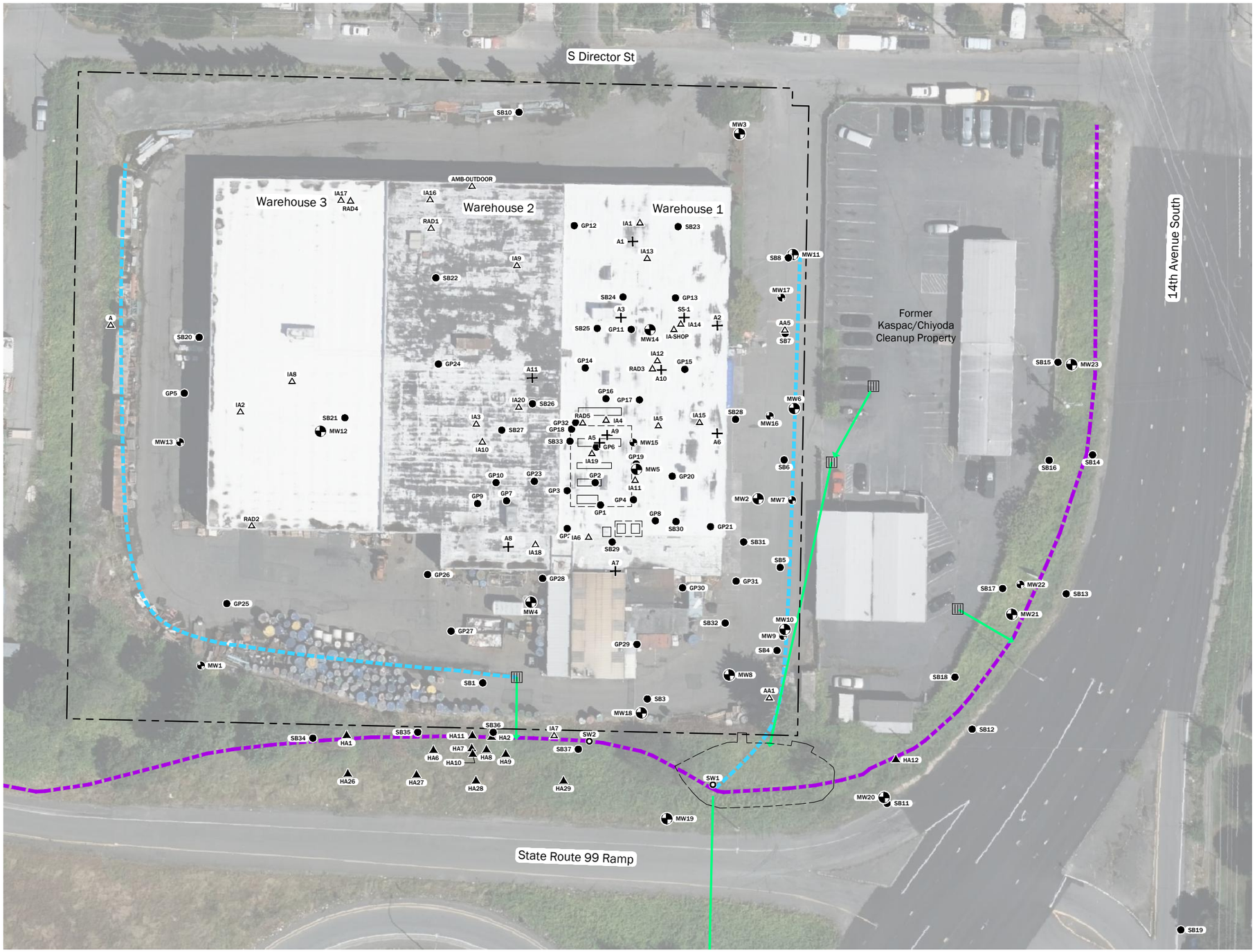
Air/Soil Gas Investigation Locations 2005 - 2021

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 4-3

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\25806001020_F4-1 - F4-3_Site Plans.dwg 4-3 Date Exported:5/30/2024 3:42 PM - by Michael R. Woods



Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Ditch Water Sample
- Sub-slab soil gas sample
- Indoor/outdoor air sample
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Source(s):

- Aerial from Microsoft Bing, 2022

Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 60

Feet

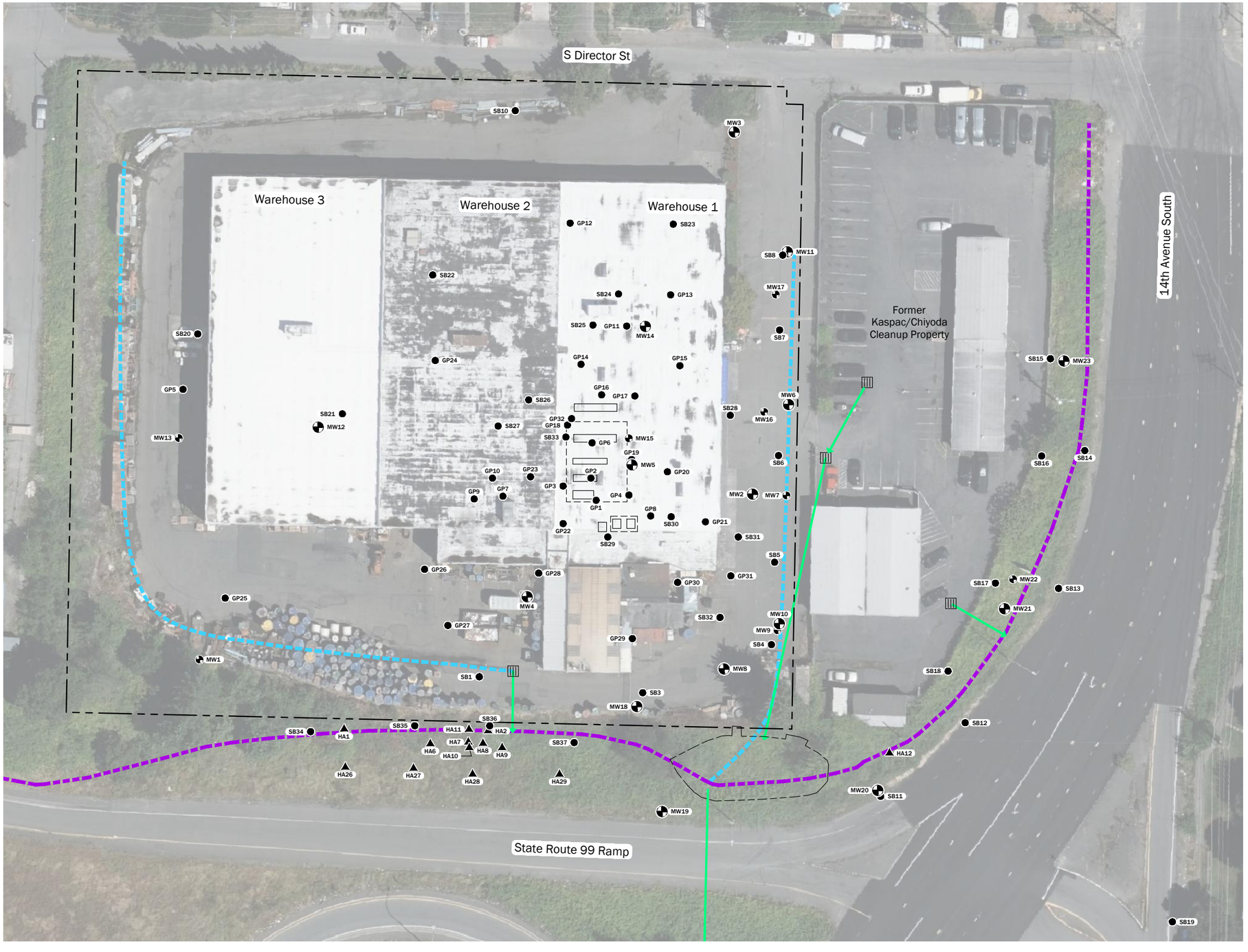
Investigation Locations 2005 - 2023

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 5-1

\\geoengineers.com\WAN Projects\25\25806001\CAD\02\RI Report\25806001_02_F5-1_F5-3_Site Plans.dwg 5-1 Date Exported:5/30/2024 3:40 PM - by Michael R. Woods



Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Source(s):

- Aerial from Microsoft Bing, 2022

Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 60

Feet

Soil and Groundwater Investigation Locations 2005 – 2023

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 5-2

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\2580600102_F5-1 - F5-3_Site Plans.dwg 5-2 Date Exported:5/30/2024 3:41 PM - by Michael R. Woods



Legend

- Sub-slab soil gas sample
- Indoor/outdoor air sample
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Source(s):

- Aerial from Microsoft Bing, 2022

Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 60

Feet

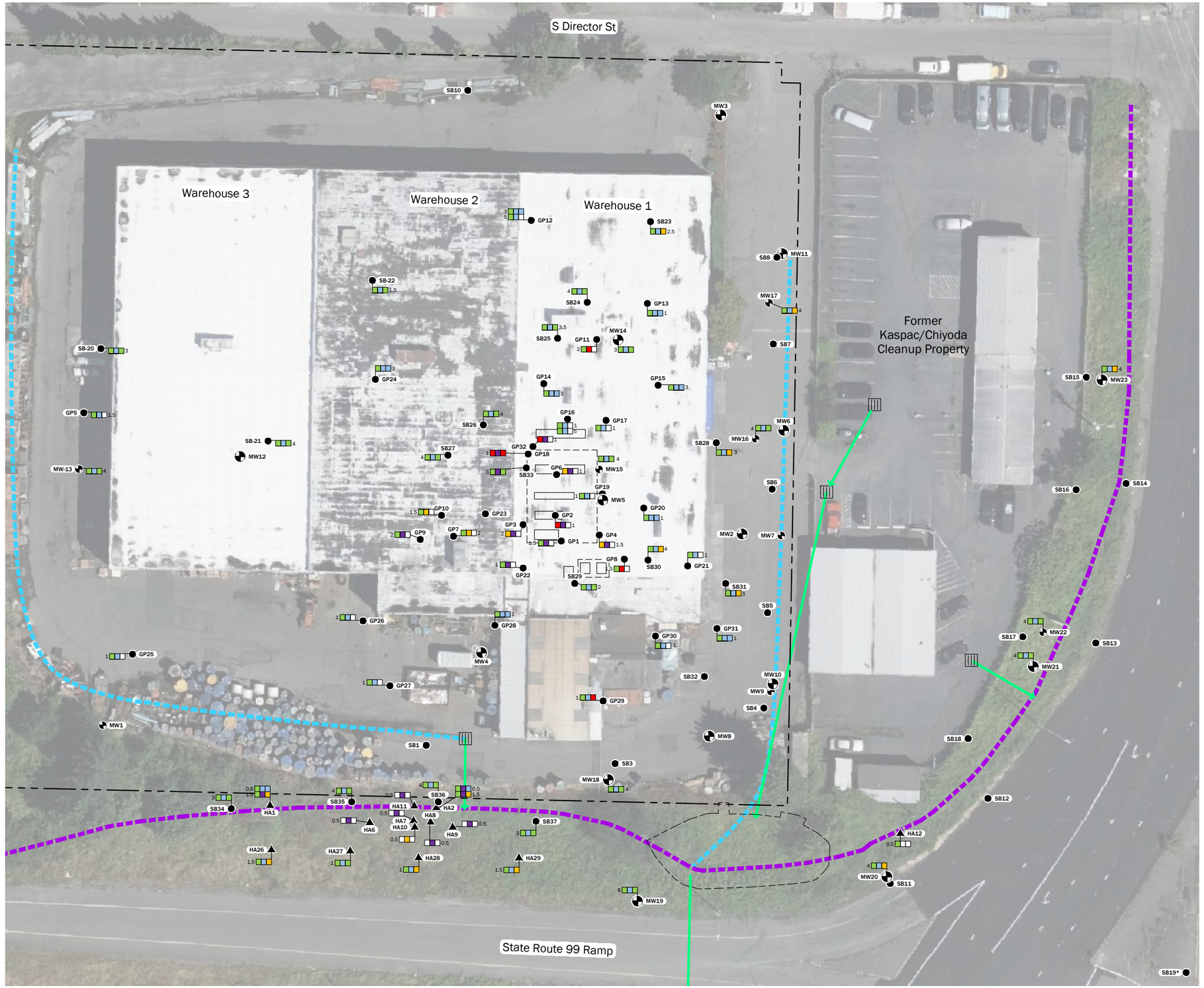
Air/Soil Gas Investigation Locations
2005 - 2023

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 5-3

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\25806001 02_F5-1 - F5-3_Site Plans.dwg 5-3 Date Exported:5/30/2024 3:41 PM - by Michael R. Woods



Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Vadose Soil Chemical Analytical Results

Total Chromium
Hexavalent Chromium
Mercury

Soil Sample Depth (feet bgs): 3 / 5 / 7

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
bgs = Below Ground Surface

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

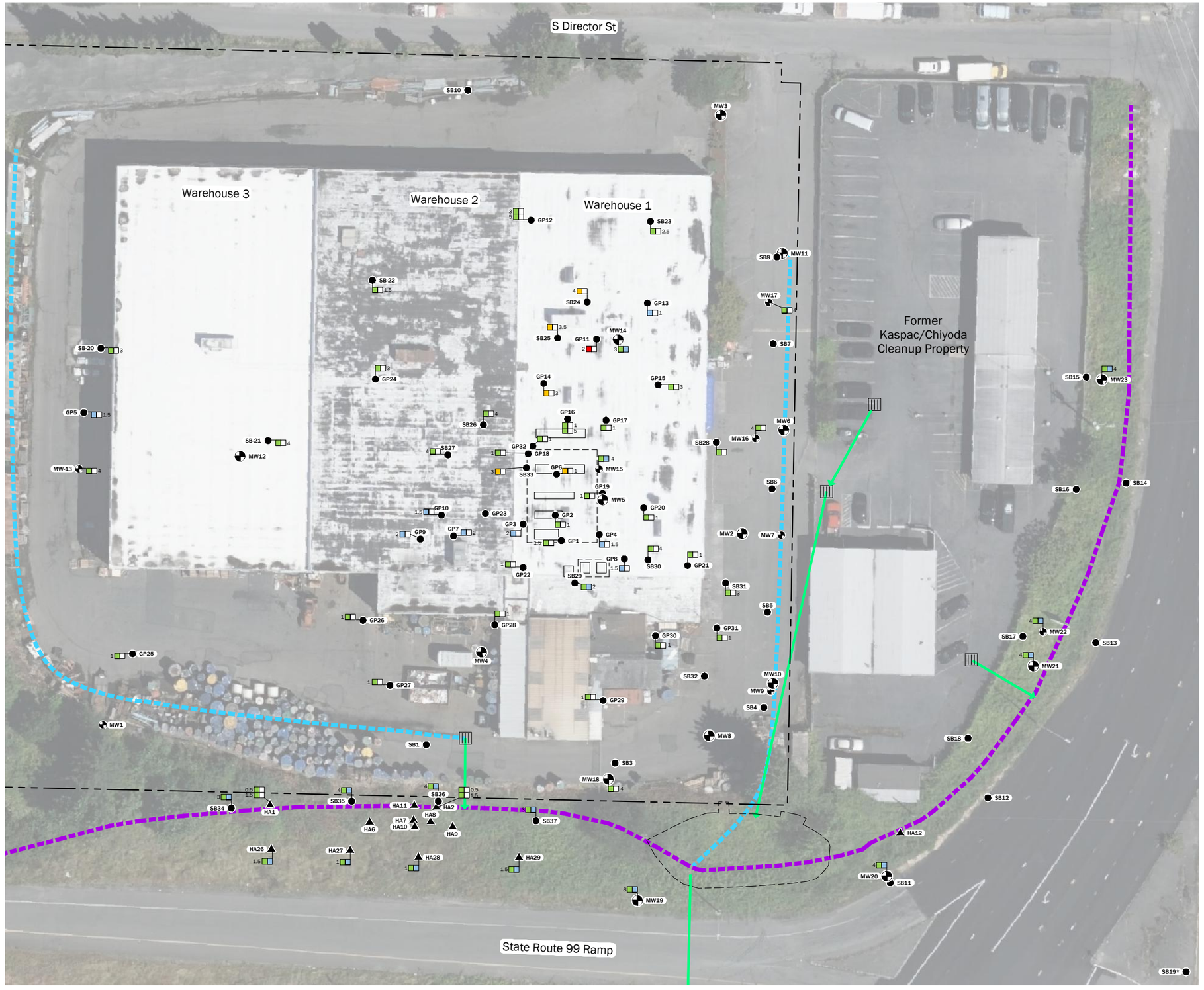
Chromium and Mercury in Vadose Soil

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-1A

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\25806001O2_F7-1A - F7-3D_Site Plans.dwg 7-1A Date Exported:5/30/2024 3:31 PM - by Michael R. Woods



Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Vadose Soil Chemical Analytical Results

Trichloroethylene
1,4-Dioxane

Soil Sample Depth (feet bgs): 3 5 7

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
bgs = Below Ground Surface
TCE = Trichloroethylene

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

TCE and 1,4-Dioxane in Vadose Soil

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-1B

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\258060102_F7-1A - F7-3D_Site Plans.dwg 7-1B Date Exported:5/30/2024 3:31 PM - by Michael R. Woods

S Director St

Warehouse 3

Warehouse 2

Warehouse 1

Former Kaspac/Chiyoda Cleanup Property

State Route 99 Ramp

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Vadose Soil Chemical Analytical Results

Total Diesel+Oil
Total cPAH TEQ

Soil Sample Depth (feet bgs): 3 5 7

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
bgs = Below Ground Surface
cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons
TEQ = Toxic Equivalent Concentration

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

Petroleum Hydrocarbons and cPAHs in Vadose Soil

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-1C

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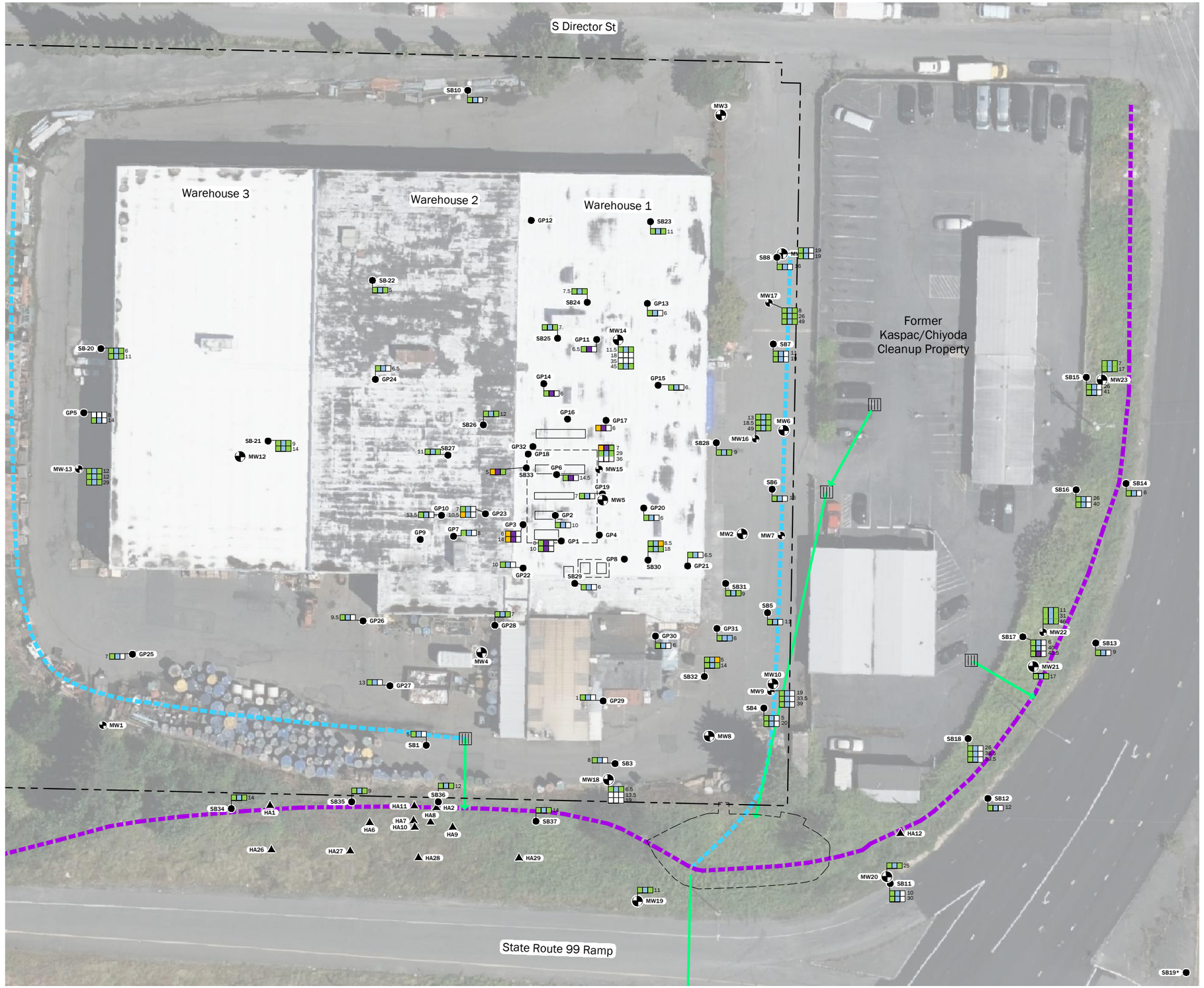

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Saturated Soil Chemical Analytical Results

Total Chromium
Hexavalent Chromium
Mercury
Soil Sample Depth (feet bgs) 3 5 7

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
bgs = Below Ground Surface

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

Chromium and Mercury in Saturated Soil

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-2A

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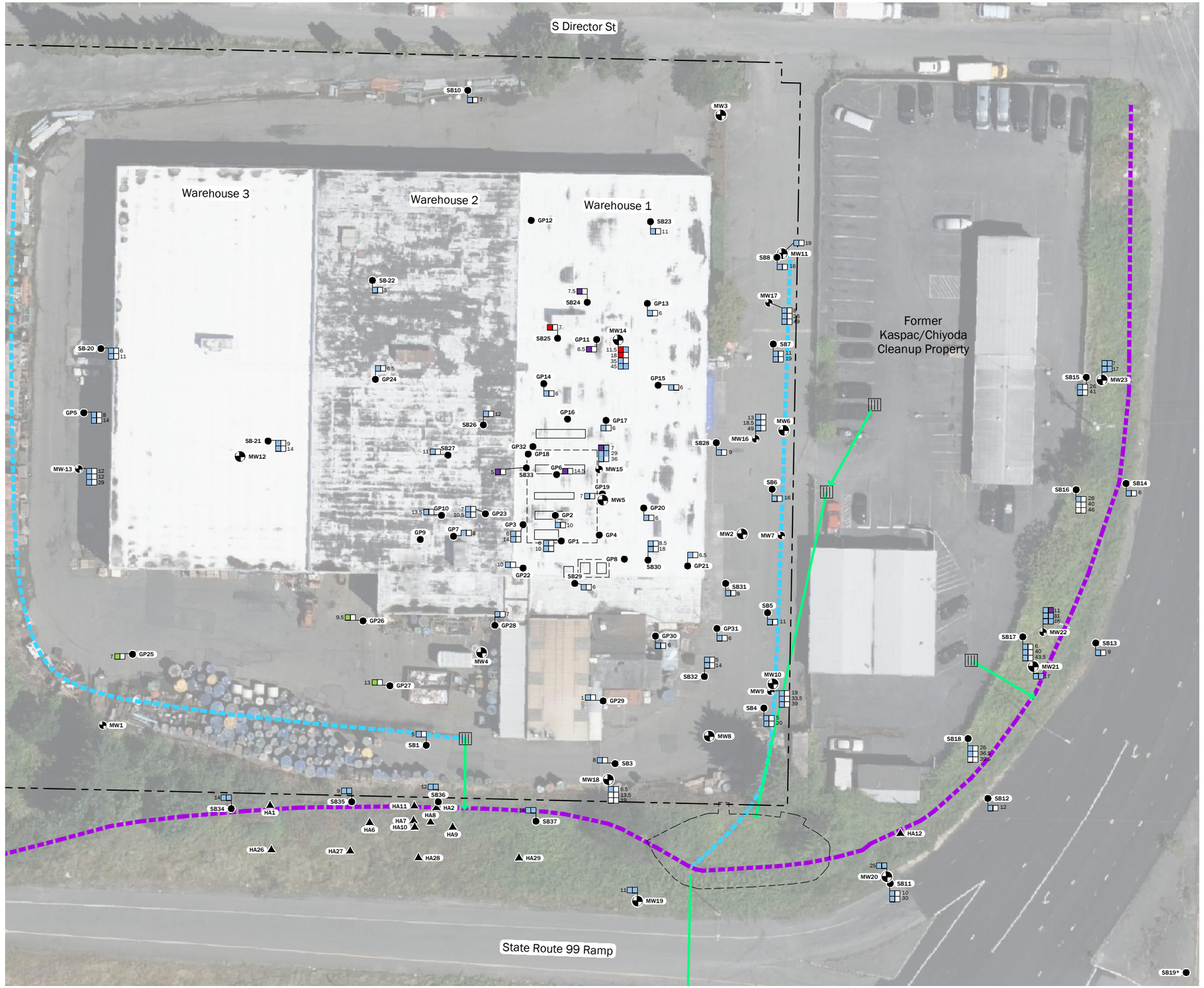

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Saturated Soil Chemical Analytical Results

Trichloroethylene
1,4-Dioxane
Soil Sample Depth (feet bgs): 3 / 5 / 7

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
bgs = Below Ground Surface
TCE = Trichloroethylene

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

TCE and 1,4-Dioxane in Saturated Soil

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-2B

\\geoengineers.com\WAN\Projects\25\25806001\CAD\02\RI Report\25806001O2_F7-1A - F7-3D_Site Plans.dwg 7-2B Date Exported:5/30/2024 3:31 PM - by Michael R. Woods

S Director St

Warehouse 3

Warehouse 2

Warehouse 1

Former Kaspac/Chiyoda Cleanup Property

State Route 99 Ramp

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Saturated Soil Chemical Analytical Results

Total Diesel+Oil
Total cPAH TEQ

Soil Sample Depth (feet bgs)

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
bgs = Below Ground Surface
cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons
TEQ = Toxic Equivalent Concentration

Sources:

- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

Petroleum Hydrocarbons and cPAHs in Saturated Soil

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-2C

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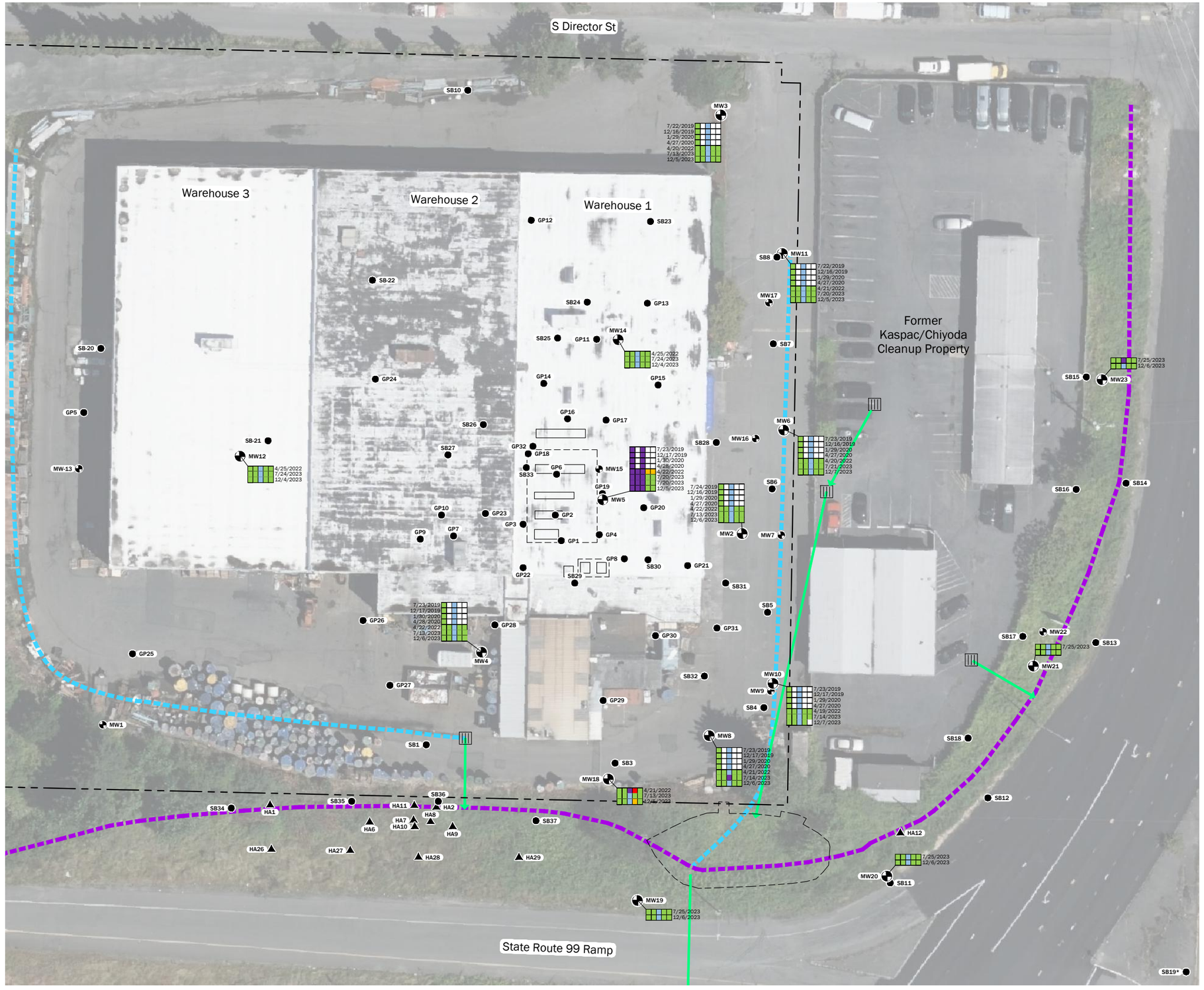

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Shallow Groundwater Chemical Analytical Results

Total Chromium
Dissolved Chromium
Hexavalent Chromium
Mercury
Dissolved Mercury

7/24/2019
12/16/2019
1/29/2020
Groundwater Sample Date

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

Chromium and Mercury in Shallow Groundwater

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-3A

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Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Shallow Groundwater Chemical Analytical Results

Trichloroethylene
1,4-Dioxane

7/24/2019
12/16/2019
1/29/2020
Groundwater Sample Date

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
TCE = Trichloroethylene

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

TCE and 1,4-Dioxane in Shallow Groundwater

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-3B

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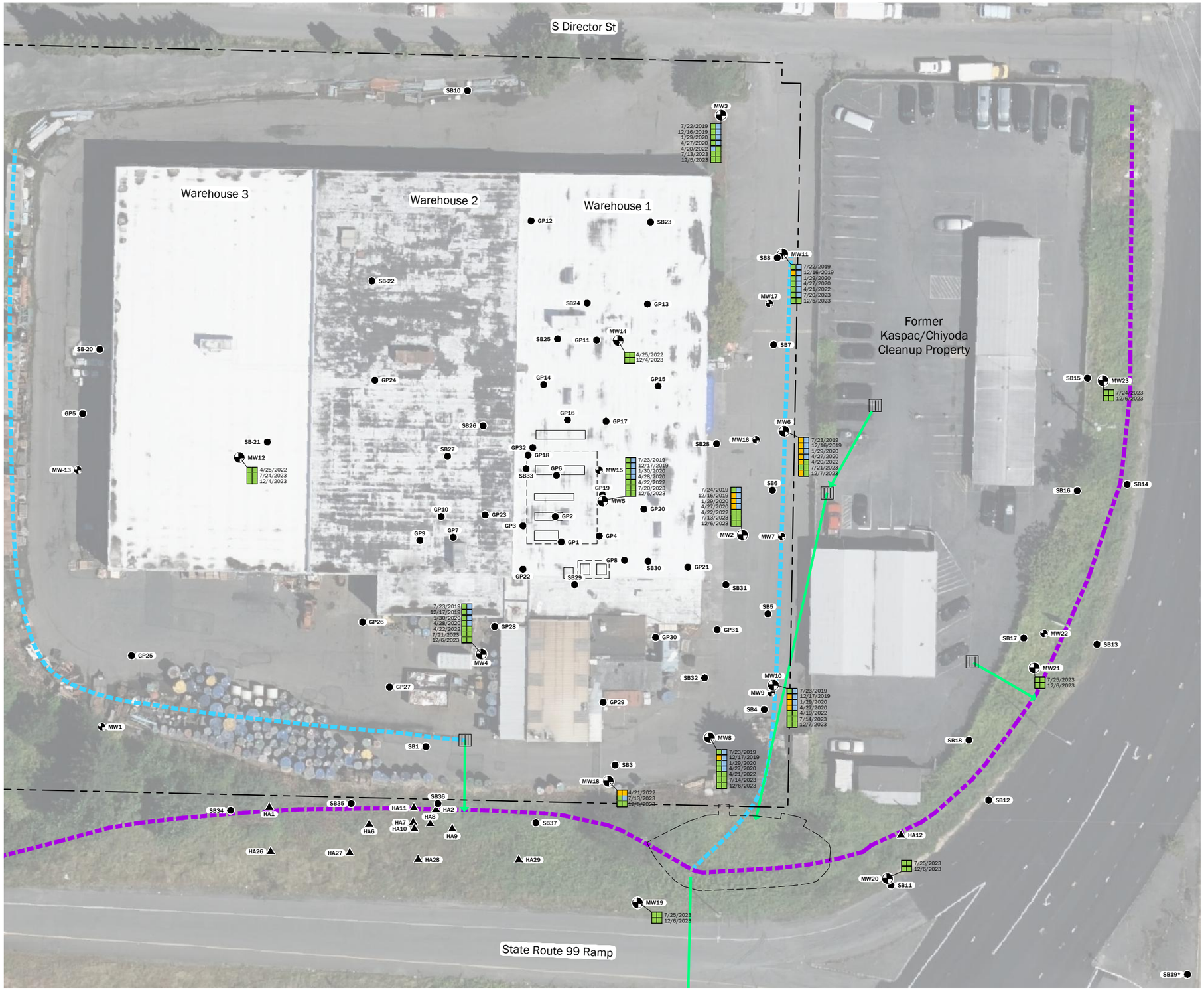

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Shallow Groundwater Chemical Analytical Results

Total Diesel+Oil
Total cPAH TEQ
7/24/2019
12/16/2019
1/29/2020
Groundwater Sample Date

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons
TEQ = Toxic Equivalent Concentration

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

Petroleum Hydrocarbons and cPAHs in Shallow Groundwater

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-3C

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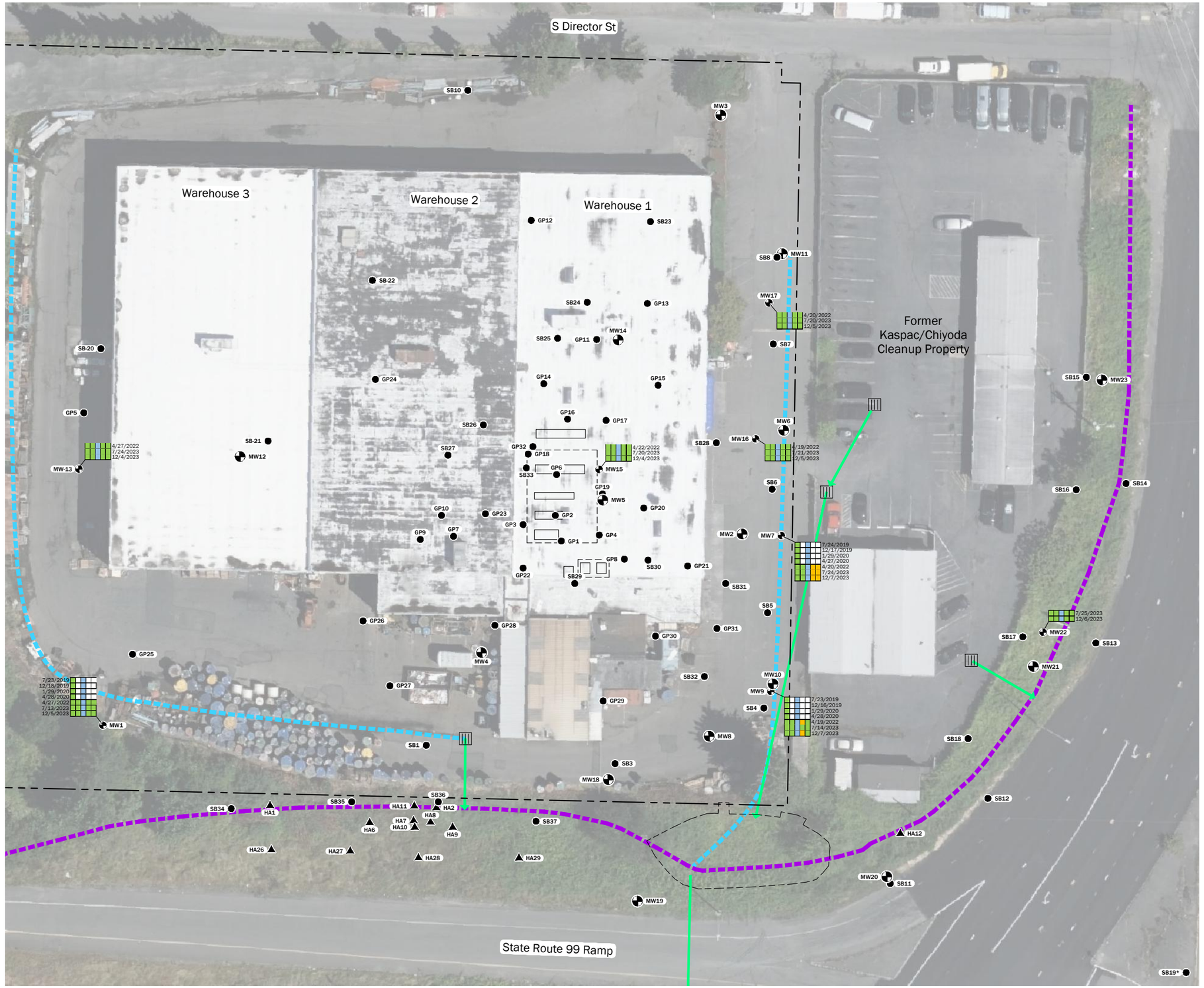

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Deep Groundwater Chemical Analytical Results

- Total Chromium
- Dissolved Chromium
- Hexavalent Chromium
- Mercury
- Dissolved Mercury

7/24/2019
12/16/2019
1/29/2020
Groundwater Sample Date

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

Chromium and Mercury in Deep Groundwater

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-4A

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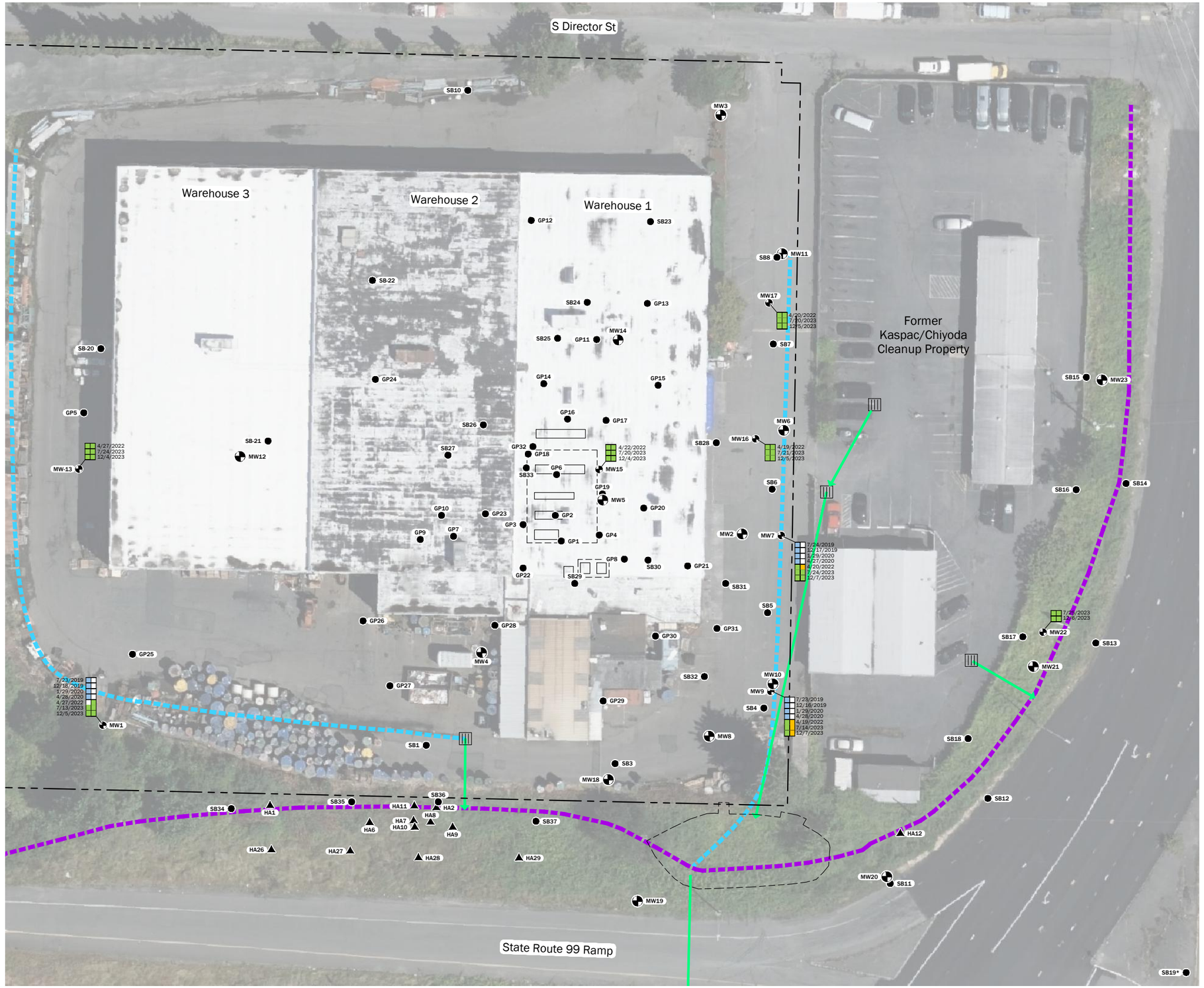

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Deep Groundwater Chemical Analytical Results

Trichloroethylene Results
1,4-Dioxane

7/24/2019
12/16/2019
1/29/2020
} Groundwater Sample Date

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
TCE = Trichloroethylene

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

TCE and 1,4-Dioxane in Deep Groundwater

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-4B

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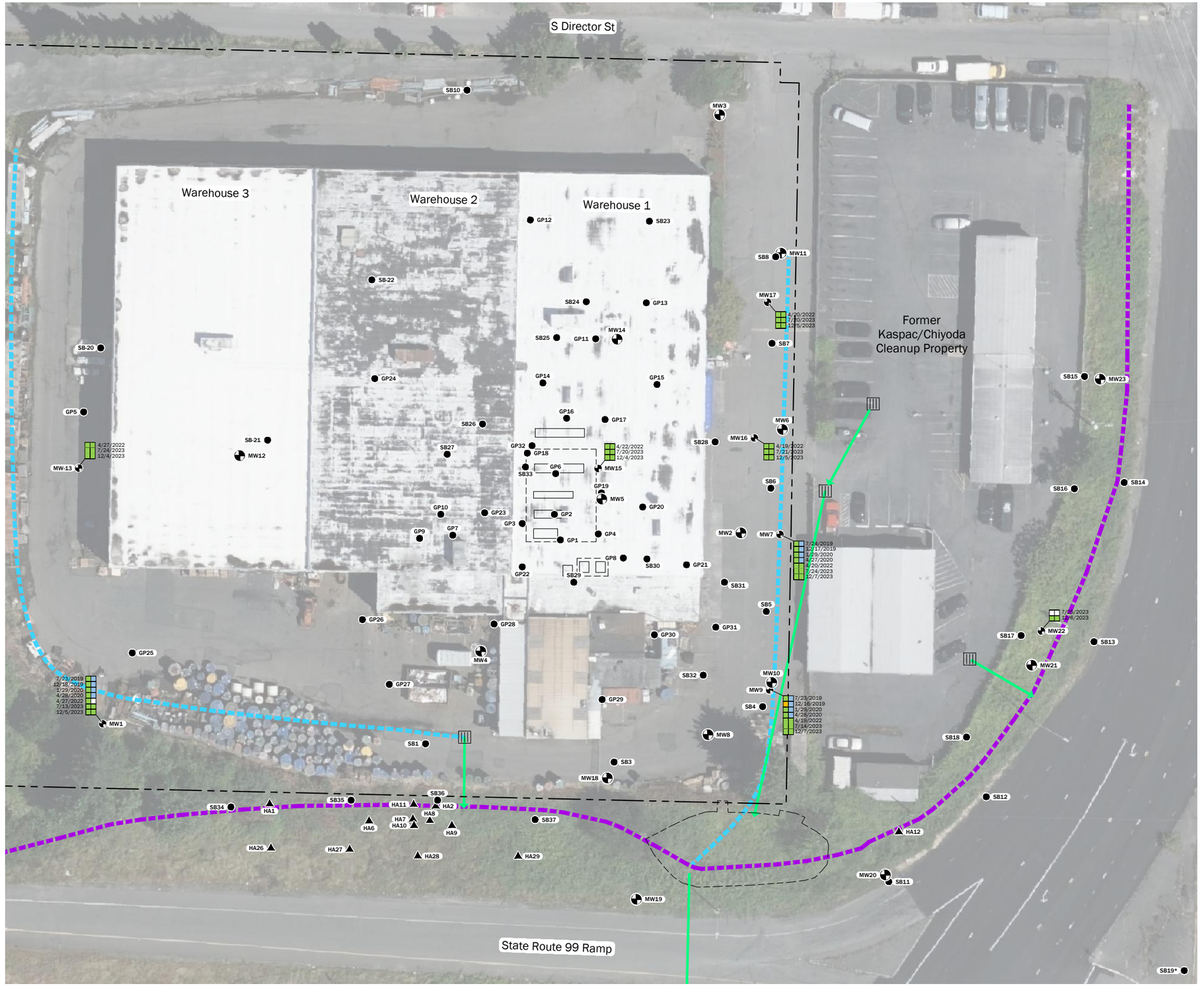

Legend

- Soil Boring
- Hand Auger
- Shallow Monitoring Well
- Deep Monitoring Well
- Former chromic acid tank
- Stormwater Runoff
- Drainage Ditch
- Catch Basin
- Stormwater Piping with Outfall
- Former Tank/Ditch Excavation Area
- Property Parcel

Deep Groundwater Chemical Analytical Results

Total Diesel+Oil
Total cPAH TEQ

7/24/2019
12/16/2019
1/29/2020
} Groundwater Sample Date

- Detect >100X most stringent PCUL
- Detect >10X most stringent PCUL
- Detect >most stringent PCUL
- ND >most stringent PCUL
- ND or detect <= most stringent PCUL
- Not analyzed at this location

PCUL = Preliminary Cleanup Level
ND = Not Detected
cPAHs = Carcinogenic Polycyclic Aromatic Hydrocarbons
TEQ = Toxic Equivalent Concentration

Sources:
- Aerial from Microsoft Bing, 2022

*SB19 located 30' Southeast of marked location. (See F4-1)
Projection: WA State Plane, North Zone, NAD83, US Foot

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N

0 50
Feet

Petroleum Hydrocarbons and cPAHs in Deep Groundwater

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 7-4C

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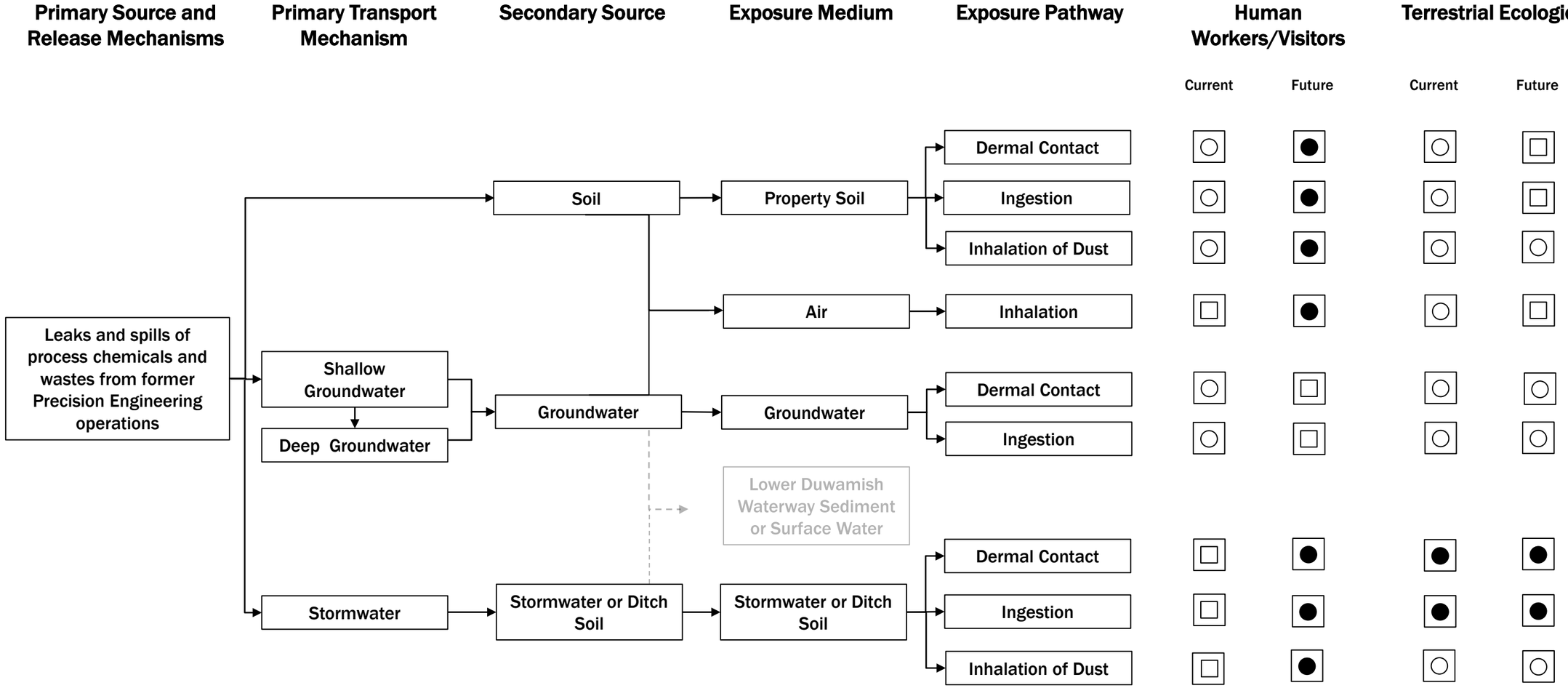

Legend

- Complete Exposure Pathway
- Incomplete Exposure Pathway
- Complete but Minor/Unlikely Exposure Pathway

N

Not to Scale

Conceptual Site Model

Precision Engineering, Inc.
Seattle, Washington

GeoEngineers

Figure 8-1

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