

Remedial Investigation and Feasibility Study Report

**Dawn Foods Site
6901 Fox Ave South**

Project Number: 033-009

Prepared for:



June 16, 2025

Prepared by:



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Dawn Foods Site 6901 Fox Ave South

Project Number: 033-009
Ecology Facility Site ID No.: 3505
Cleanup Site ID No.: 16678
Agreed Order No.: 21602

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Acronyms and Abbreviations

ARARs	applicable or relevant and appropriate requirements
ASTs	aboveground storage tanks
bgs	below ground surface
Bridge	Bridge Point Seattle 130, LLC
BTEX	benzene, toluene, ethylbenzene, and xylenes
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
CSM	conceptual site model
COC	contaminant of concern
COI	constituents of interest
CVOC	chlorinated volatile organic compound
CUL	Cleanup up level
Ecology	Washington Department of Ecology
EPA	United States Environmental Protection Agency
ERD	enhanced in-situ reductive dechlorination
FBI	Friedman & Bruya, Inc
ft	foot
GC/MS	gas chromatography/mass spectrometry
GWCC	Great Western Chemical/Cascade Columbia Distribution Company
IHSs	indicator hazardous substances
IAWP	Interim Action Work Plan
ICP-DRC-MS	inductively coupled plasma dynamic reaction cell mass spectrometry
LDW	Lower Duwamish Waterway
µg/L	microgram per liter

µg/m ³	microgram per cubic meter
µS/cm	microSiemens per centimeter
mg/kg	milligram per kilogram
MTCA	Model Toxics Control Act
NAVD88	North American Vertical Datum of 1988
PCE	perchloroethylene (tetrachloroethene)
pg/L	picogram/liter
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyl aroclors®
PCUL	Preliminary Cleanup Level
PQL	Practical quantitative limit
QAPP	Quality Assurance Project Plan
QQQ	triple quadrupole mass spectrometry
RI/FS	Remedial Investigation/Feasibility Study
RIWP	Remedial Investigation Work Plan
Site	Former Dawn Foods facility
SGC	Silica gel cleanup
SL	Screening level
SVOCs	Semi-volatile organic compounds
TEA	Terminal electronic acceptors
TEE	terrestrial ecological evaluation
TEQ	Toxic equivalency
TCE	trichloroethene
TOC	Total organic carbon
TPH	total petroleum hydrocarbons
PCE	tetrachloroethene
VC	Vinyl Chloride
VOC	volatile organic compound
WAC	Washington Administrative Code
ZVI	Zero-valent iron

Engineer's Certification

I certify that the Remedial Investigation and Feasibility Study for the Former Dawn Foods facility (located at 6901 Fox Ave South in Seattle, Washington) was completed by me or by a person under my direct supervision.

Work for this project was performed in accordance with generally accepted professional practices for the nature and condition of work completed in the same or similar localities, at the time the work was performed.

No other warranty, express or implied, is made.

Grant Hainsworth P.E., Principal
Washington State PE Number: 33192
Expiration Date: 6/5/2027

1 Introduction

This report presents the Remedial Investigation and Feasibility Study (RI/FS) for the Dawn Foods Site (Site), located at 6901 Fox Ave South in Seattle, Washington (see Figure 1; King County Parcel Number 000180-0113). The Site is currently owned by Bridge Point Seattle 130 (Bridge). This document has been prepared on behalf of Bridge for review and technical consultation by the Washington State Department of Ecology (Ecology) as required by Agreed Order (AO) No. 21602.

The purpose of this report is to document Site conditions, examine remedial options, and select a remedy protective of human health and the environment consistent with Chapter 70A.305 RCW, Model Toxics Control Act (MTCA), as implemented by Chapter 173-340 WAC, MTCA Cleanup Regulation (collectively “MTCA”). This document is organized as follows:

- Section 1 summarizes general Site and adjacent properties information.
- Section 2 presents the results of field investigations.
- Section 3 presents the Conceptual Site Model based on the data presented in Section 2.
- Section 4 presents proposed Site cleanup standards and indicator hazardous substances.
- Section 5 presents remedial objectives and potential remedial technologies.
- Section 6 describes the proposed remedial alternatives.
- Section 7 evaluates the proposed remedial alternatives and selects a recommended remedy for the Site.
- Section 8 provides additional detail regarding the selected remedy.

1.1 General Site Information

The Site covers 5.4-acres and is located in the Georgetown neighborhood of Seattle on the eastern shoreline of the Duwamish Waterway. The Site includes a warehouse building built in 1977 that is approximately 128,800 square feet (2.96 acres). The entire property, with the exception of limited landscaping, is covered with buildings, concrete, or asphalt.

In 2020 Bridge purchased the property from Guimont Fox Avenue LLC. The property, including the warehouse building, was leased to Dawn Food Products, Inc. through the end of 2023 to mix, store, produce, and ship dry food products, such as cake and brownie mixes. Bulk oils, which were used to make the dry food products, such as canola oil were received by truck and were previously received by rail. Currently the building is vacant.

The Site stormwater system collects roof drainage and surface flow as shown on Figure 2. The discharge point is a single outfall located on the Seattle Boiler Works property (500 South Myrtle Street, Seattle), with discharge to the Duwamish Waterway (Figure 2). Stormwater associated with operations on the Site is managed in compliance with Industrial Stormwater General Permit No. WAR011560. This stormwater discharges to the Duwamish Waterway at a point south of the

southern property boundary (see Figure 2). As shown on Figure 2, at least one other source contributes to the discharge point.

1.1.1 Site History/Past Land Use

The history of the Site is summarized below:

- The Site is located in the Duwamish River Valley and is on the eastern shore of the Duwamish Waterway. The river formerly meandered throughout the area until the 1913 to 1916 dredging program provided a channelized Duwamish Waterway. Figure 3 shows the historical features based upon historical aerial photographs and Sanborn Fire Insurance maps overlain on a current aerial photograph of the Site vicinity. In particular, features and the shorelines from 1917 and 1966 (Sanborn Fire Insurance maps) are identified. These years are selected because they are well represented on available historical documents, 1917 represents the very early record of the maritime use/shoreline features and 1966 represents the shift to metal fabrications. Figure 3 also presents improvements, historical features and shorelines for adjacent and surrounding properties.
- Ship building activities, such as ship repair, painting, and fabrication, likely occurred between 1917 and 1966 (see Figures 4A through 4D).
- Emerson GM Diesel, a sheet metal fabrication and generator manufacturing company, leased and operated on the property from about 1927 to the mid 1967/1969 (see Figure 4E). This operation overlapped with the ship repair and fabrication work, which slowly decreased as Emerson GM Diesel increased operations on the facility.
- King County Tax assessor records indicate that the existing warehouse was constructed in 1977 with all previously existing buildings demolished at that time. Fox Avenue Warehouse Corporation is listed as the owner of the property at that time, followed by Carline Foods and Sam Wylde Flour and Energy Foods occupying the building up until approximately 1987 (Hart Crowser 1996a and ECI 1998). Records indicate that the current warehouse was used by various food companies, such as Bunge Foods (1988 to 2003) and then Dawn Foods (2003 to 2023).

1.1.2 Future Planned Land Use

Bridge is currently completing renovations to the existing warehouse which will maintain its use as an industrial warehouse consistent with local zoning and master use planning. A future tenant will likely use the warehouse for distribution.

1.1.3 Site Zoning and Land Use

The Site is located in the Georgetown neighborhood of Seattle adjacent to the Duwamish Waterway in a predominately industrial/commercial area of Seattle. The Site is zoned General Industrial IG1 U85 by the City of Seattle, which allows for industrial uses, and excludes residential land uses (excluding certain conditional uses which may be allowed, such as caretaker's quarters). Under the

City of Seattle 2035 Master Plan¹, the Site will continue to be used for industrial purposes for the foreseeable future. This land use planning provides an institutional control and serves as a de facto environmental covenant against residential land use.

1.1.4 Vulnerable Populations and Overburdened Communities

The Site is located within a likely vulnerable population or overburdened community as it satisfies the first of the test criteria outlined in Ecology guidance (Ecology 2024a):

1. The Site is located in a census tract that ranks a 10 on the Environmental Health Disparities Index from the Washington State Department of Health's EHD Map².

The Site does not exceed the threshold for the second and third test criteria:

2. The Site is located in a census tract that is below the 80th Washington state percentile of the Demographic Index from the U.S. Environmental Protection Agency's EJ Screen³ (the Site is located in the 77th percentile in Washington state); and
3. The Site is located in a census tract that is below the 80th Washington state percentile of the Supplemental Demographic Index from the U.S. Environmental Protection Agency's EJ Screen (the Site is located in the 70th percentile in Washington state).

The completed Interim Action (Section 6.1) and Bridge's ongoing efforts to comply with the requirements of the AO will serve to address historical impacts at the Site and address potential human and environmental exposures. Those restorative actions will be further considered and documented in the evaluation of remedial actions presented in Section 7.

1.2 Adjacent General Site Information

1.2.1 Great Western Chemical/Cascade Columbia Distribution

Great Western Chemical/Cascade Columbia Distribution Company (GWCC) is located hydraulically upgradient to the east of the Site (Figures 3 and 5). GWCC operated a chemical and petroleum repackaging and distribution facility on the upgradient property. Groundwater flows from GWCC towards the Site (in an east to west direction) with eventual discharge to the Duwamish Waterway.

In 1990, releases on the GWCC property were reported from multiple underground storage tanks (USTs) of unspecified petroleum products, halogenated organics, and non-halogenated solvents. In 2012, Ecology entered into an Agreed Order with the current property owner, Fox Ave Building LLC, to implement a Cleanup Action Plan.

¹ <https://www.seattle.gov/opcd/current-projects/seattle-2035-comprehensive-plan>

² <https://fortress.wa.gov/doh/wtnibl/WTNIBL/Map/EHD>

³ EPA's online EJ Screen tool was not active at time of this draft report. The tool was accessed through this non EPA link: <https://pedp-ejscreen.azurewebsites.net/>

Based on information reported by Ecology,⁴ contaminants of concern in the soil and groundwater originating from the GWCC property are:

- Chlorinated volatile organic compounds (CVOCs)
- Petroleum hydrocarbons
- Semi-volatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs)
- Dioxins and furans

Documents for the GWCC cleanup show the “Northwest Corner Plume CAA [Cleanup Action Area]” and the “Loading Dock Area” overlapping with the Site, as shown on Figure 5. The southeastern portion of the Bridge Property is designated as part of the “Downgradient Groundwater Plume CAA” for the GWCC Site. Data from the 2012 Cleanup Action Plan indicate that the impacts to the Bridge property include tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene, and vinyl chloride in groundwater (Ecology 2012). The potential for vapor intrusion (VI) at the Site due to this groundwater contamination does not appear to have been assessed by GWCC, although the data indicate that groundwater is likely impacted at concentrations exceeding applicable screening levels for VI.

Thermal treatment of groundwater occurred from January to May of 2013 and “bio-polishing” was initiated in 2014 (Calibre 2024). In March and August 2022, bio-polishing actions, which included the injection of soluble substrate in selected wells, bio-augmentation, buffer water injections, and performance groundwater monitoring were completed. Substrate injections were performed in the Northwest Corner Plume CAA portion of the GWCC Site (Calibre 2022) due to the presence of shallow groundwater concentrations that exceeded the total CVOC remediation level of 250 micrograms/liter ($\mu\text{g/L}$)⁵. Groundwater sampling was completed in July 2022 and August 2023 and indicated total CVOCs in the shallow groundwater bearing zone were present immediately upgradient from the Dawn Foods Site at concentrations between 124 and 191 $\mu\text{g/L}$ in 2022 and between 48 and 208 $\mu\text{g/L}$ in 2023 (Calibre 2024). These results are similar to the pre-remediation total CVOCs concentration range of 63.2 and 144 $\mu\text{g/L}$ reported for sampling performed in June 2019 (Calibre 2019). Furthermore, concentrations of PCE are as high as 112 $\mu\text{g/L}$ and TCE is as high as 17.9 $\mu\text{g/L}$ at B-22, and vinyl chloride is as high as 30.3 to 55.1 $\mu\text{g/L}$ at R1-1W12 and NW1-1, respectively. All three of these wells are located on the east side of Fox Ave South, immediately up-gradient of the Site (Calibre 2024). These findings confirm a likely continuing impact to the Dawn Foods Site from historical releases on the GWCC Site.

1.2.2 Schultz Distributing

Emerson/Schultz Distributing is located northeast of the Site across Fox Avenue S, immediately north of GWCC as shown on Figure 3. Emerson/Schultz Distributing was developed in the 1920s for the Gypsum Products Corporation. From the late 1930s until the 1960s, Federal Pipe manufactured

⁴ <https://apps.ecology.wa.gov/gsp/Sitepage.aspx?csid=5082>

⁵ The site-wide cleanup levels for groundwater are considerably higher than the cleanup levels established for this site (discussed in Section 4). The GWCC Cleanup levels for the main indicator cVOCs are: PCE = 3.3 $\mu\text{g/L}$; TCE = 30 $\mu\text{g/L}$ and vinyl chloride = 2.4 $\mu\text{g/L}$.

wood pipes and tanks. Its operations included a dip tank, drying kilns, and warehouse space. In 1964, a group of individuals, including members of the Emerson family, purchased the Gypsum Products Corporation. Emerson GM Diesel then leased the property in the 1960s and performed maintenance and repair of diesel motors and trucks. Pacific Detroit Diesel occupied the property between 1989 and 1996. In 1996, the property was leased to Schultz Distributing, Inc. Schultz has used the property as a distribution center for petroleum products. A number of aboveground storage tanks (ASTs; more than 21 based on aerial photos from 2006-2017) were installed on the Site as part of the Schultz operation. An internet search indicates that Schultz no longer operates at the property. It is not clear when Schultz vacated the property; Alpine Auto Sales is identified in the historical directories on the western portion of the property as early as 2010.

Past environmental investigations identified solvent use in the central part of the yard and in the shop area. In the western part of the yard nearest to the Dawn Foods Site, a 2,000- to 6,000-gallon UST collected paint material and solvents from a former paint room/carpenter shop (Floyd|Snider 2011).

Based on the location of the Schultz Distributing property, the history of that property, the known CVOC contamination, and the well established direction of groundwater migration, this property may be contributing to CVOC impacts on the Dawn Foods Site. The Schultz Distributing property does not appear to have been identified as a potential contaminated site by Ecology.

1.2.3 Duwamish Waterway

The western Site boundary is the Duwamish Waterway. This portion of the Duwamish Waterway is within the Lower Duwamish Waterway (LDW) Superfund Site which is a 5-mile stretch of the channelized river that flows north into Elliot Bay. The LDW was added to the National Priorities List by the U.S. Environmental Protection Agency (EPA) in 2001. Sediment in the LDW contains a wide range of contaminants due to decades of industrial activity and runoff from urban areas. EPA is leading efforts to assess and clean up the in-water impacts, while Ecology is the primary regulatory authority for upland source control sites along the LDW.

2 Field Investigations

2.1 Environmental Investigations

Numerous investigations have occurred at the Site since 1988. Figures 6 and 7 show the known environmental sampling locations between 1996 and 2024. Below is a summary of environmental investigations completed to date.

2.1.1 Earth Consultants, Inc. - 1988

On May 24, 1988, Earth Consultants Inc. (ECI) conducted soil sampling activities on the Site, prior to the adoption of MTCA. Laboratory analyses were conducted to evaluate soils for the presence of petroleum hydrocarbons and heavy metals. Conclusions presented in ECI's report to Larco Development dated May 31, 1988 acknowledged the presence of relatively small, localized surficial spillages of oil along the railroad tracks north of the building. The report concluded that the data suggested that the concentration of petroleum (oil) was below then current environmental regulatory agency "action levels" and that no remedial measures would be required under then existing law. No heavy metals were detected (ECI 1988). Other potential contaminants of concern were not considered. The ECI document does not include a diagram of sample locations, tables summarizing data, or copies of laboratory reports.

The data quality of this report is considered low and the scope of the work appears to be below the current standard of care.

2.1.2 Hart Crowser - 1996

In 1996 Hart Crowser completed a limited subsurface investigation of the Site for the Guimont Trust (Figure 6; Hart Crowser 1996a). This investigation appears to have been performed to address recommendations presented in a Preliminary Environmental Assessment, which was prepared for Maple Leaf Property Management (Hart Crowser 1996b). Sample locations focused on four areas of the Site: the vicinity of the GWCC property boundary (HC-1); the vicinity of the historical sheet metal and assembling area/near a historical tar kettle building and boiler/aluminum dipping area (HC-2); downgradient of the former sheet metal area and near a possible paint spray booth (HC-3); and in the vicinity of historical ship painting and repair (HC-4 and HC-5).

Results of this report included field observations of petroleum-like odor in one location (sample location HC-4) and metals detected at two locations in the western portion of the subject property (in sample locations HC-4 and HC-5). Lead was detected above MTCA direct contact values at one location (HC-4). Volatile organic compounds were detected in several sample locations, but the report concluded that insufficient data was available to determine the source of the solvents (Hart Crowser 1996B). These historical features are shown on Figure 3 and 1996 Hart Crowser sample locations are shown on Figure 6.

2.1.3 CRETE - 2020-2024

Additional assessments, associated with the property purchase due diligence, were conducted at the Site to further assess the findings of the earlier characterization efforts. The additional assessment actions were conducted both before and after the effective date of the AO (July 6, 2023).

2.1.3.1 Prior to Agreed Order

Prior to the effective date of the AO CRETE conducted further assessments of soil and groundwater conditions. This work was done to confirm the 1996 Hart Crowser data, verify that chlorinated volatile organic compounds (CVOCs) were present in groundwater along the eastern property boundary and the upgradient portion the Site due to the likely migration from the GWCC site (and potentially Schultz), characterize the vertical extent of contamination in soil, evaluate sub-slab and indoor air conditions and evaluate tidal influence on shallow groundwater conditions. Work included:

- Soil and groundwater sampling from temporary push probe drilling locations and from monitoring wells.
- Six monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6) were installed December 15-16, 2021 and subsequently developed on December 17, 2021.
- Three additional monitoring wells (MW-7, MW-8, and MW-9) were installed on March 9, 2023 and developed on March 13, 2023.
- Subslab and indoor air vapor sampling (June 2020 and June 2021).
- A tidal study was performed from January 4 to 10, 2022 to assess the potential tidal influence on groundwater at the Site.

2.1.3.2 Remedial Investigation

As noted, the effective date of the AO was July 2023. Prior to undertaking additional assessment of the Site, all of the then-existing data were shared with Ecology as required by the AO. Existing data were evaluated in the Remedial Investigation Work Plan (RIWP) to identify data gaps. In accordance with the methods detailed in the RIWP, RI sampling was conducted from late 2023 through September 2024. The data gaps and the associated additional investigative tasks included:

- Groundwater quality immediately upgradient of groundwater discharge to the LDW. A well point, PD-1, was installed at the base of the shoreline bank downgradient of MW-1 on January 10, 2024.
- Water quality within groundwater seeps on the east bank of the LDW. Additional samples were collected from visible surface water seeps in April, June, and September 2024 (Seep, Seep-MW1, Seep-MW2) and a surface water sample (LDW) was collected on June 6, 2024.
- Additional synoptic data for sitewide groundwater quality. Quarterly groundwater sampling was performed at monitoring wells (MW-1 through MW-9) in March, June, and August 2023

and January, April, June, and September 2024. Monitoring wells MW-10 and MW-11 were sampled in September 2024. Sampling was also performed at a well point (PD1) in January, April, June and September 2024.

- Additional soil and groundwater delineation in the vicinity of the building and potential source areas. Additional drilling was performed and included completing soil borings and collecting temporary groundwater grab samples from twelve (12) locations on February 27 through February 29, 2024.
- Potential vapor intrusion beneath the warehouse building. Collected subslab vapor and indoor air and ambient air vapor samples on May 2, 2024.
- Additional information regarding the interaction between groundwater and the LDW and the potential extent of tidal influence and hydraulic communication. Completed a tidal study on October 28 through October 31, 2023.

Sample locations are shown on Figure 7. The results of these investigation efforts are summarized in Section 2.3. Appendix A includes copies of the laboratory reports not previously provided to Ecology. Soil and groundwater samples were collected in accordance with the RIWP Sampling and Analysis Plan / Quality Assurance Project Plan (SAP/QAPP) with the following minor deviations:

- Seep samples – water samples were collected from seeps observed during low tide. Seep sampling was not specified in the RIWP, this was added to provide data to assess groundwater discharge to surface water.
- LDW grab sample – surface water grab samples were collected directly from the LDW to provide background water quality information. Surface water sampling was not specified in the RIWP but was added to provide background data to assess groundwater quality.

Initial seep and surface water sampling deviations were noted in the second quarter 2024 progress report. Additional seep sampling was coordinated with Ecology in July 2024 based on review of RI data.

2.2 Site Conditions

2.2.1 Physical Surface Features

The Site covers 5.4-acres and includes a 128,800 square feet (2.96 acres) warehouse. The Site is covered in pavement/concrete surfaces except for two landscape areas along the shoreline, a landscape area along Fox Avenue, small areas at two transformer locations, and the rail spur north of the building. The top of the pavement is approximately 15.5 ft NAVD88⁶. The shoreline is armored from the top of bank and into the Duwamish Waterway.

The improvements to the Site eliminate the realistic possibility of its use as any type of meaningful environmental or ecological habitat. (See Section 4.3.1 Terrestrial Ecological Evaluation).

⁶ 15.5 ft NAVD88 is the average elevation measured at the surface between monitoring wells MW-1 through MW-6.

2.2.2 Regional Geology

The greater Duwamish Valley was formed by the carving action of glaciers that last advanced into this area from British Columbia approximately 15,000 years ago. When the ice sheets began to retreat approximately 5,700 years ago, the waters of Puget Sound extended up the Duwamish Valley as far south as Auburn, about 32 km (19 mi) upstream of the present mouth of the Duwamish River at Elliott Bay. Around that same time, the Osceola Mudflow descended from Mount Rainier, depositing a massive layer of sediment into the then marine waters near present-day Auburn and Kent. The mudflow diverted the historical course of the White River, at that time a tributary of the Puyallup River, to the Green River (Booth and Herman 1998).

The alluvial fill within the Duwamish Valley deepened over time from the deposition of upstream fluvial sediments of the White, Green, and Black Rivers, advancing the mouth of the Duwamish River farther to the north. The fill included beds of fine silts gravels deposited near the water's edge. These sediments eventually buried the post-glacial form of the valley so that only a few outcroppings of bedrock remain exposed at the ground surface. As the river flooded and migrated back and forth across the floodplain, these sediments were re-deposited by the river and continually intermixed with additional riverine and floodplain deposits (Booth and Herman 1998). In the late 1800s and early 1900s, extensive modifications were made to the river, including the filling of tide flats and floodplains to straighten the river channel, resulting in the abandonment of almost 6 km (3.7 mi) of the original meandering river bed. Several current side slips in the LDW are remnants of these old river meanders. The channel was dredged for navigational purposes, and the excavated material was frequently used to fill the old channel areas and the lowlands to bring them above flood levels. Subsequent filling of the lowlands for continued development resulted in a surficial layer of fill over most of the lower Duwamish Valley. Although the sediment types encountered in the LDW are variable (either from changing regional or local hydrodynamics or anthropogenic disturbances), basic sedimentary patterns of interbedded silts and sands are present in the LDW (Booth and Herman 1998).

Valley deposits consist of 50 to 100 feet of older alluvium (Qoal), representing sand and silt estuarine deposits. Locally, these older sediments contain discontinuous gravel lenses, shells, and some wood. The younger alluvial deposits atop the older alluvium have a relatively uniform thickness and depth, with a base that almost everywhere is within 5 to 10 feet of the modern sea level. These deposits, which consist of silt, sand, and sandy silt with abundant wood and organics, represent channel and floodplain deposits laid down by the modern Duwamish River. Overlying the younger alluvium are varying amounts of fill that range in thickness from 3 to 10 feet. The fill material is composed of a mixture of sand, gravel, silt, and miscellaneous construction debris.

Groundwater occurs throughout the Lower Duwamish Valley in both the older and younger alluvial deposits. Shallow groundwater can also occur locally within fill material. In general, the valley alluvium is believed to comprise a single, large aquifer system (Booth and Herman 1998). Locally, where this aquifer is thickest, upper and lower groundwater zones are often differentiated on a site-specific basis, based on the occurrence of locally-continuous silt layers, upward gradients at depth, and/or saline groundwater pockets (Booth and Herman 1998). Although some of the deeper saline pockets are a reflection of the current intrusion of marine waters, most reflect connate or "trapped" seawater from previous depositional events. Groundwater recharge to the valley occurs

via both infiltration and from upland aquifers that discharge into the alluvial valley both along subsurface pathways and through visible seeps along valley walls. Groundwater discharge is primarily to the channel of the Duwamish Waterway.

2.2.3 Site Geology

Site geologic conditions are illustrated on the geologic cross sections (Figures 8 and 9). The cross-section locations were chosen as a representative schematic of the geologic units encountered by Site explorations. Appendix B includes borehole logs collected during the 2020 and 2024 field investigations. Direct push cores and monitoring well hollow stem augers were advanced to a depth of approximately 15 to 21.5 ft below ground surface (bgs). The units encountered beginning at the surface and progressing deeper are discussed in the following subsections.

2.2.3.1 Fill Material

Near-surface soil at the Site predominately consists of fill material. Fill is present from ground surface (below pavement and structures) to a depth of 4 to 12 ft bgs). The fill may consist of sediment dredged during Duwamish River channelization. The fill material may also include debris from former Site operations, particularly in the nearshore area, since the Site grade was increased between shipyard operations and the current configuration. The fill material may also include debris from former Site operations, particularly in the nearshore area, since the Site grade was increased between shipyard operations and the current configuration. Fill material is predominately composed of poorly graded silty fine sand to gravelly sand or sandy silt to gravelly sandy silt. Locally, fill includes some organic matter, wood, and debris, including concrete rubble.

2.2.3.2 Recent Alluvial Deposits

The first native soils encountered beneath the fill are interpreted to represent recent (i.e., predevelopment) alluvial deposits of the lower Duwamish Valley. These deposits range in composition from fine to medium sand to slightly silty to very silty fine to medium sand. Locally, within these deposits, fine sandy silt lenses are intercepted. Where fill is not present, these alluvial deposits range in depth from near-surface to the total depth investigated. These deposits have been interpreted to represent channel and floodplain deposits laid down by the modern Duwamish River (Booth and Herman 1998). These younger alluvial deposits are where the water table is encountered.

2.2.3.3 Silt Horizon

The upgradient GWCC site identified a thin layer of silt occasionally at 11 to 14 ft bgs. This silt horizon was used to define the base of an upper shallow groundwater unit. Except for direct push location GP-SB-2, this silt horizon was not encountered on the Site. A separate shallow silt (above 6 ft bgs) was observed in limited areas on the eastern portion of the Site that was also observed in the Northwest Corner of the GWCC site.

2.2.4 Groundwater

As stated above, the river formerly meandered throughout the area until the 1913 to 1916 dredging program provided a channelized Duwamish Waterway. Regional shallow groundwater flow

direction is generally to the west-southwest with groundwater discharging to the Duwamish River. Tidal fluctuations are expected to affect groundwater.

The shallow unconfined aquifer in the Duwamish River Valley is generally located within the native alluvium unit. Shallow groundwater can also occur locally within fill material. In general, the valley alluvium is believed to comprise a single, large aquifer system (Booth and Herman 1998). Groundwater recharge to the valley occurs via both infiltration and from upland aquifers that discharge into the alluvial valley both along subsurface pathways and through visible seeps along valley walls. Groundwater discharge is primarily to the channel of the Duwamish Waterway.

Groundwater was generally encountered at between 8 and 10 ft bgs although tidal influence significantly increases that range near the Waterway. Regional groundwater flow direction is generally to the west-southwest with groundwater discharging to the Duwamish Waterway. A groundwater contour map is included on Figure 10. Because groundwater at the Site is tidally influenced, the average groundwater flow directions are provided on Figure 10.

Data from the GWCC site indicate that the alluvium has an average hydraulic conductivity of 5.3×10^{-3} cm/s with a range from 3×10^{-3} to 1×10^{-2} cm/s.

Groundwater and surface water interactions also affect the salinity of the groundwater at the Site. Specific conductance, a proxy for salinity, is elevated in shoreline wells. This is likely due to the infiltration of brackish surface water from the LDW.

To determine the extent of the surface water and groundwater interactions, two tidal studies have been conducted at the Site. The first was performed from January 4 to 10, 2022 and a second from October 28 to 31, 2023; both were conducted during a time period that included negative and non-negative low tides, allowing for observation of the tidal response within the aquifer. During the first tidal study (2022), the 6 nearshore monitoring wells (MW-1 through MW-6) and the nearest NOAA-monitored tidal station (ID# 9447130 in Seattle, WA) were used to measure tidal variations. The second tidal study (2023), Site wells MW-1 through MW-9 and the same NOAA-monitored tidal station were used. The results of the 2022 tidal study are included in the RIWP and results from the 2023 tidal study are discussed below and provided in Appendix C.

The 2023 tidal study was performed for all permanent monitoring wells (MW-1 through MW-9). The tidal study was conducted to determine the average groundwater flow direction and to establish the appropriate lag time at which to sample each well such that the groundwater in the well at the time of sampling is close to its lowest elevation during the tidal cycle. Samples collected during the low elevation would therefore be most representative of groundwater recharge into the wells.

Results from the tidal study indicate that all wells (wells MW-1 through MW-9) are tidally influenced with the strongest influence located at wells closer to the shoreline, with the influence dampening to the east. A summary of the tidal study results is included in Appendix C.

There was significant tidal influence in MW-1 through MW-6, with MW-1, MW-3, and MW-4 having tidal efficiencies (the change in hydraulic head to the change in tidal stage) ranging from 50% to 69% and with MW-2, MW-5, and MW-6 having significant but lesser tidal efficiencies ranging from 38% to 41%. Shoreline well MW-2 had less tidal influence than the other shoreline wells suggesting a shoreline impedance at this location. MW-4 had stronger tidal influence than other upland wells,

MW-5 and MW-6. This variability may be due to MW-4 being closer in proximity to a former channel meander. Tidal influence at upland wells MW-7, MW-8, and MW-9 were observed at 3% to 15% and are not considered significant. Gaging and potentiometric map data from the adjacent Great Western International Chemical Company (GWCC) site RI/FS (Floyd Snider 2011) suggests that tidal influence may occur in deeper groundwater as far as 1,000 feet inland and others report significant tidal influence within 500 feet of the LDW (Booth and Herman 1998). Table 3 of Appendix C summarizes this data.

Based on the results of the tidal study, the groundwater flow direction is generally to the west-southwest with groundwater discharging to the Duwamish Waterway as shown on Figure 10.

Because the Site abuts the LDW, vertical hydraulic gradients are likely, the directions of which change with tidal levels. Generally upward gradients are present during high tides and downward gradients are present during low tides.

Table 1 provides lag times and recommended groundwater sampling windows. These lag times varied between 30 to 125 minutes.

Groundwater in the area of the Site is not used for beneficial purposes. Site groundwater has elevated concentrations of specific conductivity that exceed the secondary state water quality MCL 700 microSiemens per centimeter ($\mu\text{S}/\text{cm}$). The nearest groundwater extraction well is from 1933 and associated with a business no longer in service⁷ (Hemrick Brewing Company, which is also associated with Apex Brewing Company) located at 5225 East Marginal Way, approximately 1.4 miles away to the north.

2.3 Analytical Results

Data from the 1996 investigation are summarized on Table 2 and sample locations are shown on Figure 7. Results were compared to the Preliminary Cleanup Levels (PCULs) for the LDW. Samples at HC-1, HC-2 and HC-4 exceeded the PCULs for PCE and/or TCE. Samples from HC-4 exceeded PCULs for arsenic, cadmium, copper, lead, mercury, nickel and zinc. Oil-range petroleum hydrocarbons were detected at HC-4 and HC-5 but not at a concentration exceeding a PCUL. The 1996 data were used as the basis for subsequent work.

Investigation of the Site was performed in an iterative fashion with each round of assessment building upon the findings of earlier events. Recent sampling efforts have included a wider chemical analytical suite for soil, water, soil vapor and indoor air. Sampling has also considered potential migration from the Site to surface water.

The discussion below summarizes recent data, which are presented in Tables 3 through 15. Sample locations are shown on Figure 7, extents of contamination are shown on Figures 11 through 20, and Appendix A includes laboratory reports from data collected from 2023 through the most recent sampling events. Laboratory reports for data collected prior to 2023 were presented in the RIWP.

Soil and groundwater results are compared to the Preliminary Cleanup Level (PCUL) workbook values dated February 5, 2025 for the LDW. The selected values were based on a non-potable groundwater exposure pathway. Vapor results are compared to MTCA Method C cleanup levels

⁷ <https://www.brewerygems.com/apex.htm>

(CULs) for industrial exposure contained in the Cleanup Levels and Risk Calculations (CLARC) dated February 2025.

The selection of Site cleanup standards is discussed in Sections 4.2 through 4.4 and the distribution of the data relative to cleanup levels is discussed in Section 4.5.

2.3.1 Soil

Soil samples were analyzed for metals (aluminum, arsenic, cadmium, chromium (total and hexavalent chromium), copper, lead, mercury, nickel and zinc), CVOCs, SVOCs, benzene, toluene, ethylbenzene, and xylenes (BTEX), polychlorinated biphenyl Aroclors® (PCBs), tributyltin, and total petroleum hydrocarbons (TPH). Samples were generally collected from the vadose zone and from near the unsaturated/saturated interface at the time of sampling. Sample results are summarized on Tables 3 and 4. Sample locations are shown on Figure 7.

2.3.1.1 Metals

Soil samples were collected for metal analysis from GP-SB-5, GP-SB-6, GP-SB-8 through GP-SB-12, GP-SB-18 through -31, RI-SB-07 through RI-SB-11, and MW-1 through MW-8. Analytical results for the metals analysis are presented in Table 3. Detections of metals in soil included the following:

- Aluminum was not detected above the PCUL of 33,000 milligrams/kilogram (mg/kg) in either in both of the two samples submitted for analysis. Aluminum was detected at concentrations of 6,790 and 14,500 mg/kg.
- Arsenic was detected above the PCUL of 7.3 mg/kg at GP-SB-8, GP-SB-23, GP-SB-24, RI-SB-04, RI-SB-08, RI-SB-10, RI-SB-11, and MW-2. Concentrations above the PCUL ranged from 8.31 mg/kg (SB-23) to 28.7 mg/kg (RI-SB-10). All other detections were below the PCUL.
- Cadmium was detected above the PCUL of 0.77 mg/kg in two soil sample, SB-8 and MW-5 at concentrations of 2.76 and 1.08 mg/kg, respectively. All other samples were detected below the laboratory reporting limit.
- Chromium was detected in all soil samples above the lowest PCUL values of 0.0069 mg/kg (saturated)/0.14 mg/kg (vadose) based on hexavalent chromium. Total chromium was detected above the PCUL of 48 mg/kg (saturated/vadose) in GP-SB-22 and RI-SB-10, with concentrations of 98.4 and 698 mg/kg, respectively. Soil samples from RI-SB-07 and RI-SB-08 were analyzed for hexavalent chromium in addition to total chromium. Hexavalent chromium was detected in both soil samples at a concentration of 0.648 mg/kg (RI-SB-08) and 0.688 mg/kg (RI-SB-07), above the PCUL.
- Copper was detected above the PCUL of 36 mg/kg at GP-SB-5, GP-SB-8, MW-5, RI-SB-04, RI-SB-08, RI-SB-10, and RI-SB-11. Concentrations above the PCUL ranged from 53.7 mg/kg (RI-SB-08) to 460 mg/kg (RI-SB-11). All other detections were below the PCUL.
- Lead was detected in above the PCUL of 50 mg/kg at GP-SB-5, GP-SB-8, GP-SB-11, RI-SB-04, RI-SB-08, RI-SB-10, RI-SB-11, and MW-5. Concentrations above the PCUL ranged from 91.4 mg/kg (RI-SB-10) to 227 mg/kg (GP-SB-8). All other detections were below the PCUL.

- Mercury was detected above the PCUL of 0.7 mg/kg at GP-SB-5, RI-SB-09 and RI-SB-11. Concentrations above the PCUL ranged from 0.112 mg/kg (RI-SB-09) to 2 mg/kg (GP-SB-5). All other detections were below the PCUL.
- Nickel was detected above the PCUL of 48 mg/kg at GP-SB-8, GP-SB-11 and RI-SB-10. Concentrations above the PCUL ranged from 62.1 mg/kg (GP-SB-8) to 477 mg/kg (RI-SB-10). All other detections were below the PCUL.
- Zinc was detected above the PCULs of 100 mg/kg (vadose)/85 mg/kg (saturated) at GP-SB-5, GP-SB-8, GP-SB-11, GP-SB-25, MW-4, MW-5, RI-SB-04, RI-SB-08, RI-SB-10 and RI-SB-11. Concentrations above the PCUL ranged from 107 mg/kg (RI-SB-08) to 7,110 mg/kg (GP-SB-8). All other detections were below the PCUL.

Figures 11 through 15 show the extent to soil impacts of select metals (zinc, arsenic, chromium, copper and nickel, respectively). The impacts are concentrated in the southwestern portion of the Site.

2.3.1.2 Petroleum-Related Compounds

Petroleum related compounds include total petroleum hydrocarbons (TPH) in the fuel and oil ranges and aromatic fuel gasoline components (benzene, toluene, ethylbenzene, and total xylenes; collectively BTEX). Select soil samples from direct push and monitoring well borings GP-SB-15 through GP-SB-17, RI-SB-1 through RI-SB-13, and MW-4 through MW-8 were analyzed for TPH compounds and BTEX. Analytical results for these compounds are summarized in Table 4.

TPH analysis consisting of gasoline-range, diesel-range, and lube-oil range organics (GRO/DRO/ORO) were performed. A total of 18 samples were submitted for GRO analysis. GRO was detected in three of the 11 samples concentrations ranging from 5.6 mg/kg to 200 mg/kg. Only one sample contained a GRO concentration greater than the PCUL of 100 mg/kg, shown on Figure 16.

A total of eight samples were submitted for DRO analysis. DRO was detected in three of the eight samples at concentrations ranging from 90 mg/kg to 3,500 mg/kg. Only one sample contained a DRO concentration greater than the PCUL of 2,000 mg/kg, shown on Figure 16.

A total of eight samples were submitted for ORO analysis. ORO was detected in two of the eight samples at concentrations of 1,200 mg/kg and 7,300 mg/kg. Only one sample contained an ORO concentration greater than the PCUL of 2,000 mg/kg.

A total of four samples were submitted for BTEX analysis. BTEX compounds were not detected above the laboratory reporting limits in any sample.

2.3.1.3 CVOCs

Analytical results for these compounds are summarized in Table 4. A total of 11 samples were submitted for CVOC analysis; analytical results for these compounds are summarized in Table 4. Of the CVOC analytes only tetrachloroethene (PCE), trichloroethene (TCE) and cis-1,2-dichloroethene (cDCE) were detected at a concentration above the laboratory reporting limits. Only PCE and TCE were detected at a concentration exceeding a PCUL.

- PCE was detected in four of the 11 samples submitted for analysis at concentrations ranging from 0.14mg/kg to 4.7 mg/kg. Each of these four values exceeded the PCUL of 0.0016 mg/kg
- TCE was detected in three of the 11 samples submitted for analysis at concentrations ranging from 0.088 mg/kg to 0.29 mg/kg. Each of these three values exceeded the PCUL of 0.00027 mg/kg.
- dDCE was detected in two of the 11 samples submitted for analysis at concentrations of 0.061 mg/kg and 0.34 mg/kg. Neither of the detected concentrations exceeded the PCUL of 160 mg/kg.

Figure 17 indicates the extent of PCE and TCE impacts in soil. The impacts are concentrated in the southwestern portion of the Site and in small areas in the southcentral and southeastern areas of the Site.

2.3.1.4 SVOCs

A total of 12 samples were submitted for SVOC analysis. This included selected soil samples from direct push soil borings GP-SB-21 through GP-SB-26 and RI-SB-1 through RI-SB-13. Analytical results for detected SVOC compounds are summarized in Table 4.

SVOCs were detected in six of the 12 samples submitted for analysis. A total of 14 SVOC analytes were detected at concentrations exceeding the laboratory reporting limits. Of those 14 analytes, only benzo(a)pyrene (BAP), fluorene and total carcinogenic PAHs (cPAHs) were detected at a concentrations exceeding a PCUL.

- BAP was detected in two of the 12 samples submitted for analysis at concentrations of 0.015 mg/kg and 0.15 mg/kg. Each of these concentrations exceeded the PCUL of 0.00016 mg/kg.
- Fluorene was detected in one of the 12 samples at a concentration of 0.67 mg/kg. This concentration exceeded the PCUL of 0.029 mg/kg.
- The detected concentrations for cPAHs were also evaluated using the Toxicity Equivalency Factor (TEF) method in WAC 173-340-708. Based on the TEF method, six of the 12 samples contained concentrations exceeding the PCUL for total cPAHs of 0.00016 mg/kg. Figure 18 indicates the extent of cPAHs exceeding the PCUL in soil and indicates that this area is limited to the southwestern portion of the Site.

2.3.1.5 PCBs and Tributyltin

A total of 21 samples were submitted for PCB analysis. Only one PCB analyte, Aroclor 1260, was detected at a concentration exceeding the laboratory reporting limits. PCBs are evaluated based on the sum of all detected Aroclor concentrations. The detected Aroclor 1260 concentration exceeded the PCUL for total Aroclors of 0.03 mg/kg. Figure 19 shows the location of the soil sample, GP-SB-30, that exceeds the PCUL on the eastern portion of the Site.

A total of four samples were submitted for tributyltin analysis. Tributyltin was not detected above the laboratory reporting limit in any soil sample (Table 4).

2.3.1.6 Summary of Soil Results

Analytes in soil exceeding a PCUL are:

- CVOCs – PCE and TCE
- Metals – arsenic, cadmium, copper, chromium (total and hexavalent), lead, mercury, nickel, and zinc
- Petroleum – GRO, DRO, and ORO
- PCBs – Total PCBs
- SVOCs – Fluorene, benzo(a)pyrene and total cPAHs

2.3.2 Groundwater

Groundwater samples were collected from temporary wells (soil borings GP-SB-1 through GP-SB-32 and RI-SB-01 through RI-SB-18) and permanent groundwater monitoring well locations (MW-1 through MW-11) shown on Figure 7. Sample locations were selected to assess the potential for off-site groundwater contamination and potential historical on-site activities to impact Site groundwater. Results are summarized in Tables 5 through 12; laboratory reports are included in Appendix A. Groundwater results are discussed below.

2.3.2.1 Reconnaissance Groundwater Samples

Reconnaissance groundwater samples were collected using standard direct push probe methods. Direct push sampling was conducted over five separate sampling events:

- January 2020 – Direct push borings GP-SB-1 through GP-SB-7
- June 2020 – Direct push borings GP-SB-08 through GP-SB-15
- December 2020 – Direct push borings GP-SB-16 through GP-SB-32
- December 2021 – Direct push borings RI-SB-01 and RI-SB-02
- February 2023 – Direct push borings RI-SB-04 through RI-SB-18

2.3.2.1.1 Metals

Groundwater samples were submitted for analysis of arsenic, cadmium, total chromium, hexavalent chromium (CrVI), copper, lead, mercury, nickel, and zinc. Samples were analyzed for both total (unfiltered) and dissolved (filtered) metals.

Portions of the Site are subject to saltwater intrusion from the LDW. Saline conditions are measured during sampling using specific conductance. The presence of saltwater can strongly influence metals quantification resulting in a high bias on results (Soriano et al. 2020). Polyatomic ions in salt water co-elute with some target analytes (e.g. arsenic and copper) and create erroneously elevated results. Special sample preparation and analytical methods can address this interference without requiring dilution. Dilution of samples results in elevated laboratory reporting limits. The potential effect of saltwater intrusion on analytical results was evaluated at the Site through a comparison of analytical methods. Specific conductivity values greater than 2,000 microSiemens per centimeter ($\mu\text{S}/\text{cm}$) were used as an indication of likely salt water influence on analytical quantification. Table 5 provides a snapshot of field parameters collected from Site monitoring wells, which shows

elevated conductivity values (greater than 2,000 $\mu\text{S}/\text{cm}$) at MW-1 through MW-3 for all events and at least one elevated reading at MW-4 and MW-6.

Initial groundwater samples were analyzed for metals by EPA Method 6020B with triple quadrupole (QQQ) mass spectrometry. Because of the high specific conductivity values, reporting limits were elevated which can mask analytical interference for the other compounds and interferences can result in false positives. Subsequent samples were submitted to Brooks Applied Labs (BAL) for analysis with EPA Method 1638, which uses inductively coupled plasma dynamic reaction cell mass spectrometry (ICP-DRC-MS) modified using a Closed-Vessel Hotblock Digestion sample preparation.

Prior to establishing the interference due to saltwater intrusion, groundwater samples collected from direct push boreholes advanced in 2020 and 2021 were analyzed using Method 6020B for both total and dissolved metals. Table 6 includes metals results from samples collected within 75 feet of the shoreline, where elevated specific conductance has been measured. The following summary of analytical results excludes those samples collected from within 75 feet of the LDW shoreline that were analyzed using EPA Method 6020B.

The results of direct push groundwater sampling are summarized below with analytical results summarized in Table 7 and sampling locations indicated on Figure 7. The summary below is based upon concentrations of dissolved metals which exceeded a PCUL.

Only dissolved arsenic, dissolved chromium, dissolved nickel, and dissolved zinc were detected at a concentration exceeding a PCUL

- Dissolved arsenic was detected in four locations at concentrations exceeding the PCUL of 8 $\mu\text{g}/\text{L}$. The detected concentrations above the PCUL ranged from 11.3 $\mu\text{g}/\text{L}$ (GP-SB-30) to 29.7 $\mu\text{g}/\text{L}$ (GP-SB-7).
- Dissolved total chromium was detected in six locations at concentrations exceeding the PCUL of 0.36 $\mu\text{g}/\text{L}$ for hexavalent chromium. The detected concentrations ranged from 1.19 $\mu\text{g}/\text{L}$ (GP-SB-30) to 2.12 $\mu\text{g}/\text{L}$ (RI-SB-02). Groundwater samples from RI-SB-07 and RI-SB-08 were also analyzed for hexavalent chromium result were not detected above the laboratory reporting limit of 0.5 $\mu\text{g}/\text{L}$.
- Dissolved nickel was detected in two samples at concentrations exceeding the PCUL of 8.2 $\mu\text{g}/\text{L}$. The detected concentrations above the PCUL were 10.9 $\mu\text{g}/\text{L}$ (GP-SB-11) and 22.7 $\mu\text{g}/\text{L}$ (GP-SB-7).
- Dissolved zinc was detected in three samples at concentrations exceeding the PCUL of 81 $\mu\text{g}/\text{L}$. The detected concentrations ranged from 102 $\mu\text{g}/\text{L}$ (RI-SB-11) to 22,300 $\mu\text{g}/\text{L}$ (GP-SB-7).

2.3.2.1.2 Petroleum-Related Compounds

Petroleum related compounds include total petroleum hydrocarbons in the fuel and oil ranges, aromatic fuel gasoline components (benzene, toluene, ethylbenzene, and total xylenes, plus the fuel additive methyl-tert butyl ether (MTBE).

TPH were analyzed as Gasoline-Range Organics (GRO), Diesel-Range Organics (DRO) and Oil-Range Organics (ORO). Analysis for DRO and ORO was also performed using silica gel cleanup (SGC) to

remove non-petroleum polar metabolites from the sample. This approach was appropriate given the likely age of any petroleum releases at the Site.

Analytical results for GRO are discussed relative to the PCUL. The PCUL for DRO and ORO is based on the combined sum of the detected concentrations.

GRO analysis was performed on nine samples. The detected concentration exceeded the PCUL of 1,000 ug/L in one sample. The detected concentration was 3,300 ug/L.

Total DRO analysis was performed on three samples (DRO and ORO). Samples from RI-SB-02 and RI-SB-10 exceed the PCUL of 500 ug/L (which includes SGC). Results were “x” flagged by the laboratory as not matching the standard chromatogram for diesel.

BTEX analyses were performed on 14 samples. None of the BTEX compounds were detected at a concentration exceeding their respective PCUL.

MTBE analysis was performed on nine samples. None concentrations exceeded the PCUL of 100 ug/L.

2.3.2.1.3 VOCs

A total of 24 samples were submitted for VOC analysis. Four VOCs were detected at a concentration exceeding a PCUL; PCE, TCE, cis-1,2-DCE, and vinyl chloride.

- PCE was detected two samples at a concentration above the PCUL of 2.9 µg/L. The concentrations were 4.1 ug/L (RI-SB-13) and 21 ug/L (RI-SB-11).
- TCE was detected in two samples at a concentration above the PCUL of 0.7 ug/L. The concentrations were 0.76 ug/L (RI-SB-09) and 2.1 ug/L (RI-SB-11).
- Cis-1,2-DCE was detected in one sample at a concentration above the PCUL of 182 ug/L. The concentration was 400 ug/L at location GP-SB-2.
- Vinyl chloride was detected in 12 samples at concentrations above the PCUL of 0.18 ug/L. The concentrations ranged from 0.21 ug/L (GP-SB-12) to 72 ug/L (GP-SB-2).

2.3.2.1.4 Tributyltin

Six samples were submitted for analysis of tributyltin (TBT). TBT was not detected in any of the samples at a concentration exceeding the laboratory reporting limit, which ranged from 0.31 ug/L to 0.52 ug/L. The PCUL for TBT is assumed to be based on a “practical quantitation limit” (PQL) of 0.0056 ug/L. This is a PQL that may be achievable under ideal conditions. The analytical laboratory was not able to attain that PQL with the site-specific sample matrices and designated analytical method.

2.3.2.2 Monitoring Well Groundwater Samples

A total of 11 monitoring wells (MW-1 through MW-11) are currently present at the Site. Routine groundwater sampling has been occurring between January 2022 and June 2024. Select wells were sampled in September 2024 and February 2025. Results are summarized on Tables 8 through 13.

The following discussion focuses on those concentrations exceeding a PCUL. Monitoring well locations are indicated on Figure 7.

2.3.2.2.1 Metals

Metals results are discussed based on dissolved concentrations relative to the PCUL. All groundwater results from samples collected from monitoring wells are summarized in Table 8. Only arsenic, chromium, and zinc were detected at a concentration exceeding a PCUL.

As discussed in Section 2.3.2.1.1, portions of the Site are subject to saltwater intrusion from the LDW. To further understand laboratory sample methods, split groundwater samples from the first sampling event (first quarter 2022, Table 9) were used to evaluate the potential for analytical bias based on saltwater intrusion. These samples were submitted to both BAL and Friedman and Bruya, Inc. (FBI) for chemical analysis. Groundwater samples submitted to BAL were analyzed for total and dissolved metals by EPA Method 1638 and the split samples submitted to FBI were analyzed for total and dissolved metals by EPA Method 6020B.

The results of the split samples indicated that elevated arsenic concentrations occurred in high salinity wells using EPA Method 6020B. Additionally, the elevated reporting limits using Method 6020B masked analytical interference for the other compounds. Due to the false positive arsenic results and the elevated reporting limits, all subsequent groundwater metals analyses were performed using EPA Method 1638 at BAL. Table 8 includes the results from BAL.

Groundwater detections above the PCUL from Site monitoring wells include the following:

- Dissolved arsenic was detected in groundwater samples from MW-8 and MW-9 at concentrations exceeding the PCUL of 8.0 ug/L. The concentrations ranged from 8.26 µg/L to 13.4 µg/L.
- Dissolved total chromium was not detected in any samples at a concentration exceeding the PCUL of 27.4 ug/L, which is based upon trivalent chromium. However, the laboratory reporting limit was in all cases above the PCUL for hexavalent chromium. Samples from MW-1 and MW-2 were submitted for analysis of hexavalent chromium in April, June, and September 2024. Hexavalent chromium was detected in four samples at concentrations exceeding the PCUL of 0.36 ug/L. The concentrations ranged from 0.522 ug/L to 1.51 ug/L; summarized on Table 10.
- Dissolved copper was detected in only one sample at a concentration above the PCUL of 3.1 µg/L. The concentration was 6.18 µg/L and was present in well MW-3.

Dissolved zinc was detected in 29 samples at a concentration above the PCUL of 81 µg/L. The detected concentration ranged from 99.4 µg/L to 2,660 µg/L and were present in wells MW-1, MW-4, and MW-5, shown on Table 8.

Figures 11 through 15 present the distribution of dissolved metals in groundwater.

2.3.2.2.2 Petroleum-Related Compounds

TPH and BTEX were analyzed on an intermittent basis from MW-1 through 9. The results are summarized below relative to PCULs.

GRO were detected in six samples at concentrations exceeding the PCUL of 1,000 ug/L. The concentrations ranged from 1,300 ug/L to 2,900 ug/L. Each of these concentrations was detected in groundwater collected at MW-8.

Total DRO were detected in one sample at a concentration above the PCUL of 500 ug/L. The detected concentration was 2,100 ug/L in MW-5. The reported concentration carried an “x” qualifier from the laboratory indicating the result did not match the typical chromatographic pattern. Analysis using silica gel cleanup (SGC) did not detect DRO at a concentration exceeding the laboratory reporting limit of 50 ug/L.

ORO were detected in two samples at concentrations exceeding the PCUL of 500 ug/L. The detected concentrations were 540 ug/L with an “x” qualifier and 590 ug/L in wells MW-5 and MW-8, respectively. Groundwater samples from MW-5 (with the result of 540 ug/L) was submitted for analysis with SGC, which did not detect ORO at a concentration exceeding the laboratory reporting limit of 250 ug/L.

Figure 16 presents the estimated extents of GRO and DRO impacts. These impacts are localized to the area surrounding RI-SB-10 (DRO) and MW-8 (GRO and DRO). The lateral extents of these impacts are well constrained by the available data.

BTEX compounds were not detected above laboratory reporting limits in groundwater samples from monitoring wells MW-1 through MW-9; all reporting limits were below the PCULs for BTEX compounds (Table 8).

2.3.2.2.3 CVOCs

CVOCs were analyzed in 58 total samples across all sampling events from each of monitoring wells MW-1 through MW-11. Only PCE, TCE, and vinyl chloride were detected at concentrations exceeding a PCUL.

- PCE was detected in 15 samples at a concentration exceeding the PCUL of 2.9 ug/L. The concentrations ranged from 3.6 to 20 ug/L and were only from wells MW-4, MW-5, and MW-8.
- TCE was detected in eight samples at a concentration exceeding the PCUL of 0.7 ug/L. The concentrations ranged from 0.9 ug/L to 1.8 ug/L and were only in wells MW-5 and MW-8.
- Vinyl chloride was detected in 33 samples at a concentration exceeding the PCUL of 0.18 ug/L. The concentrations ranged from 0.19 ug/L to 47 ug/L and were from wells MW-4, MW-5, and MW-7 through MW-11.

Figure 17 depicts CVOC impacts to groundwater at the Site. PCE and TCE impacts to groundwater are limited in lateral extent and are localized to the far southwestern, southcentral and

southeastern portions of the Site. Alternatively, vinyl chloride is widely distributed across the Site at generally low concentrations. This distribution of vinyl chloride is likely associated with on-Site migration from the upgradient GWCC Site.

2.3.2.2.4 SVOCs

PAH analyses were performed on groundwater samples collected from well MW-5 in April 2022, wells MW-1 through MW-9 in January 2024, and MW-3 in February 2025. Analysis included both non-carcinogenic PAHs and the seven cPAHs. Results are summarized on Table 11 and shown on Figure 18.

Of the non-carcinogenic PAHs only 1-methylnaphthalene was detected at a concentration exceeding its PCUL of 0.17 ug/L. The concentration was 5.9 ug/L in well MW-8.

Of the cPAHs, only benzo(b)fluoranthene was detected at one monitoring well (MW-3) at a concentration exceeding the laboratory reporting limit. The detected concentration was 0.024 ug/L with a “J” qualifier indicating it was an estimated concentration. The 2024 estimated result is higher than the benzo(b)fluoranthene PCUL of 0.00016, which is lower than the PQL of 0.009 ug/L. MW-3 was resampled in February 2025 and the compound was not detected above the laboratory reporting limit of 0.02 ug/L.

A full SVOC analyses (for non PAH/cPAH compounds) were performed in samples from MW-1 through MW-9 in January 2024. No SVOC analyte was detected in any sample at a concentration exceeding the laboratory reporting limits.

2.3.2.2.5 PCBs and Tributyltin

PCB analyses were performed on groundwater samples from well MW-5 in 2022, in wells MW-1 through MW-9 in January 2024, and additional samples were collected from MW-3 in April and June 2024.

Of the PCB analytes, only Aroclor 1254 was detected at a concentration above the laboratory reporting limits. The detected concentration was 0.04 ug/L with a “J” qualifier indicating an estimated concentration. PCBs were not detected above laboratory reporting limits in the two subsequent sampling events at MW-3. This reporting limit was less than the PCUL of 0.01 ug/L.

Organotin analyses were performed on samples from wells MW-1, MW-2, MW-4, MW-5, and MW-6 in January 2024. Organotin analysis included quantification of butyltin, dibutyltin, tributyltin (TBT) and tetrabutyltin. The results are summarized in Table 12.

Of these compounds, only TBT has a PCUL, which is 0.0074 ug/L. TBT was not detected at a concentration exceeding the laboratory reporting limits of 0.0052 ug/L.

Butyltin was detected in each of the samples at concentrations ranging from 0.0079 ug/L to 0.0559 ug/L.

Neither tetrabutyltin nor dibutyltin were detected at a concentration exceeding the laboratory reporting limits.

2.3.2.2.6 Dioxin/Furans

The detected Aroclor 1254 at MW-3 led to follow-up analysis for dioxins and furans (D/F). D/F analyses were performed on samples from MW-3 and MW-4 in January 2024. The laboratory inadvertently analyzed groundwater from MW-4 for dioxins and furans. D/F analytical results are summarized in Table 13.

No D/Fs were detected in the sample from MW-4 at a concentration exceeding the laboratory reporting limits.

The January 2024 sample from MW-3 contained nine D/F congeners at detectable concentrations. D/Fs are regulated based on a TEF adjusted total sum. The TEFs are presented in WAC 173-340-900 Table 708-1. The total TEF-Adjusted D/F concentration in MW-3 for that sample was 24.16 picograms/Liter (pg/L), which exceeded the PCUL of 0.005 pg/L.

Follow-up analysis in April 2024 resulted in the detection of only four congeners with a total concentration of 2.41 pg/L.

Additional analyses were performed in June and September of 2024. The June sampling included an as collected sample and a centrifuged sample. The September sample was as-collected with no centrifuged sample. A centrifuged sample was collected to determine if solids could be contributing to the D/F results. Those sampling results were generally consistent with between two and four D/F congeners detected and TEF-adjusted totals ranging from 0.14 pg/L to 1.41 pg/L, each exceeding the PCUL. The centrifuged result was approximately 1/3 the non-centrifuged result. This finding indicate that any detected D/Fs are likely strongly associated with turbidity within the sample.

Figure 19 presents the estimate extent of D/F in groundwater. The impacts are limited to the area in the far northwestern corner of the property. MW-3 is immediately adjacent to the LDW. There are no apparent sources of D/Fs on the Site. It is possible that the D/F observed at MW-3 is related to hydraulic communication between the LDW and the near shore groundwater. As discussed in Section 2.2.5, shoreline wells are tidally influenced with a connection extended throughout the property, but strongest within at least 150 feet into the property.

2.3.2.3 Groundwater Summary of Results

Analytes in groundwater exceeding a PCUL are:

- CVOCs – PCE, TCE, and vinyl chloride
- Dioxins/Furans
- Metals – arsenic, hexavalent chromium, copper, nickel, and zinc.
- Petroleum compounds – GRO and DRO

2.3.3 Seep Sampling

Groundwater samples were collected from seeps observed during low tide to provide additional information on groundwater quality at the property. Seep samples were collected in the vicinity of MW-1 (SEEP and SEEP-MW1) on April 26 and June 6, 2024, MW-2 (Seep-MW-2) on September 23,

2024 and MW-3 (Seep-MW3) on September 23, 2024. Samples were submitted for analysis of zinc, hexavalent and total chromium, and D/F.

Zinc (total and dissolved) has not been detected above the PCUL in samples collected from seeps in the vicinity of MW-1.

Hexavalent chromium was detected above the PCUL (of 0.36 ug/L) in the seep sample collected near MW-2 (at a concentration of 0.642 ug/L). The sample collected from the LDW surface water had a detection of 0.129 ug/L, below the PCUL.

Dioxins and furans were detected above the PCUL (0.005 picogram/liter [pg/L]) in samples collected from the groundwater seep near MW-3 and a sample from the LDW (Table 13).

2.3.4 Surface Water Sampling

Surface water grab samples were collected directly from the LDW to provide background water quality information. A surface water sample was collected April 26, 2024 for D/F and April 26 and June 6, 2024 for hexavalent chromium.

2.3.5 Vapor Intrusion

Based on the downgradient location of the Site to the upgradient GWCC site as well as the elevated concentrations of CVOCs in groundwater on the eastern portion of the Site attributable to GWCC the potential for VI was evaluated.

The VI assessment included initial evaluations of sub-slab soil gas and contemporaneous indoor air samples, followed by two rounds of indoor air sampling, and then a final round of contemporaneous soil gas and indoor air sampling after Dawn Foods had vacated the structure. Results of this work is discussed below. Appendix A includes the results from the vapor intrusion work completed in 2024; previous data were included in the RIWP.

The results of the cumulative VI assessments is presented on Figure 20.

2.3.5.1 Sub-Slab Soil Gas

Sub-slab soil gas was initially sampled in June 2020 from three locations at the Restroom, Office and Warehouse. Additional sub-slab soil gas sampling was performed in May 2024 from those same three locations plus two additional locations in the warehouse. Samples were analyzed for VOCs using Method TO-15 and Air Petroleum Hydrocarbons (APH) using the Massachusetts Department of Environmental Protection (MA-DEP) Method. All samples were collected following sampling procedures outlined in the sampling analysis plan included in the RIWP (CRETE 2024). The samples were analyzed by FBI using gas chromatography/mass spectrometry (GC/MS). Sample results are summarized in Table 14. Sampling locations are indicated on Figure 20.

The analytical results are discussed below relative to the MTCA Method C screening levels for soil gas (SLsg) as presented in the Cleanup Levels and Risk Calculations (CLARC) for VOCs. No Method C SLsg is available for TPH compounds.

PCE was detected in five of the samples at concentrations exceeding the SLsg of 1,300 $\mu\text{g}/\text{m}^3$. These concentrations ranged from 2,100 $\mu\text{g}/\text{m}^3$ to 6,900 $\mu\text{g}/\text{m}^3$.

TCE was detected in seven of the samples at concentrations exceeding the SLsg of 67 $\mu\text{g}/\text{m}^3$. These concentrations ranged from 88 $\mu\text{g}/\text{m}^3$ to 810 $\mu\text{g}/\text{m}^3$. Two sampling locations (restroom/BR-SS-0620; detected at 810 $\mu\text{g}/\text{m}^3$ and office/OF-SS-0620 detected at 290 $\mu\text{g}/\text{m}^3$) resulted in TCE detections above the MTCA Vapor Intrusion Short-term TCE subsurface screening Level of 250 $\mu\text{g}/\text{m}^3$, which is based on a short-term exposure for a workplace scenario.

PCE and TCE were detected at concentrations exceeding the SLs during both sampling events at generally consistent concentrations. Concentrations were highest on the eastern portion of the property closest to the GWCC Site.

M- and p-xylene and o-xylenes were also detected at concentrations exceeding a SLsg but only in the May 2024 sampling event. Those compounds were not detected above a laboratory reporting limits in the June 2020 event.

M- and p-xylenes were detected at concentrations of 31,000 $\mu\text{g}/\text{m}^3$ and 12,000 $\mu\text{g}/\text{m}^3$, which exceeds the SLsg of 3,300 $\mu\text{g}/\text{m}^3$. Both of these values had an “E” data qualifier indicating the result is estimated and above the instrument calibration range.

O-xylenes were detected at concentration of 9,300 $\mu\text{g}/\text{m}^3$ and 4,200 $\mu\text{g}/\text{m}^3$. The higher value also had a “E” data qualifier.

There is not a MTCA Method C screening level for TPH in soil gas. TPH was detected in all samples, with concentrations ranging from 620 $\mu\text{g}/\text{m}^3$ (WH05-SS-0524) to 6,400 $\mu\text{g}/\text{m}^3$ (BR-SS-0620).

2.3.5.2 Indoor Air

Indoor air sampling was performed in June 2020 and May 2024 contemporaneous with sub-slab vapor sampling and then as standalone sampling in June 2021 and July 2023. During those sampling events various samples were collected at the women’s restroom, office, and 6 locations in the warehouse. The June 2020 sampling event included composite indoor air samples collected over 8 hours; the remaining indoor air sampling events included composite samples collected over 24 hours. The July 2023 and May 2024 sampling events were the most extensive with eight locations each. The May 2024 results represent Site conditions after Dawn Foods had vacated the premises. During all sampling events ambient samples were collected from upwind and downwind locations to estimate background levels of the COCs in the project area at the time of indoor air sampling.

Sample results are summarized in Table 15. Sampling locations are indicated on Figure 20. The Site is located in an industrial area of Seattle and several VOC compounds were detected in ambient air samples. Table 15 shows both the detected concentrations and a corrected concentration, which removes the average concentration of the VOC compound if it was detected in ambient air. VOCs⁸ in the ambient air could be from sources outside of the building such as paints, aerosol sprays, fuels, or from emissions released from industrial uses in the area. The warehouse has many truck bay doors and windows that are directly connected to ambient air. During sampling activities, the doors were closed.

⁸ <https://www.epa.gov/indoor-air-quality-iaq/volatile-organic-compounds-impact-indoor-air-quality>

No volatile compounds were detected in any samples at a concentration exceeding a MTCA Method C indoor air cleanup level or above the TCE short-term air action level.

TPH was detected in all indoor air samples collected. As mentioned above, samples were collected when Dawn Foods was operating in the building (2020-2021), when they were ramping down activity (2023) and after they had vacated the building (2024). This discussion focuses on samples collected in 2024, which represent current Site conditions. TPH concentrations in indoor air samples collected inside the building ranged from 31 µg/m³ to 131 µg/m³. Ecology has not developed a TPH vapor intrusion screening level for commercial or industrial land use. In the absence of a MTCA screening level, indoor vapor sample results from May 2024 were evaluated on a point-by-point basis against risk thresholds using spreadsheets developed by Ecology (Ecology 2023). The spreadsheets are provided in Appendix E. The May 2024 results (summarized on Table 15) were compared to MTCA Method B Unrestricted, MTCA Commercial, and MTCA Method C Industrial risks using the hazard index, total cancer risk, and individual cancer risks. The May 2024 results were evaluated because those samples were collected when Dawn Foods production had terminated operations and vacated the building. Results from all locations were below the MTCA Commercial Method C vapor risk factors⁹ and also below the MTCA Method B (unrestricted and commercial scenario). Evaluation of risk factors is included in Appendix E.

Table 15 also includes an evaluation of the July 2023 indoor air sampling event; this information was discussed in the RIWP. During the July 2023 event Dawn Foods was in the process of ramping down activities as they prepared to vacate the building. During that sampling event results from all locations were below the MTCA Commercial Method C vapor risk factors. Details related to this evaluation are presented in the RIWP.

2.3.5.3 Vapor Intrusion Summary of Results

There are no indoor air exceedances for the default MTCA cleanup levels or the risk scenarios evaluated.

2.3.6 Sediment

U.S. EPA Region 10 (EPA) is the agency with regulatory primacy for in-water and sediment cleanup of the LDW. The Site is located between river mile 2.2 and 2.3. Surface and subsurface data available on the LDW Superfund Site website, collected in close proximity to the Site, indicate that sediment proximal to the Site is not contaminated (Windward 2010). The Record of Decision for the LDW confirms that sediment adjacent to the Site does not require cleanup (EPA 2014). Sites immediately upstream and downstream of the Site do have contaminated sediment which can migrate, and likely historically has migrated, to sediment adjacent to the Site. These contaminants include: metals such as arsenic, lead, mercury, and zinc; PAHs, such as fluoranthene and phenanthrene; PCBs, TPH, and SVOCs such as benzyl alcohol (Ecology 2009). The cleanup action proposed for these nearby sites includes removal of contaminated sediment (EPA 2014).

LDW pre-remedial design sediment sampling was performed in 2022 (Windward and AnchorQEA 2023). Four grab samples and two sediment core samples were advanced in the intertidal zone

⁹ The RIWP includes a comparison of the July 2023 indoor air vapor results to the MTCA Commercial Method C vapor risk factors (CRETE 2024). TPH risk factors were acceptable for the Commercial Method C value for all samples.

adjacent to the Site. The samples were all below LDW remedial action levels for arsenic (57 mg/kg), total PCB Aroclor® (12 mg/kg Organic Carbon normalized), and total cPAH (5.5 mg/kg).

These findings indicate that the Site was not historically, and is not currently, a source of impacts to the Duwamish Waterway or sediment adjacent to the Site.

2.4 Summary of Interim Action

To address CVOCs and zinc in groundwater in the southwestern corner, the southcentral portion, and the southeastern corner of the Site, an Interim Action (IA) was completed from November 8 through 21, 2024. The interim action included in-situ enhanced reductive dechlorination (ERD) for CVOCs and anaerobic sulfate-reduction for zinc via substrate injection in the vicinity of MW-5/MW-4, RI-SB-13, and MW-8. For CVOCs, injection locations focused on areas with PCE and TCE detected, since these compounds indicate potential on-Site sources.

All work was performed in accordance with WAC 173-340-430 and the Ecology approved Interim Action Work Plan (IAWP; CRETE 2024b). The extent of the interim action is shown on Figure 21. To address both CVOCs and zinc in groundwater, a nutrient-amended carbohydrate electron donor was injected in the vicinity of MW-5/MW-4, RI-SB-13, and MW-8. The application of the electron donor to the subsurface created reductive conditions necessary for the reductive dechlorination of CVOCs and the sulfate reduction of zinc sulfate to zinc sulfide. For CVOCs, the goal was to address the minor mass of chlorinated solvents dissolved in groundwater, but also address the majority of the chlorinated solvent mass sorbed onto the organic fraction in the soil as it partitions into the groundwater. For zinc, the goal was to transform adequate zinc in soil and groundwater to less soluble zinc sulfide to reduce groundwater concentrations to below the zinc CUL prior to migration to surface water.

The IAWP included installing 2 new monitoring wells – MW-10 and MW-11 (Figure 7). These wells were installed on September 19, 2024.

Select Site monitoring wells (MW-1, MW-4, MW-5, MW-10 and MW-11) were sampled on September 23, 2024 to provide pre-treatment baseline conditions and sample on February 25 and 26, 2025 to represent post treatment conditions (approximately 90 days from initial treatment). These wells will continue to be monitored (in May and August 2025) to evaluate the effectiveness of the IAWP. These results are summarized in Section 6.1.

3 Conceptual Site Model

This section presents a conceptual site model (CSM) that discusses potential receptors and exposure pathways that will be evaluated during development of proposed CULs in Section 4.

3.1 Site Conditions

3.1.1 Physical Habitat Features

The Site is located in the Georgetown neighborhood of Seattle adjacent to the Duwamish Waterway in a predominately industrial/commercial area of Seattle. The Site covers 5.4-acres and includes a 128,800 square feet (2.96 acres) warehouse. The Site is covered in pavement/concrete surfaces except for the rail spur north of the building (which is covered in compacted gravel/dirt), a narrow strip to the west of the rail spur (which is compacted gravel), small areas of landscaping on the east side of the property, and a narrow strip of heavily armored shoreline which slopes steeply into the Duwamish Waterway.

3.1.2 Geology and Hydrogeology

Site geologic conditions are illustrated on the cross sections (Figures 8 and 9). Shallow soil consists of sand fill with some silt and gravels from ground surface to 9 to 12 ft bgs. Locally, fill includes some organic matter, wood, and debris, including concrete rubble. A thin layer of silt was occasionally identified at 11 to 14 ft bgs in boreholes advanced within about 150 feet of the shoreline that may be indicative of the pre-filling surface.

Groundwater is tidally influenced and results of tidal studies indicate that groundwater flow is to the west-southwest with groundwater discharging to the Duwamish Waterway. A groundwater contour map is included on Figure 10. Results from the 2023 tidal study indicate that all wells (wells MW-1 through MW-9) are tidally influenced with the strongest influence located at wells closer to the shoreline, with the influence dampening to the east. A summary of the tidal results is included in Appendix C.

3.2 Sources

There are no current releases or ongoing sources of contamination at the Site. Historical sources which may have contaminated soil, groundwater, and or indoor air/sub-slab vapor include the following:

- Ship painting and repair activities: Activities such as ship repair, painting, and fabrication likely occurred as early as 1917, and through 1966. These activities occurred primarily in the western and southwestern portion of the Site, as seen on historical aerials included as Figures 4A and 4B. The historical record is not clear on the exact types of activities and various locations in which they were performed.
- Industrial manufacturing and fabrication over much of the central and western portion of the Site: After ship building, the Site was leased and used by Emerson GM Diesel until the

mid 1970s. These past operations likely resulted in releases and spills that included . Historical sources in the vicinity of MW-5 and MW-8 have resulted in CVOCs, petroleum compounds and metals (MW-5 only). PCE and TCE were detected in soil and groundwater above screening levels at from RI-SB-11 and RI-SB-13 (PCE only). These past industrial processes are also likely responsible for the other compounds such as PCBs. The sources of dioxin and furans in groundwater is not known but may be attributed to past industrial use or contamination from the LDW. The sources and timing of releases are not known.

- On-Site migration of groundwater impacts from GWCC and Emerson/Schultz Distributing: As discussed in Section 2, the Site is downgradient of known chlorinated solvent releases from GWCC and the Emerson/Schultz Distributing block. The impacts at the GWCC Site are well established and known to migrate off-property, with documentation by GWCC confirming the existence of off-property impacts. These impacts have resulted in a broad dissolved-phase vinyl chloride plume that has affected much of the Dawn Foods Site and may also have contributed PCE and TCE impacts to the eastern portion of the Site.

3.3 Potential Transport Mechanisms

Contaminant release mechanisms refer to the manner in which contaminants are released from the primary source. Primary release mechanisms associated with the former ship building facility included upland process-related releases and spills. Given the apparent changes in Site grade and due to changes in the shoreline location, it is possible that some of these historical surface releases are at some depth below grade with clean fill above. The release mechanisms for the historical on-Site Emerson GM Diesel activities are similarly assumed to be surface releases and the vertical migration through the soil column.

Urban and industrial sources outside the Site, including on-Site migration, could also have resulted in releases to soil, groundwater, or air within the Site boundaries. GWCC is a known contributor of CVOCs to groundwater impacts at the Site.

The Site is almost entirely paved or covered with concrete and warehouse structures, thereby limiting the potential transport mechanisms to the following:

- Soil leaching to groundwater – Soils are impacted with several compounds and have the potential to impact groundwater. This mechanism is limited given the degree of impervious surface cover.
- Groundwater transport to surface water – The hydraulic gradient is toward the LDW with discharge to the waterway through seeps and groundwater flux below the low water level of the LDW.
- Volatilization to Indoor Air – Volatile compounds are known to exist in the soil gas below the on-Site structure. Those impacts have not affected indoor air quality above a CUL. Future modifications to the property either through remodel or redevelopment can readily address this mechanism through engineering controls (e.g., vapor barrier, passive venting).

Stormwater is currently managed under Industrial Stormwater General Permit No. WAR011560. The majority of the Site is paved and stormwater is monitored based on the permit conditions. The Site paving and concrete cover and existing stormwater system prevent any significant interaction between stormwater with soil and groundwater.

3.4 Potential Ecological and Human Receptors

Ecological and human receptors could be directly or indirectly exposed to contaminants in soil, sediment, and surface water as follows:

- Ecological – See Section 4.3.1 for Terrestrial Ecological Evaluation Exemption. The Site is located within an industrial area of Seattle with no discernable upland habitat. PCUL have incorporated the protection of sediment and surface water to the LDW.
- Human – On-Site workers or workmen performing improvements.
 - Direct exposure – Incidental ingestion or dermal contact with soil or groundwater
 - Inhalation – Volatilization to indoor air or below grade work environments (trenches, pits, excavations)
 - Direct contact with or ingestion of groundwater – Direct contact (incidental ingestion and dermal contact) could occur in areas where groundwater becomes exposed during construction.

These receptors and pathways are evaluated in Section 4.

4 Proposed Cleanup Standards

4.1 Applicable or Relevant and Appropriate Requirements

4.1.1 Applicable or Relevant and Appropriate Requirements

MTCA requires that all cleanup actions comply with applicable or relevant and appropriate requirements (ARARs) under state and federal laws (WAC 173-340-360(2)), including “legally applicable requirements” and “relevant and appropriate requirements.” This section lists these requirements as they apply to cleanup levels, treatment and disposal, and property development.

4.1.1.1 Laws Applicable to Cleanup Levels

Potentially applicable requirements that apply to cleanup and action levels are summarized in Table 16. These are applied in Sections 4.2 through 4.4 below during the selection of the appropriate cleanup levels for soil and water is discussed below.

4.1.1.2 Laws Applicable to Treatment and Disposal

Table 16 provides a summary of laws relating to the management of soil and water during the treatment and disposal process. These laws are applied to the evaluation of remedial alternative in Section 7 of this report.

4.1.1.3 Other Remediation Requirements

Other potentially applicable requirements that apply to remediation activities are summarized in Table 16 and listed in the sections below. These requirements do not apply to cleanup levels or treatment and disposal activities, but place restrictions on how the remediation may be performed. These requirements are also considered in the evaluation of alternatives for implementability and cost (Section 7).

4.2 Proposed Groundwater Cleanup Standards

Proposed groundwater CULs are based on the PCUL workbook for the Lower Duwamish Waterway (version February 5, 2025). Where relevant, the PCULs have been adjusted based on practical quantitative limits (PQLs) or natural background concentrations. PCULs were developed based on groundwater non-potability. Support for that decision is provided below in Section 4.2.1.

Absent a consideration for potability, the two pathways related to groundwater cleanup are vapor intrusion and surface water. While the LDW is being addressed by EPA there remains the requirement that discharge from the Site not adversely impact the surface water quality.

The vapor intrusion pathway has been demonstrated to be incomplete due to the structure effectively preventing sub-slab vapor from entering the warehouse (Section 2.4.3). In addition, there are no plans to modify the existing warehouse foundation and floor or construct new structures. The current structure is an effective engineering control against vapor intrusion.

Arsenic was adjusted upward to the groundwater natural background level.

Future groundwater samples may be analyzed for EPH/VPH in addition to Northwest Total Petroleum hydrocarbon (NWTPH)-Dx to allow development and comparison of TPH concentrations relative to MTCA Method B criteria.

4.2.1 Groundwater Non-Potability

Groundwater potability was reviewed for applicability of human consumption of groundwater as a potential exposure pathway. Based on the criteria presented in WAC 173-340-720(2)(d), groundwater beneath the Site satisfies the MTCA non-potability criteria, and therefore human consumption of groundwater is not an exposure pathway of concern. Protection of drinking water is not applicable because the shallow groundwater is not potable and is expected to remain non-potable in the future under MTCA and local regulations based on the following evaluation:

- WAC 173-340-720(2)(d)(i) The conditions of (a) and (c) of this subsection are met. The conditions of (b) are also likely to be met:
 - WAC 173-340-720(2)(a) Neither the Site nor groundwater in its vicinity is a current source of drinking water based on Ecology's on-line well construction inventory.
 - WAC 173-340-720(2)(b)(ii) - The groundwater contains natural background concentrations of organic or inorganic constituents that make use of the water as a drinking water source not practicable. The proximity of the Site to the Duwamish Waterway indicates that any production scale groundwater extraction would result in saltwater intrusion to a well on the Site. This finding also relates to -720(2)(d) as a very low probability source of beneficial use groundwater.
 - WAC 173-340-720(2)(c) Ecology determines it is unlikely that hazardous substances will be transported from the Site groundwater to groundwater that is a current or potential future source of drinking water based on the following site-specific factors:
 - (i) The extent of affected groundwater was discussed in Section 3.2.
 - (ii) The distance to the nearest existing water supply well is estimated to be about 0.6 miles to the north.
 - (iii) The likelihood of interconnection between the contaminated ground water and groundwater that is a current or potential future source of drinking water since drinking water wells would be installed in deeper aquifers and there is an upward vertical gradient in the vicinity of the Site.
 - (iv) The characteristics of the hazardous substances were discussed in Section 3.
 - (v) The hydrogeologic characteristics of the Site were discussed in Section 2.3. Upward vertical gradient was discussed above in (iii) and the direct connection of shallow groundwater to surface water is discussed below in (d).

- (vi) The impacted shallow aquifer is part of an upper groundwater zone in the Duwamish Valley that is present to about 80 feet bgs. A specific discontinuous shallow silt was identified at GWCC but the upper groundwater zone is a deltaic deposit that includes numerous silt, silty sand, and sand interbeds.
- WAC 173-340-720(2)(d). Conditions (i) through (iv) of this section are met.
 - i The conditions specified in (a) and (c) of this subsection are met - see above.
 - (ii) Groundwater beneath the Site is known to discharge to surface water (LDW)
 - (iii) The LDW is not classified as a suitable domestic water supply source under WAC 173-201A.
 - (iv) The shallow aquifer has an average hydraulic conductivity of 5×10^{-3} cm/s. Groundwater response to tidal fluctuation at this Site and GWCC has been observed several hundred feet into the upland, and elevated specific conductance (up to greater than 32,115 $\mu\text{S}/\text{cm}$ [Table 5]) consistent with the presence of saline surface water mixing has been measured in groundwater. These observations indicate significant hydraulic connection between groundwater and surface water.

Other information to consider with respect to whether Site groundwater is a potential future source of drinking water include:

- Specific conductance measured in groundwater contains natural background levels up more than 45 times the state and local secondary maximum contaminant level of 700 $\mu\text{S}/\text{cm}$ (at MW-3, January 2024; Table 5).
- A domestic supply well could not be placed in the vicinity of the Site as state and local codes prohibit the construction of drinking water wells in the vicinity of the Site.
- WAC 246-290-130(1) requires drinking water supplies to come from the highest quality source, which at the Site is the municipal water supply system.
- WAC 290-135(2)(b) specifies a minimum 100-foot drinking water well setback from surface water, roads, utilities, and buildings.

4.2.2 Summary of Proposed Groundwater Cleanup Levels

Groundwater CULs are based on protection of surface water and sediment are presented in Table 17 for the following:

- CVOCs – PCE, TCE, and vinyl chloride
- Petroleum compounds – GRO and DRO
- Metals – arsenic, hexavalent chromium, copper, nickel, and zinc.
- Dioxins/Furans

The groundwater CUL for all COIs is based on protection of surface water or sediment and the conditional point of compliance is set at the point of discharge to the Duwamish Waterway.

4.3 Proposed Soil Cleanup Standards

The Site is an industrial property as defined in MTCA WAC 173-340-200 because the property has been and is planned to be used for distribution of manufactured products and the property is zoned industrial by the City of Seattle (MML U/85 is an industrial and maritime zone).

Soil screening levels used in Section 2 are based on the PCUL workbook for Lower Duwamish Waterway (version February 5, 2025), which has been developed by Ecology specifically for upland sites adjacent to the LDW. The TEE exposure pathway was evaluated and indicated that substantial wildlife exposure is unlikely; therefore, potential TEE exposures were not incorporated into the soil CULs. A detailed discussion of TEE exemption is provided in Section 4.3.1, below.

The soil CULs for all COIs are based on soil leaching to groundwater where groundwater CULs are based on the protection of surface water or sediment. For the metals COIs, many of these CULs default to natural background (arsenic, cadmium, total chromium, copper, mercury, nickel, and zinc [saturated]) because the protection of surface water or sediment PCUL is lower than the natural background value established by Ecology. Compliance with natural background cleanup levels is discussed in Section 4.5.2.

The point of compliance for soil CULs is throughout the Site.

4.3.1 Terrestrial Ecological Evaluation

A simplified terrestrial ecological evaluation (TEE) was performed for the Site. The following is a scored simplified TEE according to WAC 173-340-7492(2)(a)(ii).

The Site is located in an industrial area of south Seattle. The Site and the surrounding properties are industrial facilities resulting in less than ¼-acre of contiguous, undeveloped land. The Site is adjacent to the LDW; however, the shoreline is comprised of a steeply sloped bank with heavy armor which does not provide any habitat.

Based on Site conditions, the following points are assigned Per Table 749-1 of WAC 173-340-7492:

- | | |
|---|-----------------|
| 1. Points per contiguous, undeveloped acreage (<0.25 acres): | 4 points |
| 2. The area is industrial or commercial (zoned as industrial ¹⁰). | 3 points |
| 3. Low habitat quality of the site. | 3 points |
| 4. Undeveloped land is unlikely to attract wildlife. | 2 points |
| 5. PCB detected in soil. | 1 point |
| 6. Summation of Items 2 through 5: | 9 points |

This score (**9 points**) is larger than Item 1 score (**4 points**) and therefore the simplified TEE may be ended under WAC 173-340-7492 (2)(a)(ii) and the Site is exempt from further consideration of terrestrial or ecological exposures. Therefore, potential TEE exposures were not incorporated into the soil CULs and will not be considered further in the RI/FS.

¹⁰ City of Seattle Industrial Zone MML U/85

Only two locations have exceedances of the industrial or commercial soil concentrations provided in the Priority Contaminants of Ecological Concern for Sites that Qualify for the Simplified Terrestrial Ecological Evaluation Procedure MTCA Table 749-2 (Appendix D); RI-SB-10 (zinc at 5 to 8 ft bgs) and GP-SB-08 (lead and zinc at 9 to 10 ft bgs). Only RI-SB-10 is located on the property as GP-SB-08 is on the neighboring Seattle Boiler property. Due to the presence of these exceedances in the upper 15 feet, appropriate institutional controls will be required to prevent future exposure in the event of a land use change per WAC 173-340-7492(3).

4.3.2 Summary of Proposed Soil Cleanup Standards

Soil cleanup standards are based on the PCULs that were calculated to be protective of groundwater to surface water and sediment pathways are presented in Table 17 for the following:

- CVOCs – PCE and TCE
- Metals – arsenic, cadmium, copper chromium (total and hexavalent), lead, mercury, nickel, and zinc
- Petroleum – GRO, DRO, and ORO
- PCBs – Total PCBs
- SVOCs – Fluorene, benzo(a)pyrene and Total PAHs

4.4 Proposed Indoor Air Cleanup Standards

The proposed CULs for indoor air are MTCA Method C for indoor air based on an industrial exposure pathway. Ecology has not developed a TPH vapor intrusion cleanup level for commercial or industrial land use. In the absence of a MTCA cleanup levels, indoor air sample results were evaluated on a point-by-point basis against vapor risk using spreadsheets developed by Ecology (Appendix C). Compliance with vapor cleanup standards is based on direct measurement of indoor air quality.

There are no indoor air exceedances of a proposed CUL. However, TCE, PCE, and xylenes have been detected above sub slab screening levels (Table 15). Thus, indoor air CULs are included for TCE, PCE, and xylenes since these compounds are in sub-slab vapor above screening levels and may pose a risk if building conditions change or if subsurface work is conducted that could result in the accumulation of vapors (such as confined space work). No sub-slab vapor cleanup levels have been established by Ecology.

4.4.1 Summary of Proposed Indoor Air Cleanup Standards

Indoor air cleanup standards are based on MTCA Method C industrial indoor air cleanup levels and are presented in Table 17 for the following:

- VOCs – PCE, TCE and xylenes.

4.5 Nature and Extent of Contamination

With the development of cleanup levels complete, the data presented in Section 2 are evaluated based on the relevant receptors and exposure pathways and associated cleanup levels in the following sections.

4.5.1 Groundwater

Groundwater CULs are based on protection of surface water and sediment. The conditional point of compliance is at the point of discharge to surface water or shoreline monitoring wells. The extent of impacts to groundwater for each of the COCs is presented on Figure 22.

There are three locations where groundwater CULs are exceeded at the conditional point of compliance:

- MW-1 – zinc
- MW-2 – hexavalent chromium
- MW-3 – benzo(b)fluoranthene, dioxins/furans

The zinc exceedance at MW-1 is associated with the source area in the southwest corner of the property. Zinc (total and dissolved) has not been detected above the PCUL in samples collected from seeps in the vicinity of MW-1.

Hexavalent chromium has been detected above the cleanup level at MW-2 and at two seep locations south of MW-2 (SEEP-MW-1 and SEEP-MW-2). For samples collected in September 2024, these concentrations were 0.645 µg/L at MW-2 and 0.89 and 0.642 µg/L at SEEP-MW1 and SEEP-MW2, respectively. A surface water sample was also collected at this time and measured 0.129 µg/L. These groundwater concentrations range from 1.8 to 2.5 times the LDW PCUL which has been adjusted downward by a factor of 3.6 relative to default MTCA assumptions based on the site-specific fish consumption rate and fish diet fraction.

The dioxin/furan toxic equivalency (TEQ) exceeded the cleanup level (0.009 pg/L) at MW-3 and at SEEP-MW3. A surface water sample was collected in April 2024 and the dioxin/furan concentration also exceeded the cleanup level. The MW-3 groundwater sample collected in June 2024, that was centrifuged prior to analysis to reduce interference from solids, had a dioxin/furan TEQ of 0.14 picogram/liter (pg/L), slightly exceeding the April 2024 surface water sample concentration of 0.09 pg/L (Table 13).

Other groundwater cleanup level exceedances are present in the southcentral and southeast portion of the Site for PCE, TCE, DRO, and GRO. PCE and TCE impacts in the southeast portion of the property are indistinguishable from upgradient impacts at the GWCC Fox Avenue Site. In addition, a large portion of the property contains vinyl chloride exceedances that appear to be associated with sources upgradient of the Dawn Foods Site.

Figure 22 shows the extent of groundwater exceeding cleanup levels. This figure differs from the Section 2 figures as described below:

- 1-methylnaphthalene exceeded the CUL at MW-8 during the sampling event in January 2024. The CUL (0.17 ug/L) is based on groundwater protective of indoor air and there is no CUL for the protection of surface water pathway. 1-methylnaphthalene is not included in the standard TO-15 analyte list so vapor data are not available, but it has been demonstrated that the building is an effective barrier to vapor migration to indoor air (Section 2.4.3). Therefore 1-methylnaphthalene is not shown on Figure 22.
- Benzo(b)fluoranthene was detected at MW-3 in one sample collected in 2024, which was not reproduced in subsequent groundwater sampling conducted in February 2025. Therefore benzo(b)fluoranthene is not shown on Figure 22.
- Nickel was detected in the groundwater grab samples from GP-SB-7 (22.7 µg/L) and GP-SB-11 (10.9 µg/L) above the CUL of 8.2 µg/L. Monitoring wells MW-4 and MW-5 were installed immediately adjacent to GP-SB-7 and GP-SB-11, respectively (Figure 7), to provide long term groundwater data from these locations. Dissolved nickel has not been detected in MW-4 or MW-5 above the CUL in the last nine sampling events. Therefore, nickel is not considered a COI in this area and is not shown on Figure 22.
- Arsenic
 - Arsenic was detected at GP-SB-7 (29.7 µg/L) but has not been detected at MW-4 above the CUL (MW-4 was installed immediately adjacent to GP-SB-7 to provide long term groundwater data from this location). Therefore, arsenic is not considered a COI in this area.
 - Low level arsenic has been detected in groundwater grab samples in the upgradient portion of the Site at GP-SB-18, GP-SB-30, GP-SB-31 and from monitoring well MW-9. Oxidation-Reduction Potential readings (Table 5) at MW-8 and MW-9 indicate that this area has groundwater reducing conditions that are likely due to the presence of GWCC CVOC contamination and associated enhanced reductive dichlorination treatment injections at GWCC (see Section 1.2.2). Arsenic concentrations have been decreasing in groundwater collected from monitoring wells MW-8 and MW-9 and was detected below the CUL in the last event at MW-9 and for the last three quarters at MW-8. These exceedances are likely due to reducing conditions caused by groundwater treatment at the upgradient GWCC Site. Therefore, arsenic is not considered a COI in this area.
 - Groundwater slightly exceeds the CULs for arsenic and vinyl chloride at RI-SB-06 in the northwest corner of the Site. This location is close to the northern property boundary and downgradient of the adjacent Seatac Marine Services property. At nearby MW-3, arsenic has not been detected above the CUL in the last 9 quarterly sampling events and vinyl chloride was not detected for 4 consecutive groundwater sampling events (Table 8). This appears to be an incomplete exposure pathway as this data is not observed at the downgradient monitoring well. Therefore, arsenic and vinyl chloride are not considered a COI in this area.
- Dissolved zinc was detected in a grab groundwater sample from GP-SB-29, located in the north eastern portion of the Site, above the CUL of 81 µg/L. Zinc has not been detected

above the CUL in any other borings in the vicinity of GP-SB-29. This appears to be an incomplete exposure pathway as it has not been reproduced in data collected in the vicinity. Therefore, zinc is not considered a COI in this area.

4.5.2 Soil

Preliminary evaluation of soil exceedances of PCULs was presented in Section 2. The majority of the preliminary soil exceedances were based on soil PCULs that were calculated to be protective of groundwater to surface water and sediment pathways. However, the PCULs for many of the detected metals are well below the natural background concentrations documented by Ecology. Therefore, as normally allowed, the CULs for arsenic, cadmium, total chromium, copper, mercury, nickel and zinc are defaulted to natural background concentrations for Western Washington.

To further evaluate the extent of soil contamination, the following evaluations were performed:

- Comparison to soil direct contact criteria
- A statistical analysis of soil metals concentrations relative to natural background (Table 18)
- A demonstration of soil protective of groundwater (Table 19)

The majority of soil at the Site contains metals concentrations that are consistent with natural background metals concentrations (arsenic, cadmium, chromium, copper, mercury, nickel, and zinc). Soil samples that exceeded natural background concentrations were further examined using a soil to groundwater demonstration to evaluate whether the detected concentrations pose a threat of migration to groundwater. The soil to groundwater demonstration evaluation included metals, TPH, TCE, PCE, PCBs, and SVOCs).

The resulting extent of soil contamination is illustrated in Figure 23 and discussed in more detail below.

4.5.2.1 Direct Contact

Soil concentrations on the property are below MTCA Method C industrial levels for direct contact for all samples except RI-SB-10 from 5 to 8 feet bgs. Arsenic was detected at 28.7 mg/kg, above the Method A level of 20 mg/kg. This area is currently capped by the building parking lot. All other soil concentrations are below MTCA Method C industrial standards (Method A for arsenic and lead), which are shown on Table 3 for metal compounds. Method C direct contact values are not listed for non metal compounds because the low level detections, summarized on Table 4, are well below Method C direct contact values.

4.5.2.2 Natural Background Metals

Soil CULs for arsenic, cadmium, total chromium, copper, mercury, nickel and zinc are based on natural background concentrations. In Section 2, individual point exceedances of these natural background CULs were identified; however, this results in an overestimate of metals soil contamination since the natural background CUL was established based on the 90% upper confidence limit (UCL) of the natural background data set. To provide a more accurate representation of the extent of metals soil contamination, Site soil contamination concentrations were evaluated for compliance with natural background concentrations using the MTCA three-part

rule defined in WAC 173-340-740(7), with modifications as set forth in WAC 173-340-740(7)(e)(i) and (ii) to control false positive error rates at 5%, as follows:

- The 95% upper confidence limit (UCL) on the sample mean may not exceed the natural background concentration.
- No sample may exceed two times the natural background concentration, except that this exceedance factor may be increased consistent with the procedures outlined the Statistical Guidance for Ecology Site Managers (Ecology 1992).
- Less than 10% of the samples may exceed the natural background concentration, except that this percentage may be increased consistent with the procedures outlined the Statistical Guidance for Ecology Site Managers (Ecology 1992).

Detailed statistical data tables and ProUCL outputs are provided in Appendix D and a summary of the analyses are presented in Table 17.

Soil concentrations were determined to be consistent with natural background metals concentrations except for the following locations where metals soil contamination is present:

- GP-SB-05 (mercury is present at a concentration greater than 10 times the CUL), GP-SB-08 (zinc is present greater than 10 times the CUL), and GP-SB-11 (zinc is present greater than 5 times the CUL);
- RI-SB-04 (zinc is present greater than 7 times the CUL), RI-SB-10 (arsenic is present more than 4 times the CUL), and RI-SB-11 (copper is present more than 10 times the CUL);
- RI-SB-07 and RI-SB-08 (hexavalent chromium are present greater than 10 times the CUL);
- MW-5 (zinc is present at a concentration greater than 10 times the CUL).

Samples GP-SB-22 (total chromium), GP-SB-23 (arsenic), GP-SB-24 (arsenic), GP-SB-25 (zinc), RI-SB-09 (mercury), MW-2 (arsenic) and MW-4 (zinc) have point exceedances above a CUL but satisfy the natural background evaluation per WAC 173-340-740(7). Compliance with the natural background is summarized on Table 18 and detailed in Appendix D.

4.5.2.3 Soil Protective of Groundwater

CULs for the soil leaching to groundwater pathway are developed based on soil-to-groundwater partitioning calculations that include several assumptions that are generally acknowledged to be conservative and tend to overestimate the degree of contaminant partitioning to groundwater. These assumptions include 1) steady-state equilibrium conditions; 2) individual chemicals rather than mixtures; 3) partitioning coefficients that bias toward leaching; and 4) low soil organic carbon content. MTCA allows for an empirical demonstration for this pathway per WAC 173-340-747.

In order to make an empirical demonstration that a measured soil concentration will not cause an exceedance of a groundwater CUL, it is necessary to meet the following requirements under 173-340-747(9)(b):

- The measured groundwater concentration associated with the soil is less than or equal to the applicable groundwater CUL Site conditions will not change in a way that could cause future migration

Appendix D presents a summary of soil and groundwater data that are co-located or where there is a groundwater sampling location immediately downgradient of a soil sampling location.

This analysis was performed for arsenic, lead, copper, mercury, total chromium, nickel, PCBs, and SVOCS (including cPAHs and fluorene). Table 19 provides a summary of individual locations and analytes which either failed the natural background analysis (arsenic, mercury and zinc) or were not included in the natural background evaluation because the PCUL is not based on natural background (cPAHs and fluorene).

The empirical demonstration evaluated data that was based on co-located soil and groundwater samples with the exceptions noted below.

- With respect to cPAHs, co-located groundwater data were only available for one sample location (GP-SB-25); however, the results were extrapolated to the other locations since GP-SB-25 had the highest cPAH soil concentration by a factor of 10 and total cPAHs have not been detected above the CUL in downgradient monitoring wells.
- Total PCB Aroclors exceeded the CUL in a soil sample collected from 12.5 to 13.3 ft bgs at GP-SB-30. GP-SB-30 is located near the upgradient edge of the Site and is more than 500 feet from the LDW. The PCB Aroclor concentration of 0.057 mg/kg exceeded the CUL of 0.03 mg/kg that is based on protection of surface water. Although there are no nearby paired groundwater samples, PCB Aroclors were analyzed at monitoring wells MW-1 through MW-9 in January 2024 with a resample of MW-3 in April 2024 and all monitoring well results were below the CUL.

The empirical demonstration requirements in WAC 173-340-747(9) and WAC 173-340-747(10)(c) have been satisfied for arsenic, lead, copper, mercury, total chromium, nickel, PCBs, and SVOCS (including cPAHs and fluorene), summarized on Table 19, as follows:

- There has been no accumulation of light non-aqueous phase liquid on or in groundwater per WAC 173-340-747(10)(c)(i)(A).
- There have been no exceedances of surface water screening levels that are attributable to leaching from soil to groundwater per WAC 173-340-747(9)(b)(i).
- Soil contamination is associated with industrial activity that dates back to 1917 through 1966 (Section 3.2). A significant amount of time has elapsed to enable any constituent transport from soil to groundwater that could have occurred at the Site. Also, current hydrogeologic conditions are sufficiently representative of future Site conditions; no changes to the surface structures footprints/pavement are planned or likely in the future. The Site is zoned industrial and will continue to be used that way, maintaining the low leaching potential and minimal surface water infiltration. As a result, the criteria in WAC 173-340-747(9)(b)(ii) and WAC 173 340-747(10)(c)(i)(B) are satisfied.
- The spatial distribution of the monitoring network and the existing data record (e.g., more than eight consecutive quarters of comprehensive groundwater monitoring events

conducted along shoreline monitoring wells and upgradient monitoring wells) are sufficiently robust to support the determinations listed above (Ecology 2016).

TCE and PCE have been detected above CULs in soil samples and groundwater samples at the following locations: RI-SB-09 (TCE only), RI-SB-11, and RI-SB-13 (PCE only). And TPH-Dx have been detected in soil samples and groundwater samples from RI-SB-10. This demonstrates a potential connection between soil and groundwater for these compounds.

4.5.2.4 Summary of Soil CUL Exceedances

Based on the results of the natural background and soil to groundwater pathway analyses, the following soil sample locations exceed CULs for the identified chemicals:

- RI-SB-07 – Hexavalent Chromium (10-15 feet bgs)
- RI-SB-08 – Zinc and Hexavalent Chromium (5-10 feet bgs)
- RI-SB-11 – Zinc, PCE and TCE (0.5-2 feet bgs [PCE and TCE only] 5-7.5 feet bgs [zinc, PCE and TCE])
- GP-SB-8 – Zinc (9-10 feet bgs)
- RI-SB-09 – PCE and TCE (10-12.5 feet bgs)
- RI-SB-10 – TPH Gx and Dx (5-8 feet bgs)
- RI-SB-13 – PCE (7.5-9 feet bgs)

Contaminants that were demonstrated to be in compliance with natural background metals concentrations and to be protective of the soil to groundwater pathway achieve CULs and are not retained as COCs.

4.6 Chemicals of Concern

As discussed in Section 2, the soil and groundwater sample locations and analyses were selected based on past known and suspected Site use. Soil and groundwater samples have been collected across the Site (Figure 7) and have been analyzed for a wide variety of chemical compounds including: metals, TPH, CVOCs, PCBs, dioxin and furans, SVOCs, BTEX, PAHs, and tributyltin.

The following table summarizes the process of determining the chemicals of concern (COCs) from the COIs presented in the RIWP as determined by the analysis of RI data and cleanup level exceedances presented in Section 4.5.

Constituent	COI	COC
Soil		
Arsenic	Yes	No – < Soil to GW Pathway
Cadmium	Yes	No – < DC and Soil to GW Pathway
Total Chromium	Yes	No – < DC and Soil to GW Pathway
Hexavalent Chromium	No	Yes
Copper	Yes	No – < DC and Soil to GW Pathway
Lead	Yes	No – < DC and Soil to GW Pathway
Mercury	Yes	No – < DC and Soil to GW Pathway
Nickel	Yes	No – < DC and Soil to GW Pathway
Zinc	Yes	Yes
TPH- Gasoline	No	Yes
TPH – Diesel	No	Yes
TCE and PCE	No	Yes
cPAH TEQ	Yes	No – < DC and Soil to GW Pathway
Benzo(a)pyrene	No	No – see cPAH TEQ
Fluorene	No	No – < DC and Soil to GW Pathway
PCB	No	No – < DC and Soil to GW Pathway
Groundwater		
Arsenic	Yes	Yes – at low redox (MW-9)
Cadmium	Yes	No - < PCULs
Total Chromium	Yes	No - <PCULs
Hexavalent Chromium	No	Yes
Copper	Yes	No - <PCULs
Mercury	Yes	No - <PCULs
Nickel	Yes	No - <PCULs
Zinc	Yes	Yes
TPH-G	Yes	Yes (MW-8)
TPH-Dx	Yes	Yes (MW-8)
PCE	Yes	Yes
TCE	Yes	Yes
cis-1,2 DCE	Yes	No - <PCULs
Vinyl Chloride	Yes	Yes
1-methylnaphthalene	No	No – below PCUL based on protection of surface water
Benzo(b)fluoranthene	No	No
Dioxin and Furans	No	Yes (MW-3)
Indoor Air		
PCE	No	Yes (based on sub-slab data)¹
TCE	Yes	Yes (based on sub-slab data)¹
Naphthalene	Yes	No - <PCULs
TPH	Yes	No - <PCULs
Xylenes	No	Yes (based on sub-slab data)¹

Notes:

No - <PCULs = all values are below PCULs

No – < DC and Soil to GW Pathway = all soil concentrations are below direct contact or satisfied the soil to groundwater demonstration to be protective of groundwater

1. The indoor air COCs TCE, PCE, and xylenes since these compounds were present in sub-slab vapor above screening levels (Table 14) and may pose a risk if building conditions change or if subsurface work is conducted that could result in the accumulation of vapors (such as confined space work). No sub-slab vapor cleanup levels have been established by Ecology.

In summary, the COCs for each media are as follows:

- Soil: hexavalent chromium, zinc, TPH-gasoline, TPH-diesel, TCE, and PCE
- Groundwater: arsenic, hexavalent chromium, zinc, TPH-gasoline, TPH-diesel, TCE, PCE, vinyl chloride and dioxin and furans (at MW-3 only)
- Indoor Air: TCE, PCE and xylenes.
- Cleanup levels for the COCs are provided in Table 17.

5 Remedial Objectives and Technologies

This Feasibility Study (FS) has been prepared consistent with the requirements of WAC 173-340-351. This section identifies the Remedial Action Objectives (RAOs) and briefly reviews a set of technologies that are potentially applicable at the Site based on the Site conditions and the scope of the cleanup.

5.1 Remedial Action Objectives

RAOs are selected below in conformance with the requirements of WAC 173-340-351(6)(a) Based on the conceptual site model, the FS has identified the following RAOs:

RAO 1. Worker Contact w/ Vapor and or Soils

- Reduce risk of vapor exposure during confined space work associated with Site buried-utility and subsurface construction workers
- Working below 5 feet near RI-SB-10
- Point of Compliance - Exclusion Zone (work area)

RAO 2. Groundwater (via groundwater discharge to LDW)

- Reduce risk to aquatic life (surface water and sediment)
- Reduce risk to humans via ingestion of fish and shellfish
- Point of Compliance - Groundwater discharge to surface water

RAO 3. Groundwater (Reduce Soil Leaching to Groundwater)

- Reduce risk of soil contamination leaching to groundwater
- Point of Compliance - To depth below ground surface where leaching occurs

No other RAOs are necessary to protect the current or potential future exposure pathways at the Site.

5.2 Remedial Technologies

Remedial technologies that will be combined into the alternatives to be evaluated are discussed below in accordance with WAC 173-340-351(6)(b). Groundwater contaminated with CVOCs (PCE, TCE, and VC), zinc, hexavalent chromium, and dioxin and furans have the potential to migrate and impact the LDW as these have been detected in monitoring wells above CULs (Figure 22). Dioxins and furans have very limited potential for migration in groundwater. There are a limited number of remedial technologies that will effectively address both CVOCs and metals. This section briefly reviews a set of technologies that are potentially applicable based on the Site conditions and the nature and extent of contamination. These technologies may be used in combination to address the Site RAOs and include:

- Institutional Controls
- Natural Attenuation and Monitoring

- Capping
- Enhanced in-situ reductive dechlorination (ERD)
- Permeable Reactive Barrier
- Excavation, Off-Site Disposal

5.2.1 Institutional Controls

The purposes and implementation requirements of Institutional Controls (ICs) are defined under WAC 173-340-440. ICs are legal or administrative measures designed to limit or control activities that could result in exposures to contamination before, during, and after a cleanup action, particularly if contaminant residues are likely to remain above cleanup levels for an extended period of time. For the Site cleanup, institutional controls would be designed to:

- Ensure access by the Owner/representatives or Ecology to remedial systems (e.g., cleanup or monitoring equipment) before, during, and after active cleanup operations
- Protect occupants and construction workers from exposure to hazardous substances on-site during and after active cleanup operations.

A common institutional control is a local ordinance or a state rule or regulation. Local government, using its general land use authority, can limit the installation of groundwater wells and can require permits before excavation or drilling occurs in contaminated or urban areas. WAC 173-160-171 prohibits installation of a well within 100 ft of known or potential areas of contamination. The State Department of Health reviews permit applications for public drinking water sources and requires that the applicant should only use drinking water from the highest quality source feasible.

ICs may also include restrictive covenants (WAC 173-340-440(9)) commonly referred to as Environmental Covenants (ECs) which are recorded against a property deed and which run with land and are binding on future owners of a property which is part of a Site. ECs must be consistent with the requirements of the Uniform Environmental Covenants Act. Engineering controls which are part of a long-term remedy may be enshrined within the EC along with requirements for periodic inspection and contingency plans for removing, maintaining, or modifying the engineering control.

To the extent required by WAC 173-340-440 (11), Bridge will establish financial assurance for cleanup actions that include engineered and/or institutional controls. Financial assurance is intended to demonstrate that Bridge has sufficient resources to pay for costs associated with the operation and maintenance of the cleanup action, including institutional controls, compliance monitoring and corrective measures. Bridge currently provides financial assurance for other cleanup sites using a corporate financial test consistent with EPA requirements (40 CFR Part 264, Subpart F) and comparable state requirements.

Institutional controls already exist in the form of local ordinances restricting the use of groundwater for drinking water and prohibiting the installation of groundwater monitoring or extraction wells. These controls will remain in place unless the City of Seattle changes its regulations. The entire area around the Site is and has historically been used by industry (Section 1). Institutional controls are

also required for the simplified TEE (Section 4.3.1) and will be carried forward to provide physical barriers between subsurface soils and wildlife receptors.

All soil samples collected throughout the Site are below the MTCA Method C industrial worker direct contact value. Sub-slab vapor is present below the building at concentrations above MTCA screening levels, however all vapor samples collected within the building are below cleanup levels (Figure 20). Soil and groundwater beneath the building are likely the source of sub-slab vapor concentrations. Based on the potential for these sources to be disturbed during future work, institutional controls shall be applied to all soil beneath the building foundations. Because the building is currently limiting the exposure, and because future plans are uncertain as to the extent of remodeling, removal, or reconstruction, institutional controls will be put into place until the soil beneath the building is accessible. When the soil beneath the building becomes accessible, controls will be put into place to ensure that the soil is properly managed and disposed of in accordance with all local, state, and federal laws. Institutional controls would also address the maintenance of the existing surface capping in a manner that prevents potential exposures.

The use of ICs and ECs as a component of the Site remedy is carried forward for additional evaluation.

5.2.2 Capping

Capping is a containment technology that involves leaving contaminated soil in place, isolating the medium from direct contact, and reducing or eliminating infiltration. Containment technologies include hard surface capping with buildings and parking lots or soft capping with clean soil or gravel. Cap inspections and maintenance ensure that cap integrity is not compromised by Site operations, wear, or climate; institutional controls such as deed restrictions ensure proper future management of the cap and contained soil. The requirements for inspection and maintenance of a cap is typically included within an IC or EC for a Site. Capping is not treatment, so toxicity, mobility and volume of contaminants are not reduced by this technology.

Soil data indicates that soil contamination is below MTCA Method C industrial values (Section 4.5.2.1), thus capping is not needed for the direct contact pathway. However, capping is required to maintain the physical barriers per the simplified TEE (Section 4.3.1) and to limit potential infiltration of surface precipitation and its potential effects on contaminant mobility to groundwater. Development plans for the Site include maintaining the current building footprint (128,800 square feet building which covers approximately 55% percent of the Site) and parking/paved areas (which covers the remainder of the Site except for a small strip of vegetation along the shoreline). Because CULs were developed assuming that this pathway would be limited (see Section 4.3.1 for a TEE discussion) capping is carried forward as a potential technology for the Site.

The potential use of capping as a component of the Site remedy is carried forward for further evaluation.

5.2.3 Enhanced In-Situ Reductive Dechlorination

ERD is the process of modifying chemical, physical, and biological conditions in the aquifer to stimulate the microbial degradation of CVOCs in groundwater under anaerobic conditions to harmless end products (e.g., carbon dioxide [CO₂] or ethene). Under anaerobic (i.e., reducing conditions or low redox potential) oxidized metals, such as hexavalent chromium are also reduced to less toxic species like trivalent chromium. In this way ERD may also be effective at treating the hexavalent chromium immediately downgradient of the PCE and TCE impacts to groundwater.

ERD is conducted in place, without having to pump out groundwater for aboveground cleanup. ERD is the process through which chlorine atoms attached to an organic compound are sequentially removed under anoxic (low oxygen) conditions. The degradation process for PCE is generally PCE → TCE → cis-1,2-dichloroethylene (with the possibility of minor amounts of trans-1,2-dichloroethylene and 1,1-dichloroethylene) → vinyl chloride → ethene. ERD is used frequently to remediate CVOC contamination in groundwater. Application of ERD is comprised of the introduction of an electron donor and sometimes bioaugmentation to modify existing geochemical and biological conditions in an aquifer to facilitate degradation of contaminants. The electron donor (which is a carbon source) is used as food by native microbes, which in turn, produce hydrogen through fermentation reactions. This process depletes the aquifer of dissolved oxygen and other electron acceptors including nitrate, sulfate, and ferric iron, which lowers the oxidation-reduction potential, thereby creating the conditions for reductive dechlorination to occur¹¹.

An electron donor is added to the impacted area to overcome the terminal electronic acceptors (TEA) sinks (i.e. dissolved oxygen, nitrate, sulfate, etc.) and create sulfate-reducing and/or methanogenic conditions throughout the target treatment zone. Either one or both conditions will promote the transfer of electrons to the chlorinated solvents, which will reduce their concentrations and remediate the target area. Desirable electron donor qualities include high water solubility, no particulate matter, low viscosity, and a low retardation factor in order to ensure mobility within the target treatment zone. If the substrate has a low solubility or significant retardation factor, then delivery via induced hydraulic gradients would require multiple pore volumes of recirculation prior to achieving site-wide delivery.

Anaerobic sulfate-reducing conditions, resulting from the ERD, can also stabilize zinc contamination by chemically reducing zinc sulfate to zinc sulfide, thereby reducing the solubility of the zinc that is present in soil and groundwater (Suthersan et al 2009; EPA 1987). Sufficient sulfate is expected to be present to support this process, particularly since sea water contains sulfate. Studies have also shown that metal sulfides remain stable even when the sulfate-reducing conditions no longer remain (Thomson et al. 2001; SERDP 2009). One study indicated that 1 to 2% of the metals would remobilize within 16 years after sulfate-reducing conditions no longer remained (SERDP 2009). This treatment technology can also work for hexavalent chromium; the process works by reducing the more highly oxidized hexavalent chromium to the less toxic trivalent chromium. Once transformed the trivalent chromium is stabilized within the subsurface environment by forming insoluble and immobile trivalent hydroxide precipitates and iron and sulfide complex co-precipitates. Reagents

¹¹ [https://clu-in.org/techfocus/default.focus/sec/Bioremediation/cat/Anaerobic_Bioremediation_\(Direct\)/](https://clu-in.org/techfocus/default.focus/sec/Bioremediation/cat/Anaerobic_Bioremediation_(Direct)/)

can include compounds such as calcium polysulfide reagent, zero-valent iron (ZVI) or a blended mix with a proprietary mix (such as CarBstrate & NutriChlor, EHC-M™ Slurry, or Ecobond®).

ERD via substrate injection, was selected as the interim remedial technology for the Site and the interim action was implemented in November 2024, summarized in Section 2.5. The interim action focused on CVOCs and zinc. The same technology can be applied to hexavalent chromium, treating groundwater by transforming hexavalent chromium to the less toxic trivalent chromium which then readily precipitates out as chromium hydroxide (Cr(OH)₃) due to its low solubility in water (Suthersan et al. 2009).

This technology is carried forward as it is already being implemented at the Site to effectively treat affected groundwater and could be applied to a broader treatment area to include areas of hexavalent chromium.

5.2.4 Permeable Reactive Barriers

A permeable reactive barrier (PRB) is a subsurface trench containing reactive materials through which groundwater flows. This in-situ method for remediating dissolved-phase contaminants in groundwater combines a passive chemical or biological treatment zone with subsurface fluid flow management. The most commonly used PRB configuration is a continuous trench in which the treatment material is placed as backfill into the ground surface. The trench is perpendicular to and intersects the groundwater plume.

The majority of installed trench style PRBs use zero-valent iron (ZVI)¹² as the reactive media for converting contaminants to non-toxic or immobile species. ZVI has the ability to reductively dehalogenate CVOCs and reduce the mobility of zinc. EnviroBlend is another reactive media that stabilizes metals by regulating pH and forming insoluble compounds which become trapped in the PRB.

A PRB requires installation along the entire width of the groundwater plume or the installation of a funnel and gate system. These would include a physical barrier that intercepts the groundwater plume and directs the water into the PRB. Due to the extensive trenching, a PRB is not feasible at this facility because of the extensive subsurface utilities (Figure 3) and the limited space between the groundwater plume and the shoreline. Furthermore, these reactive media will weather and become inactive over time. This weathering will be more rapid than normal due to the nearshore tidal fluctuations. Additionally, some of the immobilized chemicals may remobilize after the media is exhausted. Due to the construction constraints and concerns regarding the long-term reactivity of the media, a PRB was not retained as a remedial technology for further evaluation.

5.2.5 Excavation and Disposal

Excavation and disposal is commonly employed to permanently remove contaminated soil. Long term risks are immediately reduced by the removal of contaminated soils and the potential for this soil to act as a continuing source of groundwater contamination.

¹²https://clu-in.org/techfocus/default.focus/sec/permeable_reactive_barriers,_permeable_treatment_zones,_and_application_of_zero-valent_iron/cat/overview/

Short term risks are greater for excavation and transportation of impacted soils due to the potential for workers to be exposed to contaminants by fugitive dust emissions and the potential for off-site migration of contaminated soils by stormwater runoff.

While excavation eliminates all possible future exposure pathways, the soil data does not indicate a clear significant source and there is no documented spill or release area. Furthermore, the area available for excavation is in the parking lot which contains extensive utilities (Figure 3) and would potentially require shoring and stabilization of the building and or the shoreline depending on the location of excavation activities. Excavation is retained for consideration for small, discrete areas and for a permanent to the maximum extent practicable remedial alternative.

5.3 Selection of Remedial Technologies

The remedial alternatives to be evaluated are further screened for applicability in accordance with the requirements of WAC 173-340-351(6)(c). Based on the initial screening presented in the above section the selected technologies for this Site include:

- Institutional Controls and Monitoring
- Capping
- ERD
- Excavation and Disposal

Based on these selected remedial technologies, proposed alternatives are identified in the following section and these technologies and the proposed alternatives are evaluated as required by WAC 173-340-351(6)(d) and (e) in accordance with the requirements of WAC 173-340-360(3).

6 Remedial Alternative Descriptions and Evaluation

The following remedial alternatives have developed for the property based on the MTCA expectations for cleanup action alternatives (WAC 173-340-370), and are evaluated based on the requirements of WAC 173-340-360(3). These alternatives include a combination of technologies discussed above, which jointly address the RAOs for the Site.

1. Alternative 1 – ERD, Institutional Controls, Monitoring, and Capping
2. Alternative 2 – ERD, Targeted Excavation and Off-Site Disposal, Institutional Controls, Monitoring, and Capping
3. Alternative 3 – ERD, Excavation and Off-Site Disposal, Institutional Controls, Monitoring, and Capping

The next section describes the alternatives, including a summary of the first round of performance data collected from the interim action, and the following sections evaluate the alternatives based on MTCA standards.

6.1 Summary of Interim Action

As stated in Section 2.5, to address CVOCs and zinc in groundwater in the southwestern corner, the southcentral portion, and the southeastern corner of the property an IA was completed. All work was performed in accordance with WAC 173-340-430 and the Ecology approved IAWP (CRETE 2024b). The extent of the interim action is shown on Figure 21. To address both CVOCs and zinc in groundwater, a nutrient-amended carbohydrate electron donor was injected in the vicinity of MW-5/MW-4, RI-SB-13, and MW-8 on November 8 through 21, 2024.

Prior to the injection work, a baseline groundwater sampling event was conducted September 23 through 25, 2024 at monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-8 through MW-11. The first round of performance sampling was completed on February 25 and 26, 2025 at the same wells sampled for the baseline sampling and point of discharge location PD1. Results are summarized on Tables 20 and 21. Copies of laboratory results are included in Appendix A.

The first round of performance groundwater sampling results showed the following for the CVOC results:

- Concentrations of VC, PCE and TCE at shoreline well MW-1 and the property boundary well MW-11 are below the CULs.
- PCE and TCE are below the CULs at MW-4 and MW-8.
- Concentrations of PCE and TCE at MW-5 and MW-10 are above the CUL.
- VC concentrations at MW-4, MW-5, MW-8, and MW-10 are above the CUL.

The first round of performance groundwater sampling results showed the following for the zinc results:

- Dissolved zinc concentration at MW-4 and MW-11 are below the CUL.
- Dissolved zinc concentrations at MW-1 and MW-5 remain above the CUL.

Geochemical parameters (summarized on Table 21) show that conditions remained favorable for reductive dechlorination. During initial injection, an electron donor was added to the impacted area to overcome the terminal electronic acceptors (TEA) sinks (i.e. dissolved oxygen, nitrate, sulfate, etc.) and create sulfate-reducing and/or methanogenic conditions throughout the target treatment zone. Either one or both conditions will promote the transfer of electrons to the chlorinated solvents, which will reduce their concentrations and remediate the target area. Methanogenic conditions are evident by the increase in methane from the pre-injection baseline event (September 2024) to the post injection event (February 2025) and the lack of nitrate and reduction in sulfate in source area wells. Iron concentrations have increased between the baseline and post injection event, evidence of the presence of electron donors that stimulate microbial activity and promote the transformation of chlorinated solvents.

The next performance sampling event will be in the Spring of 2025 and this data will be compared with the baseline and initial performance sampling to evaluate conditions within the treatment area.

6.2 Remedy Descriptions and Evaluation

6.2.1 Alternative 1 - ERD, Institutional Controls, Monitoring and Capping

Alternative 1 includes ERD, as completed in the Interim Action and expanded to include areas of hexavalent chromium, and maintains the existing cap to prevent contact with soils exceeding cleanup levels. This alternative is depicted on Figure 24 and includes:

- ERD to address both CVOCs and zinc in groundwater will include a nutrient-amended carbohydrate electron donor injected in the vicinity of MW-5/MW-4, RI-SB-13, and MW-8 (completed during the Interim Action – See section 6.1). Groundwater results will be evaluated and additional injections may be performed as a contingent action.
- ERD to address hexavalent chromium in groundwater will include similar application and treatment technology as work performed in the Interim Action. A dense network of single point injections are proposed in the vicinity of MW-1, MW-2 and MW-6 (Figure 24). Injections will be completed using a nutrient-amended carbohydrate electron donor. This treatment technology would also address low level soil contamination present in the saturated zone. Groundwater results will be evaluated at MW-1, MW-2 and MW-6 and additional injections may be performed as a contingent action.
- Maintaining the current asphalt parking and building structure which will serve as a cap for the entire Site.

- Short-term groundwater monitoring of existing Site wells (MW-1-MW-6, MW-8, MW-9, MW-10 and MW-11) to determine the effectiveness of the ERD injections and long-term groundwater monitoring of shoreline monitoring wells (MW-1, MW-2 and MW-3); to evaluate groundwater conditions at the conditional point of compliance.
- Institutional controls to ensure that future property activities do not result in human or environmental exposure to impacted soils or sub-slab vapor and that the existing capped surfaces are maintained. A contaminated media management plan will be developed to manage Site soils and vapor conditions below the current building and will protect any future building conditions.

This alternative addresses groundwater contamination through active (ERD) measures and continued groundwater monitoring. The alternative includes active treatment of CVOCs, zinc and hexavalent chromium at the southwestern corner (vicinity of MW-5 & RI-SB-07/CVOCs, zinc and hexavalent chromium), southcentral portion (vicinity of RI-SB-13/CVOCs), and the southeastern corner (vicinity of MW-8/CVOCs).

Continued groundwater monitoring at the upgradient portion of the Site (MW-9) and the northwest corner (RI-SB-06; via MW-3) will address decreasing concentrations of arsenic (MW-9) and include monitoring of CVOCs (RI-SB-06; monitored at MW-3) and zinc (GP-SB-29) to ensure groundwater does not migrate to the point of compliance. TPH located in the southwestern corner (RI-SB-10/TPH-Dx) and southeastern corner (MW-8/TPH-Gx) will also be monitored to ensure TPH does not migrate to the point of compliance.

Soil contamination is addressed through ERD treatments for contamination within in the saturated zone and institutional controls.

This alternative addresses the RAOs as summarized below:

- **RAO 1. Worker Contact w/ Vapor and Soils** - Institutional controls (including a contaminated media management plan) are included to reduce the potential risk of worker contact with soil (at RI-SB-10), vapor or for vapor migration into the building if building conditions change. Compliance with this RAO will include documentation of compliance with institutional controls in quarterly/annual reports provided to Ecology.
- **RAO 2. Groundwater (via groundwater discharge to LDW)** - ERD treatment of zinc and hexavalent chromium will treat groundwater above CULs that could discharge to the LDW. Remaining areas of the Site will be monitored through a long term monitoring plan. Groundwater compliance with this RAO will be measured at shoreline monitoring wells.
- **RAO 3. Groundwater (Reduce Soil Leaching into Groundwater)** - ERD treatment of zinc and hexavalent chromium will treat saturated soil contamination. Remaining areas of the Site will be monitored through the long term monitoring plan. Institutional controls will ensure that the surface features remain. Groundwater compliance with this RAO will be measured at shoreline monitoring wells.

6.2.2 Alternative 2 - ERD, Targeted Excavation and Off-Site Disposal, Capping, Institutional Controls and Monitoring

Alternative 2 includes all the elements of Alternative 1 but adds targeted excavation in the vicinity of RI-SB-11 for soil with CVOCs, metals, and TPH compounds above CULs. Alternative 2 is shown on Figure 25.

Proposed excavation is to 9 feet bgs with depth driven by PCE, TCE, and zinc in samples from RI-SB-11. The excavation extent will be pre-determined based on existing data and is limited along the shoreline, adjacent to the building and in the utility corridor near the building. Final soil conditions at the limits of the excavation will be documented through sampling and analysis. Excavated soils will be disposed of at an off-site Subtitle D landfill. Shoring will be required along the building and riverbank sides of the excavation to provide support during excavation. Water drainage and stormwater features will be rerouted during excavation. Dewatering will be required to control groundwater infiltration. This alternative avoids the main water lines, power lines and gas lines that run along the south side of the building. The existing stormwater system will be affected by Alternative 2. Catch basins within the footprint of removal (which will be removed) will be replaced after implementation.

This alternative includes maintaining the current cap and replaces the asphalt cap disturbed during excavation activities, resulting in a continuous cap over impacted soil to prevent migration through erosion and to prevent contact with impacted soils. This remedy includes:

- All elements of Alternative 1.
- Targeted excavation of approximately 1,100 tons of soil contaminated with PCE, TCE and zinc.
- All utilities removed during construction will be reinstalled. All monitoring wells are outside of excavation footprints and are not expected to be damaged during construction.

This alternative will address soil and groundwater contamination through active measures and continued groundwater monitoring to demonstrate long-term effectiveness. The alternative includes active treatment of CVOCs, zinc and hexavalent chromium at the southwestern corner (vicinity of MW-5 & RI-SB-07/CVOCs, zinc and hexavalent chromium), southcentral portion (vicinity of RI-SB-13/CVOCs), and the southeastern corner (vicinity of MW-8/CVOCs). Excavation targets CVOC concentrations in the southwestern corner (RI-SB-11).

Continued groundwater monitoring at the upgradient portion of the Site (MW-9) and the northwest corner (RI-SB-06; via MW-3) will address decreasing concentrations of arsenic (MW-9) and include monitoring of CVOCs (RI-SB-06; monitored at MW-3) and zinc (GP-SB-29) to ensure groundwater does not migrate to the point of compliance. TPH located in the southwestern corner (RI-SB-10/TPH-Dx) and southeastern corner (MW-8/TPH-Gx) will also be monitored to ensure TPH does not migrate to the point of compliance.

Soil contamination is addressed through ERD treatments for contamination within in the saturated zone, excavation in the vicinity of RI-SB-11 and institutional controls.

This alternative complies with the RAOs as summarized below:

- **RAO 1. Worker Contact w/ Vapor and Soils** – Institutional controls (including a contaminated media management plan) are included to reduce the potential risk of worker contact with soil (at RI-SB-10), vapor or for vapor migration into the building if building conditions change. Compliance with this RAO will include documentation of compliance with institutional controls in quarterly/annual reports provided to Ecology.
- **RAO 2. Groundwater (via groundwater discharge to LDW)** – ERD treatment of zinc and hexavalent chromium will treat groundwater above CULs that could discharge to the LDW. Remaining areas of the Site will be monitored through a long term monitoring plan. Groundwater compliance with this RAO will be measured at shoreline monitoring wells.
- **RAO 3. Groundwater (Reduce Soil Leaching into Groundwater)** – Targeted excavation at Area 1 (RI-SB-11) will remove vadose and saturated soil contamination eliminating the potential for leaching to groundwater. ERD treatment of zinc and hexavalent chromium will treat saturated soil contamination. Remaining areas of the Site will be monitored through the long term monitoring plan. Institutional controls will ensure that the surface features remain. Groundwater compliance with this RAO will be measured at shoreline monitoring wells.

6.2.3 Alternative 3 - ERD, Excavation and Off-Site Disposal, Capping, Institutional Controls and Monitoring

Alternative #3 includes elements identified in Alternative #2 but also includes additional excavation in the soil impacted areas around RI-SB-09 and RI-SB-10 (Area 1; CVOCs and TPH), RI-SB-13 (CVOCs, Area 2), and MW-3 (Area 3; dioxin and furans) as shown on Figure 26. This alternative includes significantly more excavation along the shoreline and within the footprint of Site utilities. Significant dewatering will be required for removal along the shoreline (Area 3) to control groundwater and river water during excavation activities. Utilities, including gas, power, and water lines, will need to be terminated prior to excavation activities and reinstalled upon completion. Stormwater lines which overlap with the removal areas will be abandoned and replaced following excavation activities.

Excavated soils will be disposed of at an off-site Subtitle D landfill. This alternative includes maintaining the current cap and replaces the asphalt cap disturbed during excavation activities, resulting in a continuous cap over impacted soil to prevent migration through erosion and to prevent contact with impacted soils. Site stormwater will be captured and treated, using the current treatment system. This remedy includes:

- All the elements of Alternative 1 and 2.
- Excavation of approximately 10,000 tons of soil above the cleanup levels for VOCs (TCE and PCE), metals (zinc), dioxin and furans and TPH. Performance monitoring on the bottom and sides of the excavated area to ensure all soil above the remediation levels is removed. This includes excavated soils outline in Alternative 2, the total volume of soil to be removed is 10,000 tons.
- All utilities removed during construction will be reinstalled.

- Monitoring wells MW-3, MW-4 and MW-5 which are within excavation footprints (MW-3 and MW-5) or side slopes (MW-4) are expected to be damaged during construction. These monitoring wells will be replaced in close vicinity to the abandoned well and using similar construction details as removed wells (total well depth, diameter, mount and screen interval).

This alternative will address groundwater contamination through active (ERD and excavation) measures and continued groundwater monitoring. The alternative includes active treatment of CVOCs, zinc and hexavalent chromium at the southwestern corner (vicinity of MW-5 & RI-SB-07/CVOCs, zinc and hexavalent chromium), southcentral portion (vicinity of RI-SB-13/CVOCs), and the southeastern corner (vicinity of MW-8/CVOCs). Excavation targets CVOC and metal concentrations in the southwestern corner (RI-SB-09, -10, and -11), TPH located in the southwestern corner (RI-SB-13), and dioxin and furans in the northwest corner (MW-3).

Continued groundwater monitoring at the upgradient portion of the Site (MW-9) and the northwest corner (RI-SB-06; via MW-3) will address decreasing concentrations of arsenic (MW-9) and include monitoring of CVOCs (RI-SB-06; monitored at MW-3) and zinc (GP-SB-29) to ensure groundwater does not migrate to the point of compliance. TPH located in the southeastern corner (MW-8/TPH-Gx) will also be monitored to ensure TPH does not migrate to the point of compliance.

Soil contamination is addressed through ERD treatments for contamination within in the saturated zone, excavation and institutional controls.

This alternative complies with the RAOs as summarized below:

- **RAO 1. Worker Contact w/ Vapor and Soil** – Institutional controls (including a contaminated media management plan) are included to reduce the potential risk of worker contact with vapor or for vapor migration into the building if building conditions change. Under this alternative soils at RI-SB-10, which are above Method A direct contact for arsenic, will be removed and disposed of at an off-site disposal facility. Compliance with this RAO will include documentation of compliance with institutional controls in quarterly/annual reports provided to Ecology.
- **RAO 2. Groundwater (via groundwater discharge to LDW)** – ERD treatment of zinc and hexavalent chromium will treat groundwater above CULs that could discharge to the LDW. Remaining areas of the Site will be monitored through a long term monitoring plan. Groundwater compliance with this RAO will be measured at shoreline monitoring wells.
- **RAO 3. Groundwater (Reduce Soil Leaching into Groundwater)** – Excavation at Area 1 (RI-SB-11), Area 2 (RI-SB-13) and Area 3 (MW-3) will remove vadose and saturated soil contamination eliminating the potential for leaching to groundwater. ERD treatment of zinc and hexavalent chromium will treat saturated soil contamination. Institutional controls will ensure that the surface features remain. Remaining areas of the Site will be monitored through the long term monitoring plan. Groundwater compliance with this RAO will be measured at shoreline monitoring wells.

7 Evaluation of Remedial Alternatives

MTCA provides the framework for evaluating and selecting cleanup actions. Within this framework are threshold requirements that must be met by all cleanup actions. The general requirements for cleanup actions, as defined in WAC 173-340-360(3)(a), are to:

- (i) Protect human health and the environment, including likely vulnerable populations and overburdened communities;
- (ii) Comply with cleanup standards (WAC 173-340-700 through 173-340-760);
- (iii) Comply with applicable state and federal laws (WAC 173-340-710);
- (iv) Prevent or minimize present and future releases and migration of hazardous substances in the environment;
- (v) Provide resilience to climate change impacts that have a high likelihood of occurring and severely compromising its long-term effectiveness;
- (vi) Provide for compliance monitoring (WAC 173-340-410 and 173-340-720 through 173-340-760);
- (vii) Not rely primarily on institutional controls and monitoring at a site, or portion thereof, if it is technically possible to implement a more permanent cleanup action;
- (viii) Not rely primarily on dilution and dispersion unless the incremental costs of any active remedial measures over the costs of dilution and dispersion grossly exceed the incremental degree of benefits of active remedial measures over the benefits of dilution and dispersion;
- (ix) Provide for a reasonable restoration time frame; and
- (x) Use permanent solutions to the maximum extent practicable.

The disproportionate cost analysis (DCA) involves comparing the costs and benefits of the three alternatives and selecting the alternative with incremental costs that are not disproportionate to the environmental benefits resulting from that alternative. As outlined in WAC 173-340-360(5)(c)(iv), costs are determined to be disproportionate to benefits if the incremental cost of a more expensive alternative compared to a lower cost alternative exceeds the incremental degree of benefits achieved by the more expensive alternative. The evaluation criteria for the DCA are specified in WAC 173-340-360(5)(d) and include the following:

- Protectiveness
- Permanence
- Effectiveness over the long-term
- Management of implementation risks
- Technical and administrative implementability
- Cost

In the following sections, the alternatives are evaluated with respect to general requirements followed by a discussion of the DCA. Table 22 summarizes the ranking for each alternative, which was ranked using a relative scale of low (1), medium (2), and high (3) as to how each alternative meets each of the factors listed above. The rankings were based on best professional judgement, as quantitative methods are generally not available. The incremental benefit vs incremental cost (disproportionate cost analysis or DCA) was assessed by calculating a benefit/cost ratio by dividing a total benefit score by the estimated cost in millions of dollars. The higher the ratio, the greater the benefit vs estimated cost.

Based on these evaluations, a preferred remedial alternative is identified and discussed in Section 8.

7.1 General Requirements

7.1.1 Protect Human Health and the Environment

MTCA describes protectiveness as the overall protectiveness of human health and the environment, including the degree to which existing risks are reduced, time required to reduce risk at the facility and attain cleanup standards, on-site and off-site risks resulting from implementing the alternative, and improvement of the overall environmental quality.

All the alternatives provide adequate protection of human health and the environment. The protection of the terrestrial ecosystem is achieved by the use and maintenance of the Site as an industrial property.

Alternatives #2 and #3 provide additional levels of protection by removing source material from the Site and placing contaminated soil in an off-site landfill.

The possible other exposure pathway, the flow of impacted groundwater into marine surface waters, is protected in all alternatives through ERD treatments and by groundwater monitoring and possible contingent actions. It is further protected in Alternatives #2 and #3 by source material removal and disposal. The duration of groundwater monitoring for each alternative is commensurate with the amount of contamination left on the Site; Alternatives #1 and #2 include long-term groundwater monitoring, and Alternative #3 includes groundwater monitoring for two years after the remedy.

7.1.2 Compliance with Cleanup Standards and Laws

The cleanup levels for the Site have been developed in accordance with WAC 173-340-700 through WAC 173-340-760, discussed in Section 3.5 and summarized on Table 16. Alternatives #1 through #3 were developed based on the cleanup levels for the site.

7.1.3 Comply with Applicable State and Federal Laws

A review of applicable local, state and federal laws which affect Site cleanup levels, treatment and disposal, and remediation activities are listed in Section 4.1 of this document and summarized on Table 16. Alternatives #1 through #3 comply with all applicable state and federal laws.

7.1.4 Prevent or Minimize Releases and Migration of Hazardous Substances

Alternatives #1 through #3 all prevent or minimize the releases of migration of hazardous substances through source reduction through in situ chemical injections (Alternatives #1 and #2) and soil excavation and removal (Alternative #3).

7.1.5 Provide Resilience to Climate Change Impacts

All alternatives focus on subsurface conditions and include replacing surface conditions to pre remedial action conditions. Current Site conditions include a well armored riverbank slope that has been constructed to account for a high variability of surface water variations. Sea level rise in the vicinity of the Site is about 2 feet, which is considered the likely range by the year 2100¹³.

The mean higher high water (MHHW) level for the LDW is elevation is 11.3 feet (based on the North American Vertical Datum of 1988 [NAVD88]). The current surface elevation of the upland is about 15.5 ft NAVD88¹⁴. This is 4.2 feet above the current MHHW elevation, which is above the future predicted sea level rise value or around 13.3 feet NAVD88.

None of the alternatives include specific measures to address future climate conditions as current Site conditions are protective of future conditions.

7.1.6 Compliance Monitoring and Protection

Monitoring during implementation of the remedy, included in Alternatives #1 through #3, will ensure that human health and the environment are protected during construction. Monitoring will be performed in compliance with a health and safety plan and local permits.

Performance sampling during soil excavation (Alternatives #2 and #3) will ensure that cleanup criteria are satisfied. Groundwater monitoring will occur after the cleanup action to ensure that groundwater meets cleanup criteria.

7.1.7 Comply with Applicable State and Federal Laws

A review of applicable local, state and federal laws which affect Site cleanup levels, treatment and disposal, and remediation activities are listed in Section 4.1 of this document and summarized on Table 16. Alternatives #1 through #3 comply with all applicable state and federal laws.

7.1.8 Not rely Primarily on Institutional Controls and Monitoring

Alternatives #1 through #3 include active remediation along with institutional controls and monitoring. None of the alternative rely solely on institutional controls and monitoring.

¹³ <https://www.wacoastalnetwork.com/wp-content/uploads/2020/02/SLR-Report-Miller-et-al-2018.pdf>

¹⁴ 15.5 ft NAVD88 is the average elevation measured at the surface between monitoring wells MW-1 through MW-6.

7.1.9 Not rely Primarily Dilution and Dispersion

Alternatives #1 through #3 include active remediation and do not rely on dilution or dispersion.

7.1.10 Reasonable Restoration Time Frame

Restoration time frame represents the time it takes to achieve cleanup levels at the points of compliance. The reasonable restoration time frame is evaluated by the factors described in WAC 173-340-360(4)(c) and include the following:

- (i) Potential risks posed by the site to human health and the environment, including likely vulnerable populations and overburdened communities;
- (ii) Practicability of achieving a shorter restoration time frame. A restoration time frame is not reasonable if an active remedial measure with a shorter restoration time frame is practicable;
- (iii) Long-term effectiveness of the alternative. A longer restoration time frame may be reasonable if the alternative has a greater degree of long-term effectiveness than one that primarily relies on on-site or off-site disposal, isolation, or containment;
- (iv) Current use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;
- (v) Potential future use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;
- (vi) Availability of alternative water supplies;
- (vii) Likely effectiveness and reliability of institutional controls;
- (viii) Ability to control and monitor migration of hazardous substances from the site;
- (ix) Toxicity of the hazardous substances at the site;
- (x) Natural processes that reduce concentrations of hazardous substances and have been documented to occur at the site or under similar site conditions; and
- (xi) For ecology-conducted or ecology-supervised remedial actions, public concerns identified and Indian tribes' rights and interests are also included.

All remedial actions are expected to take about six to nine months to implement. Alternative 3 is expected to achieve groundwater cleanup levels within 2 years as the removal includes all accessible soil contaminated material.

Alternative #2 could achieve groundwater cleanup levels within that timeframe but longer term monitoring (2 to 5 years) is required to confirm cleanup levels have been achieved and there is the potential need for contingent groundwater actions.

Alternative #1 relies on ERD for in situ groundwater treatment and attenuation and the time to achieve groundwater cleanup levels is anticipated to be much longer. Attenuation is expected to be 5 to 10 years.

All of the alternatives consider the 11 evaluation criteria set forth in WAC 173-340-360(4)(c), all result in a reasonable restoration timeframe for each alternative.

7.1.11 Permanence

According to WAC 173-340-360(5)(d)(ii), permanence refers to the degree to which the alternative permanently reduces the toxicity, mobility, or volume of hazardous substances, including the adequacy of the alternative in destroying the hazardous substances, reduction or elimination of hazardous substance releases and sources of releases, degree of irreversibility of waste treatment process, and characteristics and quantity of treatment residuals generated.

Alternatives involving excavation provide the greatest degree of permanence, with the removal of impacted soil from the Site. Due to the extent of remedial action, Alternatives 2 and 3 are more permanent than Alternative 1. Alternative 3 removes the greatest quantity of impacted soil; therefore, it is expected to be the most permanent.

Further evaluation of this item is included in the Disproportionate Cost Analysis, discussed below, which includes the procedures outlined in WAC 173-340-360(5)(c)(i) through (iv).

7.2 Disproportionate Cost Analysis

7.2.1 Protectiveness

As discussed in Section 7.1.1, all the alternatives provide adequate protection of human health and the environment through a combination of removing source material, monitoring and institutional controls. All alternatives protect marine surface waters through ERD treatments and by groundwater monitoring and possible contingent actions. Alternative #1 is ranked the lowest because the most amount of source material is contained on-site while the other alternatives include greater source area removal, by removing source material from the Site and placing contaminated soil in an off-site landfill. Alternatives 2 and 3 are incrementally more protective, as the alternatives permanently remove progressively more contaminated material.

7.2.2 Permanence

As discussed in section 7.1.11, due to the extent of remedial action, Alternatives 2 and 3 are more permanent than Alternative 1. Alternative 3 removes the greatest quantity of impacted soil; therefore, it is expected to be the most permanent.

7.2.3 Long-Term Effectiveness

The following criteria will be considered when evaluating the long-term effectiveness of each alternative (WAC-173-340-360(5)(d)(iii)):

- Degree of certainty that the alternative will be successful

- How reliable the alternative will be while the hazardous substances remain on-site and exceed CULs
- Magnitude of residual risk associated with the alternative
- Effectiveness of controls that are in place to manage treatment residues or remaining wastes.
- MTCA provides hierarchy guidance (WAC-173-340-360(5)(d)(iii)(B)) for determining long-term effectiveness, as presented below in descending order:
 - Reuse or recycling
 - Destruction or detoxification
 - Immobilization or solidification
 - On-site or off-site disposal at an appropriate waste disposal facility
 - On-site isolation or containment with attendant engineering controls
 - Institutional controls and monitoring.

Effectiveness over the long-term varies depending on the degree of certainty that a remedy will be successful, the reliability of a remedy, and the residual risk of a remedy. All of the remedial alternatives have been used extensively as remedial alternatives at local MTCA cleanup sites, and have high degrees of certainty and reliability of use. The alternatives vary widely when including the hierarchy considerations. Alternative #3 performs the highest because it depends on off-site disposal, this alternative ranks higher than Alternative #2 because it has a higher volume of off-site disposal. Alternatives #1, which depends on in-situ injections (ERD) and institutional controls and monitoring, rank last.

7.2.4 Management of Short-Term Risks

Management of short-term risks relates to the risk to human health and the environment, including vulnerable populations and overburdened communities, associated with the alternative during construction and implementation, and the effectiveness of measures to control such risks.

Short-term risks associated with each alternative can be effectively managed during implementation through administrative controls. Alternative #1 poses the least short-term risk, since contaminated soil remains in place. The disposal options, Alternative #2 and #3, have the most short-term risk to human health and the environment during construction because of the handling and transporting of hazardous waste, however, these risks can be effectively managed through appropriate health and safety plans and procedures.

7.2.5 Technical and Administrative Implementability

Technical and administrative implementability relates to the ability of an alternative to be implemented, including whether the alternative is technically possible, availability of necessary off-site facilities, services and materials, administrative and regulatory requirements, scheduling, size, complexity, monitoring requirements, access for construction operations and monitoring, and integration with existing facility operations and other current or potential remedial actions.

All of the alternatives are readily implemented with local equipment and local expertise. Alternative #1 is the most readily implemented remedy as part of Site redevelopment and requires the least amount of permitting, coordination and access. Alternatives #2 and #3 require the handling and transportation of hazardous substances. Alternative #3 requires additional measures to protect the shoreline, utilities, and building during the extensive excavation efforts required to remove contaminated soils.

A sustainability analysis was completed for Alternative #1 (the lowest cost alternative) and Alternative #3 (the highest cost alternative). This quantitative sustainability analysis included analysis of the following metrics, all of which can be managed through administrative requirements and are technically implementable:

- Greenhouse Gas (GHG) Emissions Footprint/Air Emissions/Energy Usage/Resource Consumption (GHG/Emissions) – Alternative #1 has the lowest GHG/Emissions as this alternative uses the least amount of equipment and does not include the disposal of soils at a landfill. Alternative #3 has the largest GHG/Emissions as this includes the removal, transport and disposal of approximately 10,000 tons of soil and requires the import of a similar volume of backfill material.
- Water impacts – Because of the location of the Site, all alternatives have the risk of a surface release into the adjacent waterway. The risk is lower with Alternative #1 as this has minimal Site disturbance and Alternative #3 has the highest risk due to the increased Site surface disturbance from excavation activities, including excavation activities along the riverbank (in the vicinity of MW-3).
- Injury and Fatality Risk – Any construction project has the risk for injury and fatalities. These risks are minimized through compliance with ARAR’s (specially health and safety requirements associated with WA State Department of Labor & Industries and OSHA). Alternative #1 has the lowest injury and fatality risk as this alternative uses the least amount of equipment and personnel, and has the shortest duration of active construction. Alternative #3 has the highest injury and fatality risk as this includes the removal, transport and disposal of the largest quantity of soil and import backfill materials which results in a large number of transportation trucks, drivers, on-site excavation equipment and longest duration to complete the work.
- Climate Vulnerability – None of the alternatives include specific measures to address future climate conditions. All alternatives focus on subsurface conditions and include replacing surface conditions to pre remedial action conditions. Current Site conditions include a well armored riverbank slope that has been constructed to account for a high variability of surface water variations. Sea level rise in the vicinity of the Site is about 2 feet, which is considered the likely range by the year 2100¹⁵.

¹⁵ <https://www.wacoastalnetwork.com/wp-content/uploads/2020/02/SLR-Report-Miller-et-al-2018.pdf>

7.2.6 Public Concerns

Ecology and Bridge will continue to keep the public informed, seek community input, and address any concerns throughout this project. Additional issues or concerns will be considered as part of the cleanup action selection process, per WAC 173-340-600. Public comments on this RI/FS will be solicited from the community during the formal comment period, following Ecology's input. Common community concerns include noise, traffic, short- and long-term risks, and timeframe for any proposed cleanup actions. Public concerns generally revolve around the degree of environmental improvement vs. public inconvenience (generally traffic). For purposes of this FS, it was assumed that the degree of long-term environmental cleanup would have greater weight (i.e., generate less public concern) than short-term public inconvenience.

Thus Alternative #1 has the highest public concern as this alternative leaves contaminated soil in place. Alternatives #2 and #3 have lower concerns as they include excavation of impacted soils, which addresses public concerns on permanence and long-term effectiveness however, these alternatives include the most disruption to the community through construction activity and trucking of contaminated material out of the Site. As stated above, these short-term public inconvenience are weighted less than the degree of long-term environmental impact on the overall ranking of public concerns.

7.2.7 Cost

Cost refers to the cost of implementing the alternative, including construction, net present value of any long-term costs, and agency oversight costs that are recoverable. Long-term costs include operation and maintenance, monitoring, equipment replacement costs, and the cost of maintaining institutional controls.

Table 22 summarizes the expected cost for each alternative, a detailed cost breakdown is provided in Appendix F. The cost of the remedies range from approximately \$922,000 for Alternative #1 to \$7,768,000 for Alternative #3 (including long term monitoring and maintenance).

7.2.8 Disproportionate Cost Analysis Evaluation

Table 22 presents a summary of the evaluation process for each alternative. Alternative 3 ranks the highest (with a score of 14), and Alternative #1 ranks the lowest (with a score of 10).

The estimated cost of the alternatives is: \$922,000 for Alternative #1; \$2,406,000 for Alternative #2; and \$7,768,000 for Alternative #3. The incremental cost between Alternative #1 and Alternative #2 is \$1,484,000 while the incremental cost between Alternative #1 and Alternative #3 is approximately \$6,846,000.

Table 22 presents the following calculated benefit/cost ratios for each alternative:

- Benefit/Cost (Millions) Ratio
 - Alternative 1 10.8
 - Alternative 2 5.0
 - Alternative 3 1.8

The incremental benefit derived by both Alternative 2 and 3 costs significantly more than the cost of any benefit under Alternative 1. The cost of Alternative 2 is \$1,484,000 more than Alternative 1 and results in an increase of 2 points, or about \$742,000 per point of incremental benefit. Similarly, Alternative 3 has an incremental cost of \$6,846,000, or about \$1,711,500 per point of incremental benefit.

Based on the qualitative and quantitative assessment discussed above, Alternative 1 has the highest DCA relative benefit ranking ratio of 10.8. Therefore, Alternative 1 is considered the baseline alternative initially considered the most permanent by Ecology. The alternative with the next highest ratio is Alternative #2 (ratio of 5.0). Per WAC 173-340-360(3)(c)(i)(A), Alternative #1 was compared to Alternative #2, which is the next most permanent alternative.

The final DCA evaluation includes:

- The incremental change in cost compared to the degree of benefit per WAC 173-340-360(5)(c)(iv)(A) is considered during the first iteration. The difference in cost between Alternative #2 and the baseline Alternative #1 is over 600 percent, while the degree of benefit is approximately 20 percent more for Alternative #2.
- Per WAC 173-340-360(5)(c)(iv)(B)(II), if the benefits of the two alternatives are the same or similar, then the lower cost alternative uses permanent solutions to the maximum extent practicable and the analysis under this subsection is complete. Since the total benefit score of Alternative #1 is 10 and Alternative #2 is 12, a 20 percent difference, these are considered similar and Alternative #1 remains the baseline and the DCA analysis is concluded.

The DCA indicates that Alternative #1 provides the highest incremental benefit vs incremental cost as this alternative has the highest benefit/cost ratio.

8 Recommended Remedial Alternative

Alternative #1 is the recommended remedial alternative. This remedy was chosen after a careful review of the remedy selection requirements in the MTCA Cleanup Regulation, using the Site conditions and the remedy alternatives presented in this report. Alternative #1 fulfills the general requirements and the evaluation for practicable permanence (WAC 173-340-360(5)(d)(ii)). The remedy fulfills the site-specific cleanup objectives by permanently removing source materials, eliminating the exposure pathway of direct contact with soils, achieving the lowest most protective cleanup standards, and includes short-term monitoring (to evaluate active treatments) and long-term monitoring for groundwater quality.

This remedial alternative satisfies the requirements of a final cleanup under the AO. As discussed above, Alternative #1 satisfies the substantive and administrative requirements of MTCA, will achieve and maintain compliance with cleanup levels (demonstrated through monitoring), and includes institutional controls to ensure that the environment and human health are protected from possible exposure pathways. Alternative #1 will also prevent recontamination of the property from other areas of the Site through institutional controls, environmental oversight during redevelopment, and long-term groundwater monitoring.

This alternative is depicted on Figure 24. The main components of this remedy include:

- ERD in-situ treatment to address hexavalent chromium in groundwater will include similar application and treatment technology as work performed in the Interim Action. A dense network of single point injections are proposed in close proximity to the hexavalent chromium plume. Injections will be completed using a nutrient-amended carbohydrate electron donor, injected in the vicinity of MW-6, MW-1 and MW-2 (Figure 24). This treatment technology would also address low level soil contamination present in the saturated zone. Groundwater recirculation is not expected based on the low level hexavalent concentration. Groundwater results will be evaluated at MW-1 and MW-2 and additional injections may be performed as a contingent action.
- Maintaining the current asphalt parking and building structure which will serve as a cap for the entire Site.
- Short-term groundwater monitoring of existing Site wells (MW-1-MW-6, MW-8, MW-9, MW-10 and MW-11) to evaluate active treatment and long-term groundwater monitoring of shoreline monitoring wells (MW-1, MW-2 and MW-3) to evaluate groundwater conditions at the Site.
- Institutional controls to ensure that future property activities do not result in human or environmental exposure to impacted soils or sub-slab vapor and maintain the integrity of the surface cap features. A contaminated media management plan will be developed to manage Site soils and vapor conditions below the current building and address future conditions.

9 References

- Calibre 2019. Technical Memorandum Summarizing June 2019 Sampling for the Fox Avenue Site. Calibre Systems, Inc. August 29, 2019.
- Calibre 2022. 2022 Annual Report Fox Avenue Site Seattle, Washington. Calibre Systems, Inc. October 2022.
- Calibre 2024. 2023 Annual Report Fox Avenue Site Seattle, Washington. Calibre Systems, Inc. March 2024.
- CRETE 2024a. Remedial Investigation Work Plan, Dawn Foods 6901 Fox Ave South, Seattle WA. January 31, 2024.
- CRETE 2024b. Interim Action Work Plan, Dawn Foods 6901 Fox Ave South, Seattle WA. June 10, 2024.
- Ecology 2009. Lower Duwamish Waterway RM 2.0–2.3 East (Slip 3 to Seattle Boiler Works) Source Control Action Plan Final Report. April 2009. Publication No. 09-09-081.
- Ecology 2012. Cleanup Action Plan Fox Avenue Seattle Site, Washington. Washington State Department of Ecology. June 2012.
- Ecology 2016. Guidance for Remediation of Petroleum Contaminated Sites. Washington State Department of Ecology. Publication No. 10-09-057. Revised, June 2016.
- Ecology 2024. Implementation Memorandum No. 25: Identifying Likely Vulnerable Population and Overburden Communities under the Cleanup Regulations. Washington State Department of Ecology. Publication No. 24-09-044. January 2024.
- EPA 2008. Dawn Food Product response to CERCLA Section 104 (e) request for the Lower Duwamish Waterway Superfund Site, Seattle Washington. September 16, 2008.
- EPA 2014. Record of Decision Lower Duwamish Waterway Superfund Site. November 2014.
- Hart Crowser 1996a. Limited Subsurface Investigation Fox Avenue Property 6901 Fox Avenue South, Seattle Washington. November 12, 1996.
- Hart Crowser 1996b. Phase I Environmental Site Assessment Frozen Food Warehouse 6901 Fox Avenue South, Seattle Washington. June 19, 1996.
- Soriano et al. 2020. Multielemental determination of trace mineral elements in seawater by dynamic reaction cell inductively coupled plasma- mass spectrometry after Al(OH)₃ coprecipitation. *Microchemical Journal* 157. April 29, 2020.
- Suthersan et al. 2009. In Situ Metals Precipitation: Meeting the Standards. Suthan Suthersan, John Horst, David Ams. *Groundwater Monitoring & Remediation* 29, No.3/Summer 2009.

Windward and AnchorQEA 2023. Draft Pre-Design Investigation Phase I Data Package for the LDW Middle Reach. September 29, 2023.

Tables

**Table 1 Well Construction Details
Bridge - Former Dawn Foods**

Well ID	Construction Date	Well Tag ID	Well Diameter (inches)	Type	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Total Well Depth (ft bgs)	Top of PVC Elevation (ft NAVD88)	Northing (NAD 83)	Easting (NAD 83)	Average Lag Time (of 2 low low tides) hr:min	Suggested Sample Collection Time
MW-1	12/16/2021	BNL-604	2	flush mount	5	20	20	15.85	200604.88	1270762.88	0:31	30 minutes after low low tide
MW-2	12/15/2021	BNL-602	2		5	20	20	14.36	200718.75	1270647.59	2:05	120-125 minutes after low low tide
MW-3	12/16/2021	BNL-605	2		5	20	20	16.22	200859.86	1270528.95	1:37	90-100 minutes after low low tide
MW-4	12/16/2021	BNL-606	2		5	20	20	15.51	200608.63	1270863.35	0.:29	30 minutes after low low tide
MW-5	12/16/2021	BNL-601	2		5	20	20	14.27	200661.37	1270801.29	1:23	80-90 minutes after low low tide
MW-6	12/15/2021	BNL-603	2		5	20	20	14.76	200757.39	1270710.38	1:25	80-90 minutes after low low tide
MW-7	3/9/2023	BPW-457	2		4	19	19.5	14.79	200861.72	1271103.47	1:25	80-90 minutes after low low tide
MW-8	3/9/2023	BPW-455	2		4	19	20	14.83	200661.56	1271382.73	0:51	50 minutes after low low tide
MW-9	3/9/2023	BPW-456	2		4	19	20	15.54	200757.05	1271420.24	1:21	80-85 minutes after low low tide
MW-10	9/19/2024	BQH-755	2		4.5	19.5	18.96	NA	NA	NA	NA	NA
MW-11	9/19/2024	BQH-756	2	5	20	19.38	NA	NA	NA	NA	NA	
PD-1	1/10/2024	NA	1	Piezometer	Note 1	Note 1	Note 1	NA	NA	NA	NA	at low low tide

ft bgs - feet below ground surface

Note 1 - PD-1 is installed in the shoreline of the Duwamish River, at the base of the riverbank toe. The screen is approximately 1 foot below the sediment surface. The well point has a 6-inch screen and the top of the screen is positioned at approximately -3 ft MLLW.

**Table 2 Summary of 1996 Hart Crowser Soil Data
Bridge - Former Dawn Foods**

Sample ID	PCUL (mg/kg) ^A	HC-1, S-2	HC-1, S-3	HC-2, S-1	HC-2, S-2	HC-3, S-1	HC-3, S-2	HC-4, S-3	HC-4, S-4	HC-5, S-1	HC-5, S-2	MDL
Date Sample		9/6/1996	9/6/1996	9/6/1996	9/6/1996	9/6/1996	9/6/1996	9/6/1996	9/6/1996	9/6/1996	9/6/1996	
Depth ft. bgs		7.5-9.0	12.5-14.0	2.5-4.0	7.5-9	2.5-4.0	7.5-9.0	7.5-9.0	12.5-14.0	2.5-4.0	7.5-9	
PID Reading		1	5	0	0	0	0	NA	1.5	0	0	
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPH												
Gasoline Range	100 ^A	ND	ND	ND	NA	ND	ND	ND	ND	ND	NA	10
Stoddard Solvent	1000	ND	ND	ND	ND	ND	ND	20	ND	ND	NA	10
Diesel	2000	ND	ND	ND	ND	ND	ND	ND	85	ND	NA	20
Oil	2000	ND	ND	ND	ND	ND	ND	170	800	110	NA	50
PCBs												
Total Aroclors	0.03	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	0.5
VOCs												
Acetone	72000	NA	0.013	NA	ND	NA	0.049	0.038	0.046 ^C	NA	NA	0.0019
Methylene Chloride	0.43/0.032 ^B	NA	0.0032 ^C	NA	0.003 ^C	NA	0.003 ^B	0.0038 ^C	0.0031 ^C	NA	NA	0.0028
cis-1,2-Dichloroethene	160/120	NA	0.0037	NA	ND	NA	ND	0.08	ND	NA	NA	0.0014
Trichloroethene	0.0044/0.00027 ^B	NA	0.014	NA	ND	NA	ND	0.068	ND	NA	NA	0.0014
Tetrachloroethene	0.029/0.0016 ^B	NA	0.12	NA	0.0091	NA	ND	0.33	ND	NA	NA	0.0014
Carbon Disulfide	8,000/7,400 ^B	NA	ND	NA	ND	NA	ND	0.0029	0.0019	NA	NA	0.0014
trans-1,2-Dichloroethene	5/0.32 ^B	NA	ND	NA	ND	NA	ND	0.0034	ND	NA	NA	0.0014
Isopropylbenzene	8000/1600 ^B	NA	ND	NA	ND	NA	ND	0.0014	ND	NA	NA	0.0014
1,3,5-Trimethylbenzene	800/170 ^B	NA	ND	NA	ND	NA	ND	0.016	ND	NA	NA	0.0014
1,2,4-Trimethylbenzene	800/170 ^B	NA	ND	NA	ND	NA	ND	0.035	ND	NA	NA	0.0014
sec-Butylbenzene	8000/1400 ^B	NA	ND	NA	ND	NA	ND	0.005	ND	NA	NA	0.0014
4-Isopropyltoluene	na	NA	ND	NA	ND	NA	ND	0.0062	ND	NA	NA	0.0014
n-Butylbenzene	4000/690 ^B	NA	ND	NA	ND	NA	ND	0.0028	ND	NA	NA	0.0014
Naphthalene	0.039/0.002 ^{1B}	NA	ND	NA	ND	NA	ND	0.0089	ND	NA	NA	0.0069
Metals												
Aluminum	80000	NA	8180	NA	12400	NA	12000	12300	9620	NA	16000	3
Arsenic	7.3	NA	ND	NA	ND	NA	ND	26	ND	NA	ND	7
Iron	56000	NA	3100	NA	4400	NA	4000	28000	8200	NA	8200	2.5
Cadmium	0.77	NA	ND	NA	ND	NA	ND	1.8	ND	NA	ND	0.5
Chromium	Cr III: 550/27 Cr VI: 0.14/0.0069	NA	3.2	NA	5.9	NA	4.4	44	4.5	NA	8.5	1.5
Lead	250/56	NA	ND	NA	ND	NA	ND	580	36	NA	ND	5
Mercury	0.07	NA	ND	NA	ND	NA	ND	0.41	0.29	NA	ND	0.05
Copper	36	NA	7.1	NA	8.5	NA	8.8	360	47	NA	24	1
Nickel	48	NA	1.6 ^J	NA	4.9	NA	4.5	76	9.7	NA	11	5
Zinc	100/85	NA	9.4	NA	9.6	NA	11	6400	55	NA	32	0.25

Notes:

Bold = detection

Shading denotes a detected exceedance of a screening

feet bgs = feet below ground surface

mg/kg = milligrams per kilograms

U = laboratory detection limit

J = reported concentration is an estimate.

NA = Not analyzed

ND = Not detected

MTCA - Model Toxics Control Act

A- Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW. Source:

<https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

B - Screening Level MTCA Soil Protective of Groundwater Vadose/Saturated (based on protection of surface water)

C - Analyte detected in method blank

Table 3 Summary 2000-2024 Soil Data - Metals
Bridge - Former Dawn Foods

Sample ID	Date Sampled	Sample Depth (feet bgs)	Vadose or Saturated	Units	Aluminum	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
GP-SB-5-7	1/2/2020	7	Saturated	mg/kg	NA	5.09	1 U	NA	213	222	2	6.84	180
GP-SB-5-12	1/2/2020	12	Saturated	mg/kg	NA	2.48	1 U	NA	19.1	3.09	1 U	9.08	24.9
GP-SB-6-4	1/2/2020	4	Vadose	mg/kg	NA	4.98	1 U	NA	26.9	25	1 U	10.6	78.7
GP-SB-6-10	1/2/2020	10	Saturated	mg/kg	NA	2.37	1 U	NA	12.7	2.17	1 U	5.32	26.7
GP-SB-8	6/9/2020	9 to 10	Saturated	mg/kg	NA	11.6	2.76	NA	78	227	1 U	62.1	7110
GP-SB-9	6/9/2020	9 to 10	Saturated	mg/kg	NA	5.32	1 U	NA	25 U	4.23	1 U	11.8	71.9
GP-SB-10	6/9/2020	8 to 10	Saturated	mg/kg	NA	5 U	1 U	NA	35	18.6	1 U	14.2	57.6
GP-SB-11	6/9/2020	4 to 5	Vadose	mg/kg	NA	5 U	1 U	NA	83.1	48.2	1 U	174	459
GP-SB-12	6/9/2020	8.5 to 9.5	Saturated	mg/kg	NA	5 U	1 U	NA	25 U	1.04	1 U	5.40	34.5
GP-SB-18-03	12/1/2020	2 to 3	Vadose	mg/kg	NA	4.81	1 U	15.9 J / 15.7	NA	13.5	1 U	4.71 J / 5.05	46.3 J / 55.3
GP-SB-18-09.5	12/1/2020	9 to 9.5	Saturated	mg/kg	NA	1 U	1 U	7.66	NA	1 U	1 U	3.00	24.2
GP-SB-19-03.5	12/1/2020	3 to 3.5	Vadose	mg/kg	6790	3.56	1 U	9.41	NA	49.1	1 U	5.04	40.1
GP-SB-19-08.5	12/1/2020	8 to 8.5	Saturated	mg/kg	14500	3.48	1 U	9.91	NA	2.27	1 U	9.19	57.1
GP-SB-20-04.5	12/1/2020	3.5 to 4.5	Vadose	mg/kg	NA	3.41	1 U	8.53	NA	6.36	1 U	8.16	29.7
GP-SB-20-09	12/1/2020	7 to 9	Saturated	mg/kg	NA	2.49	1 U	8.34	NA	2.96	1 U	6.79	26.8
GP-SB-21-05	12/1/2020	3 to 5	Vadose	mg/kg	NA	1.75	1 U	9.89	NA	2.04	1 U	11.5	19.3
GP-SB-21-10	12/1/2020	7.5 to 10	Saturated	mg/kg	NA	6.11	1 U	7.63	NA	5.41	1 U	5.18	27.7
GP-SB-22-07	12/1/2020	5 to 7	Saturated	mg/kg	NA	4.87	1 U	98.4	NA	3.41	1 U	17.4	30.2
GP-SB-22-09	12/1/2020	9 to 10	Saturated	mg/kg	NA	2.09	1 U	9.35	NA	2.42	1 U	12.4	19.4
GP-SB-23-05	12/1/2020	3 to 5	Saturated	mg/kg	NA	13.6	1 U	11.6 J / 12.8	NA	7.66	1 U	15.2 J / 17.1	67.1 J / 77.5
GP-SB-23-11	12/1/2020	10 to 11	Saturated	mg/kg	NA	8.31	1 U	12.2	NA	7.16	1 U	14.2	55.4
GP-SB-24-10	12/1/2020	7.5 to 10	Saturated	mg/kg	NA	10.4	1 U	11.2	NA	6.27	1 U	15.0	51.7
GP-SB-24-12	12/1/2020	10 to 12	Saturated	mg/kg	NA	8.53	1 U	11.7	NA	4.35	1 U	12.4	43.3
GP-SB-25-08	12/5/2020	6 to 8	Saturated	mg/kg	NA	5.44	1 U	9.67	NA	48.3	1 U	6.49	140
GP-SB-25-13.5	12/5/2020	12 to 13.5	Saturated	mg/kg	NA	5.07	1 U	9.10	NA	3.37	1 U	11.4	29.2
GP-SB-26-06	12/5/2020	4 to 6	Vadose	mg/kg	NA	4.13	1 U	20.3	NA	20.0	1 U	14.7	39.8
GP-SB-26-12	12/5/2020	10 to 12	Saturated	mg/kg	NA	2.48	1 U	8.91	NA	3.01	1 U	9.48	22.8
GP-SB-27-08	12/5/2020	6 to 8	Saturated	mg/kg	NA	2.03	1 U	6.61	NA	1.08	1 U	5.45	18.5
GP-SB-27-12	12/5/2020	11 to 12	Saturated	mg/kg	NA	3.05	1 U	9.13	NA	6.60	1 U	7.43	32.3
GP-SB-27-14.5	12/5/2020	12 to 14.5	Saturated	mg/kg	NA	4.79	1 U	11.3	NA	3.83	1 U	7.00	20.7
GP-SB-28-04	12/5/2020	2 to 4	Vadose	mg/kg	NA	2.31	1 U	18.4	NA	34.0	1 U	22.9	36.9
GP-SB-28-08	12/5/2020	6 to 8	Saturated	mg/kg	NA	1.81	1 U	6.53	NA	1.04	1 U	5.68	17.5
GP-SB-28-12	12/5/2020	11.2 to 12	Saturated	mg/kg	NA	6.91	1 U	11.6	NA	5.49	1 U	12.8	39.5
GP-SB-28-13	12/5/2020	12 to 13	Saturated	mg/kg	NA	3.26	1 U	11.3	NA	2.81	1 U	7.09	16.5
GP-SB-29-06.5	12/5/2020	5.2 to 6.5	Vadose	mg/kg	NA	3.87	1 U	9.71	NA	3.31	1 U	6.13	19.9
GP-SB-29-10.5	12/5/2020	9.5 to 10.5	Saturated	mg/kg	NA	1.85	1 U	10.6	NA	1.83	1 U	3.88	28.1
GP-SB-29-12	12/5/2020	11 to 12	Saturated	mg/kg	NA	1.33	1 U	8.60	NA	1.42	1 U	3.93	18.4
GP-SB-30-05.5	12/12/2020	4 to 5.5	Vadose	mg/kg	NA	6.06	1 U	9.67	NA	24.8	1 U	7.62	58.6
GP-SB-30-08	12/12/2020	7 to 8	Saturated	mg/kg	NA	1.40	1 U	5.74	NA	1 U	1 U	4.2	12.1
GP-SB-30-13.3	12/12/2020	12.5 to 13.3	Saturated	mg/kg	NA	3.56	1 U	17.5	NA	5.90	1 U	12.4	54.6
GP-SB-31-06	12/12/2020	4.5 to 6	Vadose	mg/kg	NA	4.50	1 U	9.68	NA	16.5	1 U	6.97	99.8
GP-SB-31-08	12/12/2020	7 to 8	Saturated	mg/kg	NA	3.85	1 U	12.9	NA	2.50	1 U	6.59	22.8
GP-SB-31-14	12/12/2020	12.5 to 14	Saturated	mg/kg	NA	1.08	1 U	9.36	NA	1.79	1 U	4.82	23.2
MW-1 13-14'	12/16/2021	13 to 14	Saturated	mg/kg	NA	3.86	1 U	9.48	NA	1.73	1 U	5.18	17.8
MW-2 7.5-9'	12/15/2021	7.5 to 9	Saturated	mg/kg	NA	2.51	1 U	9.4	NA	2.73	1 U	12.3	25 U
MW-2 12.5-14'	12/15/2021	12.5 to 14	Saturated	mg/kg	NA	8.55	1 U	12.0	NA	3.77	1 U	17.1	41.7
MW-3 7.5-9'	12/16/2021	7.5 to 9	Saturated	mg/kg	NA	1.36	1 U	8.96	NA	2.37	1 U	14.9	25 U
MW-3 12.5-14'	12/16/2021	12.5 to 14	Saturated	mg/kg	NA	4.21	1 U	10.1	NA	6.00	1 U	10.7	38.3
MW-4 7.5-9'	12/16/2021	7.5 to 9	Saturated	mg/kg	NA	1.86	1 U	8.83	NA	1.89	1 U	6.09	138
MW-4 11-11.5'	12/16/2021	11 to 11.5	Saturated	mg/kg	NA	2.50	1 U	11.3	NA	2.67	1 U	10.7	89.2
MW-5 12.5-14'	12/15/2021	12.5 to 14	Saturated	mg/kg	NA	5.46	1.08	17.1	NA	93.1	1 U	8.37	7,000
MW-6 7.5-9'	12/15/2021	7.5 to 9	Saturated	mg/kg	NA	3.80	1 U	9.06	NA	13.9	1 U	6.89	36.1
RI-SB-01-10	12/18/2021	8 to 10	Saturated	mg/kg	NA	2.20	1 U	14.9	NA	7.51	1 U	8.21	49.2
RI-SB-01-14	12/18/2021	12.5 to 14	Saturated	mg/kg	NA	3.31	1 U	13.0	NA	2.60	1 U	7.39	16.9
RI-SB-02-08	12/18/2021	6 to 8	Saturated	mg/kg	NA	3.17	1 U	9.21	NA	2.14	1 U	5.74	64.9
RI-SB-02-12	12/18/2021	10 to 12	Saturated	mg/kg	NA	1.59	1 U	10.2	NA	1.49	1 U	4.96	25.1
RI-SB-04 2-4' / DUP-022823	2/28/2023	2 to 4	Vadose	mg/kg	NA	13.0 / 8.24	1 U / 1 U	43.3 / 32.9	161 / 38.8	97.6 / 76.9	1 U / 1 U	28.8 / 23.5	694 / 627
RI-SB-04 11-12'	2/28/2023	11 to 12	Saturated	mg/kg	NA	2.73	1 U	10.7	20.1	3.15	1 U	7.98	116
RI-SB-05 9-10'	2/28/2023	9 to 10	Saturated	mg/kg	NA	2.09	1 U	7.51	8.24	1.35	1 U	5.51	58.3
RI-SB-05 12.5-14'	2/28/2023	12.5 to 14	Saturated	mg/kg	NA	7.30	1 U	11.2	16.5	2.13	1 U	14.2	26.0
RI-SB-06 6-8'	2/28/2023	6 to 8	Saturated	mg/kg	NA	1.63	1 U	8.51	8.44	5.51	1 U	5.24	24.1
RI-SB-06 12.5-13.5'	2/28/2023	12.5 to 13.5	Saturated	mg/kg	NA	3.37	1 U	10.2	15.1	1.90	2 U	8.79	23.8
MW-7 8-10'	2/28/2023	8 to 10	Saturated	mg/kg	NA	5.44	1 U	11.2	18.2	5.70	1 U	8.15	21.3
MW-7 16-18'	2/28/2023	16 to 18	Saturated	mg/kg	NA	2.89	1 U	11.1	18.1	2.42	1 U	9.74	25.9
MW-8 11-13'	2/28/2023	11 to 13	Saturated	mg/kg	NA	1 U	1 U	5.23	7.76	1 U	1 U	4.19	15.3
RI-SB-07 10-15'	2/29/2024	10 to 15	Saturated	mg/kg	NA	NA	NA	19.8 0.688*	NA	NA	NA	NA	NA
RI-SB-08 5-10'	2/29/2024	5-10	Saturated	mg/kg	NA	10.6	0.150	20.8 0.648*	53.7	8.90	0.0195	20.5	107
RI-SB-08 10.6-12.5'	2/29/2024	10.6-12.5	Saturated	mg/kg	NA	4.54	0.041 J	14.1	23.6	38.2	0.0552	7.99	45.3
RI-SB-09 10-12.5'	2/29/2024	10-12.5	Saturated	mg/kg	NA	3.88	0.07	18.5	23.7	5.38	0.112	12.2	45.5
DUP01-0224	2/27/2024	5-8	Saturated	mg/kg	NA	4.81	0.082	15.4	22.7	4.74	0.0183	13.6	47.9
RI-SB-10 5-8'	2/27/2024	5-8	Saturated	mg/kg	NA	28.7	0.472	698	206	91.4	0.044	477	412
RI-SB-11 5-7.5'	2/27/2024	5-7.5	Saturated	mg/kg	NA	7.37	0.670	28.9	460	133	0.231	16.8	335
Screening Level MTCA Soil Method C Direct Contact (Method A for arsenic and lead)					3,500,000	20	3500	Cr III: 5,300,000 Cr VI: 820	140,000	1000	2	70,000	1,100,000
PCUL (Vadose)					33,000	7.3	0.77	Total: 48 Cr VI: 0.14	36	50	0.07	48	100
PCUL (Saturated)					33,000	7.3	0.77	Total: 48 Cr VI: 0.0069	36	50	0.07	48	85

Notes:

Bold = detection

Shading indicates a detected exceedance of a screeni

Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW. These are based on the February 5, 2025 version. Source:

<https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

* Value is for hexavalent chromium.

feet bgs = feet below ground surface

mg/kg = milligrams per kilograms

U = laboratory detection limit

J = reported concentration is an estimate.

Cr VI = Chromium VI (hexavalent chromium); Cr III = Chromium three. Both screening levels are presented, the lowest is used for shading.

NA = Not analyzed

ND = Not detected

MTCA - Model Toxics Control Act

Table 4 Summary of 2000-2024 Soil Data - Non Metal Compounds

Bridge - Former Dawn Foods

Sample ID	PCUL (mg/kg)	GP-SB-15	GP-SB-1510 (Duplicate)	GP-SB-16-07	GP-SB-16-11	GP-SB-17-05	GP-SB-17-10	GP-SB-21-05	GP-SB-21-10	GP-SB-22-07	GP-SB-22-09	GP-SB-23-05	GP-SB-23-11	GP-SB-24-10	GP-SB-24-12	GP-SB-25-08	GP-SB-25-13.5	GP-SB-26-06	GP-SB-26-12	GP-SB-27-08	
Date Sample		6/9/2020	6/9/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/1/2020	12/5/2020	12/5/2020	12/5/2020	12/5/2020	12/5/2020
Depth ft. bgs		10 to 11	10 to 11	6 to 7	10 to 11	4 to 5	9 to 10	3 to 5	7.5 to 10	5 to 7	9 to 10	3 to 5	10 to 11	7.5 to 10	10 to 12	6 to 8	12 to 13.5	4 to 6	10 to 12	6 to 8	
Zone		Saturated	Saturated	Saturated	Saturated	Vadose	Saturated	Vadose	Saturated	Saturated	Saturated	Vadose	Saturated	Saturated	Saturated	Saturated	Saturated	Vadose	Saturated	Saturated	
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
BTEX/GRO/DRO																					
Benzene	0.0088/0.00056	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Toluene	0.72/0.044	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Ethylbenzene	0.18/0.01	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Total Xylenes	0.94/0.055	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Gasoline Range	100	5 U	6 U	5 U	5 U	5 U	5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Diesel Range Organics (DRO)	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Lube Range Oil (ORO)	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
DRO/ORO (Diesel + Lube Oil)	2,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
VOCs																					
Vinyl chloride	0.0011/0.000056	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chloroethane	No Criteria	0.5 U	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,1-Dichloroethene	26/1.4	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Methylene chloride	0.43/0.03	0.5 U	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
trans-1,2-Dichloroethene	5.2/0.32	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,1-Dichloroethane	175/175	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
cis-1,2-Dichloroethene	160/160	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,2-Dichloroethane (EDC)	0.35/0.024	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1,1,1-Trichloroethane	370/21	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Trichloroethene	0.0044/0.00027	0.05 U	0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Tetrachloroethene	0.029/0.0016	0.025 U	0.025 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SVOCs (only detected compounds)																					
Naphthalene	0.039/0.0021	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	
2-Methylnaphthalene	0.67/0.039	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.28	<0.01	<0.01	<0.05	
1-Methylnaphthalene	20/20	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.8	<0.01	<0.01	<0.05	
Acenaphthylene	1.3/1.3	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	
Acenaphthene	0.5/0.28	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.43	<0.01	<0.01	<0.05	
Fluorene	0.54/0.029	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.67	<0.01	<0.01	<0.05	
Phenanthrene	1.5/1.5	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.0	<0.01	<0.01	<0.05	
Anthracene	0.96/0.051	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	
Fluoranthene	1.7/0.09	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.21	<0.01	0.016	<0.05	
Pyrene	2.6/0.14	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	0.062	<0.05	<0.05	<0.05	<0.05	<0.05	0.24	<0.01	0.017	<0.05	
Benzo(g,h,i)perylene	0.67/0.67	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	0.01 J	<0.05	<0.05	0.064 J	0.051 J	0.10	<0.01	0.010	<0.05	NA	
Benz(a)anthracene	1.3/1.3	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.11	<0.01	<0.01	<0.05	
Chrysene	1.4/1.4	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.01	0.012	<0.05	
Benzo(a)pyrene	0.0003/0.00016	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05 J	<0.05	<0.05	<0.05 J	<0.05 J	<0.05 J	0.15	<0.01	0.015	<0.05	
Benzo(b)fluoranthene	see total cPAHs	NA	NA	NA	NA	NA	NA	<0.05	<0.01	0.060	0.12 J	<0.05	<0.05	0.064 J	0.060 J	0.19	<0.01	0.019	<0.05	NA	
Benzo(k)fluoranthene	see total cPAHs	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05 J	<0.05	<0.05	<0.05 J	<0.05 J	0.063	<0.01	<0.01	<0.05	NA	
Indeno(1,2,3-cd)pyrene	0.6/0.6	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05 J	<0.05	<0.05	<0.05 J	<0.05 J	0.11	<0.01	0.010	<0.05	NA	
Dibenz(a,h)anthracene	0.23/0.23	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.05	<0.05 J	<0.05	<0.05	<0.05 J	<0.05 J	<0.05	<0.01	<0.01	<0.05	NA	
Total cPAHs TEQ	0.0003/0.00016	NA	NA	NA	NA	NA	NA	<0.05	<0.01	0.006	0.012	<0.05	<0.05	0.0064	0.006	0.188	<0.01	0.018	<0.05	NA	
PCBs																					
Aroclor 1221	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Aroclor 1232	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Aroclor 1016	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Aroclor 1242	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Aroclor 1248	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Aroclor 1254	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Aroclor 1260	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Aroclor 1262	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Aroclor 1268	see total	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Total Aroclors	0.03	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	
Tributyltin	PQL = 0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Table 4 Summary of 2000-2024 Soil Data - Non Metal Compounds

Bridge - Former Dawn Foods

Sample ID	PCUL (mg/kg)	GP-SB-27-12	GP-SB-28-08	GP-SB-28-13	GP-SB-29-10.5	GP-SB-30-05.5	GP-SB-30-13.3	GP-SB-31-06	GP-SB-31-14	GP-SB-32-04	GP-SB-32-12	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4 11-11.5'	MW-5 12.5-14'	MW-6 7.5-9'		
Date Sample		12/5/2020	12/5/2020	12/5/2020	12/5/2020	12/12/2020	12/12/2020	12/12/2020	12/12/2020	12/12/2020	12/12/2020	12/16/2021	12/15/2021	12/15/2021	12/16/2021	12/16/2021	12/16/2021	12/16/2021	12/15/2021	12/15/2021	
Depth ft. bgs		11 to 12	6 to 8	12 to 13	9.5 to 10.5	4 to 5.5	12.5 to 13.3	4.5 to 6	12.5 to 14	2 to 4	10.3 to 12	13 to 14	7.5 to 9	12.5 to 14	7.5 to 9	12.5 to 14	11 to 11.5	12.5 to 14	7.5 to 9		
Zone		Saturated	Saturated	Saturated	Saturated	Vadose	Saturated	Vadose	Saturated	Vadose	Saturated	Saturated	Saturated	Saturated	Saturated	Saturated	Saturated	Saturated	Saturated	Saturated	Saturated
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BTEX/GRO/DRO		BTEX/GRO/DRO										BTEX/GRO/DRO									
Benzene	0.0088/0.00056	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Toluene	0.72/0.044	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Ethylbenzene	0.18/0.01	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Total Xylenes	0.94/0.055	NA	NA	NA	NA	NA	NA	0.06 U	0.06 U	0.06 U	0.06 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Gasoline Range	100	NA	NA	NA	NA	NA	NA	5 U	5 U	5.6	5 U	NA	NA	NA	NA	NA	NA	5 U ht	NA	NA	
Diesel Range Organics (DRO)	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	470 x	NA	NA	
Lube Range Oil (ORO)	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,200	NA	NA	
DRO/ORO (Diesel + Lube Oil)	2,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,200	NA	NA	
VOCs		CVOCs										CVOCs									
Vinyl chloride	0.0011/0.000056	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	
Chloroethane	No Criteria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	
1,1-Dichloroethene	26/1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	
Methylene chloride	0.43/0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	
trans-1,2-Dichloroethene	5.2/0.32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	
1,1-Dichloroethane	175/175	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	
cis-1,2-Dichloroethene	160/160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	
1,2-Dichloroethane (EDC)	0.35/0.024	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	
1,1,1-Trichloroethane	370/21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	
Trichloroethene	0.0044/0.00027	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.05 U	0.05 U	0.05 U	0.05 U	
Tetrachloroethene	0.029/0.0016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.025 U	0.025 U	0.025 U	0.025 U	
SVOCs (only detected compounds)		SVOCs										SVOCs									
Naphthalene	0.039/0.0021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	0.67/0.039	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1-Methylnaphthalene	20/20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthylene	1.3/1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Acenaphthene	0.5/0.28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Fluorene	0.54/0.029	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Phenanthrene	1.5/1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Anthracene	0.96/0.051	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	1.7/0.09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Pyrene	2.6/0.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(g,h,i)perylene	0.67/0.67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benz(a)anthracene	1.3/1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chrysene	1.4/1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)pyrene	0.0003/0.00016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(b)fluoranthene	see total cPAHs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	see total cPAHs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Indeno(1,2,3-cd)pyrene	0.6/0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Dibenz(a,h)anthracene	0.23/0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Total cPAHs TEQ	0.0003/0.00016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
PCBs		PCBs										PCBs									
Aroclor 1221	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1232	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1016	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1242	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1248	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1254	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1260	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.057	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1262	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Aroclor 1268	see total	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Total Aroclors	0.03	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.057	0.02 U	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Tributyltin	PQL = 0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Table 4 Summary of 2000-2024 Soil Data - Non Metal Compounds

Bridge - Former Dawn Foods

Sample ID	PCUL (mg/kg)	RI-SB-01-10	RI-SB-01-14	RI-SB-02-08	RI-SB-02-12 / Duplicate	RI-SB-04 2-4' / DUP-022823	MW-8 11-13'	RI-SB08 5-10' DUP03-0224	RI-SB-09 10-12.5'	RI-SB-10 8-10'	RI-SB-11 0.5-2'	RI-SB-11 5-7.5'	RI-SB-13 7.9-9'	RI-SB-13 13.3-15'
Date Sample		12/18/2021	12/18/2021	12/18/2021	12/18/2021	2/28/2023	2/28/2023	2/29/2024	2/29/2024	2/27/2024	2/27/2024	2/27/2024	2/27/2024	2/27/2024
Depth ft. bgs		8 to 10	12.5 to 14	6 to 8	10 to 12	2 to 4	11 to 13	5 to 10	10 to 12.5	8 to 10	0.5 to 2	5 to 7.5	7.9 to 9	13.3 to 15
Zone		Saturated	Saturated	Saturated	Saturated	Vadose	Saturated	Saturated	Saturated	Saturated	Vadose	Saturated	Saturated	Saturated
Units		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BTEX/GRO/DRO														
Benzene	0.0088/0.00056	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	0.72/0.044	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	0.18/0.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Xylenes	0.94/0.055	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range	100	5 U	5 U	5 U	5 U / 5 U	11 x	5 U	NA	NA	200	NA	NA	NA	NA
Diesel Range Organics (DRO)	2000	50 U	50 U	50 U	50 U / 50U	50 U / 90 x	50 U	NA	NA	3,500	NA	NA	NA	NA
Lube Range Oil (ORO)	2000	250 U	250 U	250 U	250 U / 250U	250 U / 250 U	250 U	NA	NA	7,300	NA	NA	NA	NA
DRO/ORO (Diesel + Lube Oil)	2,000	250 U	250 U	250 U	250 U / 250 U	250 U / 90 x	250 U	NA	NA	10,800	NA	NA	NA	NA
VOCs														
Vinyl chloride	0.0011/0.000056	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Chloroethane	No Criteria	NA	NA	NA	NA	NA	NA	NA	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	26/1.4	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Methylene chloride	0.43/0.03	NA	NA	NA	NA	NA	NA	NA	1 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
trans-1,2-Dichloroethene	5.2/0.32	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1-Dichloroethane	175/175	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,2-Dichloroethene	160/160	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.05 U	0.34	0.061	0.05 U	0.05 U
1,2-Dichloroethane (EDC)	0.35/0.024	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,1-Trichloroethane	370/21	NA	NA	NA	NA	NA	NA	NA	0.1 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Trichloroethene	0.0044/0.00027	NA	NA	NA	NA	NA	NA	NA	0.088	0.02 U	0.29	0.092	0.02 U	0.02 U
Tetrachloroethene	0.029/0.0016	NA	NA	NA	NA	NA	NA	NA	3.6	0.025 U	4.7	2.7	0.14	0.025 U
SVOCs (only detected compounds)														
Naphthalene	0.039/0.0021	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	0.67/0.039	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	20/20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	1.3/1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	0.5/0.28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	0.54/0.029	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	1.5/1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	0.96/0.051	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	1.7/0.09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	2.6/0.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	0.67/0.67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benz(a)anthracene	1.3/1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	1.4/1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.0003/0.00016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	see total cPAHs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	see total cPAHs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.6/0.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenz(a,h)anthracene	0.23/0.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total cPAHs TEQ	0.0003/0.00016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs														
Aroclor 1221	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1232	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1016	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1242	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1248	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1260	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1262	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1268	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Aroclors	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tributyltin	PQL = 0.004	NA	NA	NA	NA	NA	NA	0.00372 U / 0.00385 U	0.00384 U	0.0021 U	NA	0.0013 U	NA	NA

Table 4 Summary of 2000-2024 Soil Data - Non Metal Compounds Bridge - Former Dawn Foods

Notes:

Bold = detection

Shading denotes a detected exceedance of a screeni

Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW. These are based on the February 5, 2025 version.

Source: <https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

^A - No benzene present in soil

feet bgs = feet below ground surface

mg/kg = milligrams per kilograms

U = laboratory detection limit

J = reported concentration is an estimate.

NA = Not analyzed

ND = Not detected

MTCA - Model Toxics Control Act

PQL for tributyltin is based on Analytical Resources confirmation on April 2024

TPH GRO - Total Petroleum Hydrocarbons Gasoline Range Organics

TPH DRO - Total Petroleum Hydrocarbons Diesel Range Organics

BTEX - Benzene, toluene, ethylbenzene, xylenes

CVOCs - Chlorinated Volatile Organic Compounds

SVOCs - Semi Volatile Organic Compounds

PCBs - Polychlorinated biphenyls

cPAHs - carcinogenic polycyclic aromatic hydrocarbons

**Table 5 Groundwater Field Parameters
Bridge - Former Dawn Foods**

Location ID	Date	Time	Depth to Water (ft BTOC)	Flow Rate (mL/min)	Temperature (°C)	Specific Conductance (µS/cm)	ORP (mV)	DO (mg/L)	pH	Turbidity (NTU)
MW-1	1/10/2024	22:45	15.26	350	13.9	12,523	95.9	7.82	6.74	3.0
	4/26/2024	13:42	14.89	250	14.6	6,834	144.0	5.71	6.49	0.5
	6/6/2024	11:28	15.41	175	15.2	9,203	143.8	10.84	6.68	0.28
	9/24/2024	5:03	15.03	300	17.1	8,906	149.4	4.10	6.59	0.28
	2/26/2025	22:17	14.8	200	12.5	15,272	240.9	6.79	6.65	1.40
MW-2	1/22/2024	22:54	11.77	250	9.8	19,964	78.3	7.86	7.39	1.8
	4/24/2024	14:03	12.45	225	11.2	17,164	161.7	6.61	7.31	2.46
	6/5/2024	11:23	12.07	225	14.2	20,182	149.6	6.52	7.35	0.93
	9/23/2024	5:06	12.2	275	18.9	27,573	149.2	3.29	7.23	2.99
MW-3	1/12/2024	0:24	nm	225	9.8	32,115	110.3	5.41	6.78	19.7
	4/25/2024	14:14	17.34	<200	11.3	23,054	94.5	4.36	6.86	11.2
	6/5/2024	10:32	16.29	150	13.1	26,214	174.3	5.85	6.70	1.8
	9/23/2024	4:23	17.2	100	17.4	29,868	148.7	3.10	6.71	12.4
	2/25/2025	22:42	16.68	200	9	30,725	13.8	4.56	6.98	31.5
MW-4	1/11/2024	23:52	14.75	200	13.4	2,376	23.7	0.21	5.98	6.7
	4/24/2024	12:28	13.98	200	15.4	1,568	124.3	0.68	6.01	13.1
	6/7/2024	11:38	14.67	200	16.3	551	75.2	0.14	6.18	3.5
	9/25/2024	5:33	13.67	150	17.6	251	-42.7	0.30	6.57	15.2
	2/25/2025	21:42	13.98	200	14.5	2,070	-116.3	0.03	6.34	4.7
MW-5	1/22/2024	21:58	11.59	225	14.3	1,297	-109.1	0.11	6.81	20.5
	4/25/2024	13:27	11.84	<250	14.3	1,242	-97.7	0.0	6.93	3.0
	6/6/2024	12:25	12.47	NM	16.1	1,294	-77.7	0.19	6.89	0.47
	9/25/2024	6:25	11.71	275	19.2	937	-128.5	0.16	6.89	2.33
	2/26/2025	23:06	11.75	200	11.8	1,249	24.8	-0.01	6.61	7.00
MW-6	1/10/2024	23:53	12.7	250	12.5	23,477	118.0	2.81	6.24	26.5
	4/24/2024	13:18	12.45	275	13.4	10,138	80.9	0.04	6.34	10.1
	6/7/2024	12:32	12.98	275	16.9	10,815	80.9	0.59	6.28	6.69
MW-7	1/12/2024	12:00	7.04	175	7.8	1,282	201.6	6.05	5.78	65.5
	4/26/2024	14:45	9.53	200	12.5	1,135	126.9	1.96	6.07	12.3
	6/6/2024	9:32	9.21	200	13.0	140	136.5	0.96	6.22	13.0
MW-8	1/10/2024	20:41	8.24	275	14.8	853	-102.9	0.16	6.35	0.43
	4/24/2024	11:33	8.60	NM	14.4	566	-51.3	0.0	6.29	2.40
	6/5/2024	12:09	8.81	250	16.7	577	-67.5	0.14	6.62	1.02
	9/23/2024	9:52	8.9	300	19.3	620	-98.0	0.18	6.41	4.39
	2/25/2025	17:48	8.07	200	14.2	553	-108.0	0.00	6.21	11.40
MW-9	1/9/2024	19:52	8.41	350	13.5	831	-120.9	0.13	6.16	0.8
	4/25/2024	12:27	9.09	300	11.4	746	-106.3	0.0	6.31	0.91
	6/7/2024	9:24	9.05	125	14.9	914	-62.2	0.40	6.16	7.54
MW-10	9/23/2024	8:38	10.77	300	16.1	234	37.7	0.88	6.40	2.88
	2/25/2025	18:29	9.94	200	13.8	186	63.1	0.01	5.79	2.80
MW-11	9/23/2024	6:49	10.17	125	16.7	318	-110.8	0.38	6.65	1.30
	2/25/2025	19:38	9.25	200	11.4	3,007	-53.0	0.04	6.17	5.90
PD-1	1/10/2024	21:46	NM - saturated at ground surface	300	12.7	2,337	-64.3	0.16	6.59	0.36
	4/26/2024	13:08	NM - saturated at ground surface	NM	14.8	1,238	-30.8	0.0	6.86	1.54
	6/6/2024	10:49	NM - saturated at ground surface	>250	14.7	789	86.1	0.27	7.58	0.92
	9/24/2024	4:26	NM - saturated at ground surface	>250	14.5	437	-63.8	4.19	6.96	1.20

Notes:

- °C - degrees Celsius
- DO - dissolved oxygen
- ft bgs - feet below ground surface
- mg/L - milligrams per liter
- µS/cm - microSiemen per centimeter
- mL/min - milliliters per minute
- mV - millivolt
- NTU - nephelometric turbidity unit
- ORP - oxidation-reduction potential
- nm - not measured

**Table 6 Direct Push Borehole Groundwater - High Salinity 2000 Data - Metals
Bridge - Former Dawn Foods**

Sample ID	PCUL (ug/L)	GP-SB-6	GP-SB-08	GP-SB-09	Dup (GP-SB-09)	GP-SB-10	GP-SB-20	GP-SB-21	GP-SB-22	GP-SB-23	GP-SB-24
Date Sampled		1/2/20	6/9/20	6/9/20	6/9/20	6/9/20	12/1/20	12/1/20	12/1/20	12/1/20	12/1/20
Sample results are in ug/L											
Metals Total/Dissolved											
Aluminum - total	See dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic - total	See dissolved	23	14.0	10.2	10.7	48.7	21.6	25	20	38.4	26.6
Cadmium - total	See dissolved	10 U	1 UJ	1 UJ	1 U	1 UJ	1 UJ	5 UJ	1 UJ	5 UJ	5 UJ
Chromium - total	See dissolved	NA	NA	NA	NA	NA	13.7	10 U	10 U	13.8	10 U
Copper - total	See dissolved	66.1	8.84	4.65	3.68 J	53.5	NA	NA	NA	NA	NA
Lead - total	See dissolved	10 U	12.6	1 U	1 U	63.9	5.85	10 U	1 U	11.1	10 U
Mercury - total	See dissolved	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	10 U	10 U
Nickel - total	See dissolved	42.4	6.11	4.24	4.74 J	18.2	8.30	12.8	10 U	15.4	10 U
Selenium - total	See dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc - total	See dissolved	3770	562	342	502	104	50 U	50 U	50 U	52.7	50 U
Arsenic - dissolved	8.0	10.6	13.1	10.2	10.7	25.2	11.9	20	18.4	27.2	27.1
Cadmium - dissolved	1.2	5 U	1 U	1 UJ	1 U	1 U	1 U	1 UJ	1 U	1 UJ	1 UJ
Chromium - dissolved	Cr III: 27.4 Cr VI: 0.36	NA	NA	NA	NA	NA	4.06	10 U	2.14	10 U	10 U
Copper - dissolved	3.1	5 U	7.00	5.58	2.97	5.29	NA	NA	NA	NA	NA
Lead - dissolved	8.1	5 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ	1 UJ
Mercury - dissolved	0.03	5 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 UJ	1 UJ
Nickel - dissolved	8.2	8.71	6.35	4.88	4.14	5.74	4.26	14.8	10U	10 U	11.3
Zinc - dissolved	81	3,110	574	378	317	5 U	5 U	50U	5 U	50U	50U

Notes:

Bold = detection

Shading denotes a detected exceedance of a screeni

Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW. These are based on the February 5, 2025 version.

Cr Vi = Chromium VI (hexavalent chromium); Cr III = Chromium trivalent. Both screening levels are presented, the lowest is used for shading.

ug/L = micrograms per liters

U = laboratory detection limit

J = reported concentration is an estimate.

NA = Not analyzed

Table 7 Summary Direct Push Borehole Groundwater Samples - Detected Compounds Only
Bridge - Former Dawn Foods

Sample ID	PCUL (ug/L)	GP-SB-1	GP-SB-2	GP-SB-3	GP-SB-5	GP-SB-6	GP-SB-7	GP-SB-8	GP-SB-9	Dup (GP-SB-09)	GP-SB-10	GP-SB-11	GP-SB-12	GP-SB-13	GP-SB-14	GP-SB-15	GP-SB-16	GP-SB-17	GP-SB-18	GP-SB-19	GP-SB-20	GP-SB-21	GP-SB-22	GP-SB-23	GP-SB-24	GP-SB-25	GP-SB-27	GP-SB-28		
Date Sampled	PCUL (ug/L)	1/2/20	1/2/20	1/2/20	1/2/20	1/2/20	1/2/20	6/9/20	6/9/20	6/9/20	6/9/20	6/9/20	6/9/20	6/9/20	6/9/20	6/9/20	12/1/20	12/1/20	12/1/20	12/1/20	12/1/20	12/1/20	12/1/20	12/1/20	12/1/20	12/5/20	12/5/20	12/5/20		
Within 75ft of the Shoreline? (See Note 1)		no	no	no	no	yes	no	yes	yes	yes	yes	no	no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no	no	no		
Sample results are in ug/L																														
Metals Total/Dissolved																														
Arsenic - total	See dissolved	NA	NA	7.22	29	23	37.9	14.0	10.2	10.7	48.7	3.68	1 U	NA	NA	NA	NA	NA	NA	16.3	10 U	21.6	25	20	38.4	26.6	15.7	2.76	5.07	
Cadmium - total	See dissolved	NA	NA	1 U	2.87	10 U	1 U	1 UJ	1 UJ	1 U	1 UJ	1 U	1 U	NA	NA	NA	NA	NA	NA	1 U	1 U	1 UJ	5 UJ	1 UJ	5 UJ	5 UJ	1 U	1 U	1 U	
Chromium - total	See dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.1	4.25	13.7	10 U	10 U	13.8	10 U	18.6	10 U	23.7	
Copper - total	See dissolved	NA	NA	25 U	1,460	66.1	5 U	8.84	4.65	3.68 J	53.5	4.01	2.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Lead - total	See dissolved	NA	NA	24.2	632	10 U	1 U	12.6	1 U	1 U	63.9	1.11	1 U	NA	NA	NA	NA	NA	NA	1.55	1.08	5.85	10 U	1 U	11.1	10 U	12.4	10 U	10 U	
Mercury - total	See dissolved	NA	NA	1 U	4.29	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	10 U	1 U	10 U	10 U	1 U	1 U	1 U	
Nickel - total	See dissolved	NA	NA	5 U	66	42.4	24	6.11	4.24	4.74 J	18.2	10.8	2.23 J	NA	NA	NA	NA	NA	NA	9.65	6.54	8.30	12.8	10 U	15.4	10 U	18.6	10 U	12.2	
Zinc - total	See dissolved	NA	NA	25 U	1,070	3770	22,800	562	342	502	104	32.2	17.9 J	NA	NA	NA	NA	NA	NA	50 U	50 U	50 U	50 U	50 U	52.7	50 U	95.5	50 U	91.9	
Arsenic - dissolved	8	NA	NA	6.92	1 U	10.6	29.7	13.1	10.2	10.7	25.2	4.61 ca	1 Uca	NA	NA	NA	NA	NA	NA	14.8	1.85	11.9	20	18.4	27.2	27.1	5.05	1 U	1 U	
Cadmium - dissolved	1.2	NA	NA	1 U	1 U	5 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 U	1 U	
Chromium - dissolved	Cr III: 27.4 Cr VI: 0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.72	10 U	4.06	10 U	2.14	10 U	10 U	1 U	1 U	1 U	
Chromium VI - dissolved	Cr VI: 0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Copper - dissolved	3.1	NA	NA	25 U	25 U	5 U	5 U	7.00	5.58	2.97	5.29	2.73	2.4 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead - dissolved	8.1	NA	NA	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 UJ	1 U	1 UJ	1 UJ	1 U	1 U	1 U	
Mercury - dissolved	0.03	NA	NA	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	
Nickel - dissolved	8.2	NA	NA	5 U	5 U	8.71	22.7	6.35	4.88	4.14	5.74	10.9	2.37 J	NA	NA	NA	NA	NA	NA	5.30	10 U	4.26	14.8	10 U	10 U	11.3	1.62	2.33	3.28	
Zinc - dissolved	81	NA	NA	25 U	25 U	3,110	22,300	574	378	317	5 U	18.8	16.5 J	NA	NA	NA	NA	NA	NA	7.01	50 U	5 U	50 U	5 U	50 U	50 U	14.6	5 U	6.36	
TPH GRO/DRO																														
Gasoline Range Organics	1000	100 U	800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	380	3,300	100 U	100 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil Organics (ORO)	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics w/ SGC	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil Organics (ORO) w/ SGC	see total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx (DRO + ORO)	See TPH Dx difference	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx (DRO + ORO) w/ SGC	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx Difference (DRO + ORO - SGC)	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs																														
Benzene	1.6	0.35 U	0.35 U	0.35 U	0.35 U	0.35 U	NA	NA	0.35 U	0.35 U	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	21	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	NA	1 U	3.1	5.1	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	102	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	NA	NA	8.1	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, Total	106	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	NA	NA	NA	1 U	5.6	8.3	3 U	3 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	14666	1 U	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	182	16	400	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane (EDC)	3.5	1 U	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	11	1 U	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	130	1 U	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	77	1 U	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	No Criteria	NA	NA	NA	NA	0.04 U	NA	NA	0.02 U	0.039	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl t-butyl ether	857	1.1	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	100	5 U	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	5 U	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	2.9	1 U	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	5440	1 U	10 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	0.7	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.18	44	72	0.31	0.2 U	0.2 U	NA	0.1 U	1 U	1 U	NA	NA	0.21	NA	NA	1.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tributyltin	PQL = 0052	NA	NA	NA	NA	NA	NA	NA	0.31U	0.36U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

Table 7 Summary Direct Push Borehole Groundwater Samples - Detected Compounds Only
 Bridge - Former Dawn Foods

Sample ID		GP-SB-29	GP-SB-30	GP-SB-31	GP-SB-32	RI-SB-01	RI-SB-02 / Duplicate	RI-SB-04	RI-SB-05	RI-SB-06	RI-SB-07 DUP05-0224	RI-SB-08 DUP04-0224	RI-SB-09 DUP02-0224	RI-SB-10	RI-SB-11	RI-SB-12	RI-SB-13	RI-SB-14	RI-SB-15	RI-SB-16	RI-SB-17	RI-SB-18
Date Sampled	PCUL (ug/L)	12/5/20	12/12/20	12/12/20	12/12/20	12/18/21	12/18/21	2/28/23	2/28/23	2/28/23	2/29/24	2/29/24	2/29/24	2/27/24	2/27/24	2/27/24	2/27/24	2/27/24	2/28/24	2/28/24	2/28/24	2/28/24
Within 75ft of the Shoreline? (See Note 1)		no	no	no	no	no	no	yes	no	no	yes	yes	no	no	no	no	no	no	no	no	no	no
Metals Total/Dissolved																						
Arsenic - total	See dissolved	1.15	15.1	17.5	NA	5.03	2.53 / 6.40	0.944	1.68	11.5	NA	4.89	2.47 / 2.68	3.04	1.58	NA	NA	NA	NA	NA	NA	NA
Cadmium - total	See dissolved	1 U	1 U	1 U	NA	1 U	1 U / 1 U	0.061 U	0.061 U	0.061 U	NA	0.061 U	0.152 U / 0.075 J	0.075 J	0.097 J	NA	NA	NA	NA	NA	NA	NA
Chromium - total	See dissolved	1 U	11.4	3.19	NA	13.5	6.56 / 19.5	7.21	3.19 J	7.02	NA	2.22 J	4.29 U / 2.87 J	3.63 J	3.13 J	NA	NA	NA	NA	NA	NA	NA
Copper - total	See dissolved	NA	NA	NA	NA	NA	NA	5.66	7.00	9.38	NA	2.86	6.66 / 5.85 J	53.0	5.89	NA	NA	NA	NA	NA	NA	NA
Lead - total	See dissolved	1 U	3.44	1 U	NA	4.27	2.70 / 11.0	1.35	1.82	2.22	NA	1.30	2.34 / 2.33	25.9	2.79	NA	NA	NA	NA	NA	NA	NA
Mercury - total	See dissolved	1 U	1 U	1 U	NA	1 U	1 U / 1 U	NA	NA	NA	NA	0.00523	0.00524 / 0.00609	0.625	0.0276	NA	NA	NA	NA	NA	NA	NA
Nickel - total	See dissolved	3.10	12.0	5.77	NA	15.7	5 U / 8.65	3.58 J	2.67 J	4.13	NA	1.54 J	3.03 U / 2.04 J	2.23 J	2.08 J	NA	NA	NA	NA	NA	NA	NA
Zinc - total	See dissolved	210	67.6	17.4	NA	38.9	31.1 / 77.4	65.7	138	19.0 J	NA	31.0	17.7 U / 9.93 J	38.9	114	NA	NA	NA	NA	NA	NA	NA
Arsenic - dissolved	8	1 U	11.3	16.4	NA	1 U	1.29 / 1.20	0.162 U	0.766	11.1	NA	4.30	1.93 / 1.84	1.13	0.996	NA	NA	NA	NA	NA	NA	NA
Cadmium - dissolved	1.2	1 U	1 U	1 U	NA	1 U	1 U / 1 U	0.061 U	0.061 U	0.061 U	NA	0.061 U	0.152 U / 0.061 U	0.061 U	0.061 U	NA	NA	NA	NA	NA	NA	NA
Chromium - dissolved	Cr III: 27.4 Cr VI: 0.36	1 U	1 U	1.19	NA	1.39	2.12 / 2.06	1.72 U	1.72 U	3.48 J	NA	1.72 U	4.29 U / 1.72 U	1.92 J	1.81 J	NA	NA	NA	NA	NA	NA	NA
Chromium VI - dissolved	Cr VI: 0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5 U	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper - dissolved	3.1	NA	NA	NA	NA	NA	NA	0.505 U	0.505 U	0.505 U	NA	0.505 U	1.26 U / 0.505 U	0.505 U	1.14	NA	NA	NA	NA	NA	NA	NA
Lead - dissolved	8.1	1 U	1 U	1 U	NA	1 U	1 U / 1 U	0.061 U	0.061 U	0.061 U	NA	0.061 U	0.152 U / 0.061 U	0.061 U	0.257	NA	NA	NA	NA	NA	NA	NA
Mercury - dissolved	0.03	1 U	1 U	1 U	NA	1 U	1 U / 1 U	NA	NA	NA	NA	0.00014 U	0.00019 J / 0.00013 U	0.00249	0.00373	NA	NA	NA	NA	NA	NA	NA
Nickel - dissolved	8.2	3.41	2.96	4.49	NA	1.95	1.66 / 1.62	1.21 U	1.41 J	2.17 J	NA	1.21 U	3.03 U / 1.21 U	1.21 U	2.30 J	NA	NA	NA	NA	NA	NA	NA
Zinc - dissolved	81	209	33.0	12.3	NA	5.49	10.7 / 9.96	7.07 U	123	8.80 J	NA	21.7 J	17.7 U / 7.07 U	7.29 J	102	NA	NA	NA	NA	NA	NA	NA
TPH GRO/DRO																						
Gasoline Range Organics	1000	NA	NA	100 U	100 U	100 U	100 U / 100 U	NA	NA	NA	NA	NA	NA	720	NA	NA	NA	NA	NA	NA	NA	100 U
Diesel Range Organics	see total	NA	NA	NA	NA	150 x	65 x / 710 x	NA	NA	NA	NA	NA	NA	3,100 x	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil Organics (ORO)	see total	NA	NA	NA	NA	490 x	250 U / 290 x	NA	NA	NA	NA	NA	NA	250 U	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics w/ SGC	see total	NA	NA	NA	NA	50 U	50 U / 50 U	NA	NA	NA	NA	NA	NA	96 x	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil Organics (ORO) w/ SGC	see total	NA	NA	NA	NA	290	250 U / 250 U	NA	NA	NA	NA	NA	NA	250 U	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx (DRO + ORO)	See TPH Dx difference	NA	NA	NA	NA	640 x	65 x / 1,000 x	NA	NA	NA	NA	NA	NA	3100 x	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx (DRO + ORO) w/ SGC	500	NA	NA	NA	NA	290	250 U / 250 U	NA	NA	NA	NA	NA	NA	96 x	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx Difference (DRO + ORO - SGC)	500	NA	NA	NA	NA	350	65 / 750	NA	NA	NA	NA	NA	NA	3004	NA	NA	NA	NA	NA	NA	NA	NA
VOCs																						
Benzene	1.6	NA	NA	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	21	NA	NA	1 U	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	102	NA	NA	1 U	1 U	NA	NA	NA	NA	NA	0.5 U / 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, Total	106	NA	NA	3 U	3 U	NA	NA	NA	NA	NA	0.02 U / 0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	14666	NA	NA	NA	NA	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	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	182	NA	NA	NA	NA	1 U	1 U / 1 U	1 U	1 U	1 U	1 U / 1 U	1 U	1 U	1.4	1.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)	3.5	NA	NA	NA	NA	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	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethane	11	NA	NA	NA	NA	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	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	130	NA	NA	NA	NA	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	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	77	NA	NA	NA	NA	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	1 U	1 U	1 U	1 U	1 U
Phenanthrene	No Criteria	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl t-butyl ether	857	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	100	NA	NA	NA	NA	5.2 ca lc	11 ca lc / 9.3 ca lc	5 U	5 U	5 U	5 U / 5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	2.9	NA	NA	NA	NA	1.6	1 U / 1 U	1 U	1 U	1 U	1 U / 1 U	1 U	1 U	2.9	21	1 U	4.1	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5440	NA	NA	NA	NA	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	1 U	1 U	1 U	1 U	1 U
Trichloroethene	0.7	NA	NA	NA	NA	0.5 U	0.5 U / 0.5 U	0.5 U	0.5 U	0.5 U	0.5 U / 0.5 U	0.5 U	0.76	1 U	2.1	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	0.18	NA	NA	NA	NA	0.21	0.30 / 0.28	0.50	0.55	0.40	0.02 U / 0.02 U	0.10	0.022	0.11	0.70	0.14	0.13	0.02 U	0.57	0.90	0.44	0.02 U
Tributyltin	PQL = 0052	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0052 U	0.0052 U	0.0052 U	0.0052 U	NA	NA	NA	NA	NA	NA	NA

Table 7 Summary of Direct Push Borehole Groundwater Samples - Detected Compounds Only Bridge - Former Dawn Foods

Notes:

Bold = detection

Shading denotes a detected exceedance of a screening level (See

Note 1: Grab groundwater samples collected after 2020 were analyzed using inductively coupled plasma mass spectrometry methods because of the high conductivity observed at the site. Groundwater grab samples collected in 2020 (all samples starting with "GP-SB") were not analyzed using these methods and results shown may include interferences resulting from high conductivity in the sample matrix. For wells within 75 feet of the shoreline, which are known to have high conductivity, dissolved metals are not compared to the SL and are not shaded. See Table 5.

Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW. These are based on the Feb 5, 2025 version. Source: <https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

Cr VI = Chromium VI (hexavalent chromium); Cr III = Chromium trivalent. Both screening levels are presented, the lowest is used for shading.

TEq - Toxicity Equivalency to cPAHs, calculated by multiplying result by appropriate TEF.

Ca = The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

x = Sample chromatographic pattern does not resemble the fuel standard used for quantitation.

ug/L = micrograms per liters

U = laboratory detection limit

J = reported concentration is an estimate.

NC - No Criterion

NA = Not analyzed

PQL for tributyltin is based on Analytical Resources confirmation on April 2024

TPH GRO - Total Petroleum Hydrocarbons Gasoline Range Organics

TPH DRO - Total Petroleum Hydrocarbons Diesel Range Organics

VOCs - Volatile Organic Compounds

ND = Not detected

**Table 8 Summary of Monitoring Well Groundwater Samples
Bridge - Former Dawn Foods**

Sample ID	PCUL (ug/L)	MW-1																						
		MW-1 / DUP01-0623 (duplicate)											MW-1 / DUP03-0823 (duplicate)											
Date Sampled		2/1/22	4/19/22	8/8/22	12/21/22	3/25/23	6/21/23	8/29/23	10/19/23	1/10/24	4/26/24	6/6/24	9/24/24	1/31/22	4/19/22	8/9/22	12/22/22	3/26/23	6/19/23	8/29/23	1/22/24	4/24/24	6/5/24	9/23/24
Sample results are in ug/L																								
Metals Total/Dissolved																								
Arsenic - total	See dissolved	1.70	1.62	1.38	1.19	1.35	1.37 / 1.42	1.25 / 1.16	1.47 J	1.65	1.38	1.32	NA	3.14	3.97	3.32	4.46	2.86	3.72	3.62	3.48	3.56	3.64	NA
Cadmium - total	See dissolved	0.179 J	0.154 J	0.289	0.550	0.252	0.158 J / 0.141 J	0.457 / 0.482	1.14	0.482	0.164 J	0.17 J	NA	0.061 U	0.061 U	0.225	0.178 J	0.152 U	0.137 J	0.311	0.067 J	0.061 U	0.09 J	NA
Chromium - total	See dissolved	2.27 J	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U / 1.72 U	1.72 U / 1.72 U	4.29 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	5.06 J	4.29 U	1.72 U	2.39 J	2.21 J	1.72 U	1.72 U	4.29 U
Copper - total	See dissolved	4.12	2.16	1.46	2.25	1.91	1.49 / 1.37	1.70 / 1.62	2.39 J	2.38	1.60 J	1.64 J	NA	1.10	3.10	1.51	9.56	1.26 U	2.87	2.80	1.17	1.33 J	1.08 J	NA
Mercury - total	See dissolved	NA	NA	NA	NA	NA	NA	NA	NA	0.00108	0.00073 H	0.00051	NA	NA	NA	NA	NA	NA	NA	0.00032 J	0.43	0.00044	NA	NA
Nickel - total	See dissolved	NA	1.21 U	1.21 U	2.05 J	1.21 U	1.21 U / 1.21 U	1.77 J / 1.69 J	3.45 J	1.29 J	1.21 U	1.21 U	NA	NA	1.31 J	1.64 J	4.35	3.03 U	1.21 U	3.54 J	1.21 U	1.21 U	1.21 U	NA
Lead - total	See dissolved	0.332	0.053 J	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U	0.107 J / 0.061 U	0.152 U	0.061 U	0.091 U	0.091 U	NA	0.081 J	0.725	0.194	2.55	0.152 U	0.589	0.229	0.061 U	0.137 J	0.091 U	NA
Zinc - total	See dissolved	278	292	225	652	388	235 / 237	390 / 398	949	496	289	282	487	7.07 U	7.07 U	7.07 U	11.0 J	17.7 U	7.07 U	14.3 J	7.07 U	12.1 U	12.1 U	NA
Arsenic - dissolved	8.00	1.23	1.58	1.37	1.14	1.41	1.43 / 1.56	1.20 / 1.26	1.52 J	1.58	1.40	1.24	NA	3.37	3.48	3.29	2.94	2.82	3.42	3.21	3.64	3.58	3.42	NA
Cadmium - dissolved	1.20	0.175 J	0.159 J	0.235	0.532	0.215	0.146 J / 0.138 J	0.451 / 0.502	1.13	0.523	0.162 J	0.17 J	NA	0.071 J	0.061 U	0.214	0.131 J	0.152 U	0.154 J	0.270	0.077 J	0.077 J	0.087 J	NA
Chromium - dissolved	Cr III: 27.4	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U / 1.72 U	1.72 U / 1.72 U	4.29 U	1.72 U	1.72 U	1.72 U	NA	1.72 U	1.72 U	1.72 U	1.72 U	4.29 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	NA
Chromium VI - dissolved	Cr VI: 0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.49	0.265	0.204	NA	NA	NA	NA	NA	NA	NA	NA	1.51	0.522	0.645
Copper - dissolved	3.10	2.30	2.07	1.56	2.14	2.91	1.44 / 1.33	1.75 / 1.81	1.94 J	2.02	1.63 J	1.67 J	NA	1.13	1.02	1.13	1.30	1.26 U	1.44	1.38	1.02	0.935 J	1.22 J	NA
Mercury - dissolved	0.03	NA	NA	NA	NA	NA	NA	NA	NA	0.00101	0.00073 H	0.00055	NA	NA	NA	NA	NA	NA	NA	0.00022 J	0.00031 J	0.00022	NA	NA
Nickel - dissolved	8.20	NA	1.21 U	1.37 J	1.85 J	1.21 U	1.21 U / 1.21 U	1.57 J / 1.54 J	3.70 J	1.22 J	1.21 U	1.21 U	NA	NA	1.21 U	1.21 U	1.21 U	3.03 U	1.21 U	1.68 J	1.21 U	1.21 U	1.21 U	NA
Lead - dissolved	8.10	0.040 U	0.040 U	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U	0.102 J / 0.061 U	1.52 U	0.061 U	0.091 U	0.091 U	NA	0.040 U	0.040 U	0.061 U	0.061 U	0.152 U	0.061 U	0.089 J	0.061 U	0.091 U	0.061 U	NA
Zinc - dissolved	81	260	282	209	637	380	226 / 235	386 / 379	956	528	290	261	508	7.07 U	7.07 U	7.07 U	7.07 U	17.7 U	7.07 U	10.9 J	7.07 U	12.1 U	12.1 U	NA
GRO/DRO - NWTPH-Dx/-Gx																								
Gasoline Range Organics	1000	NA	NA	100 U	NA	NA	NA	NA	NA	100 U	NA	NA	NA	NA	NA	1000 ⁶ 100 U ht	100 U	NA	NA	NA	100 U	NA	NA	NA
Diesel Range Organics	see total	NA	NA	50 U	NA	NA	NA	NA	NA	50 U	NA	NA	NA	NA	NA	50 U	NA	NA	NA	NA	50 U	NA	NA	NA
Diesel Range Organics w/ SGC	see total	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	NA	NA
Motor Oil Organics (ORO)	see total	NA	NA	250 U	NA	NA	NA	NA	NA	250 U	NA	NA	NA	NA	NA	250 U	NA	NA	NA	NA	250 U	NA	NA	NA
Motor Oil Organics (ORO) w/ SGC	see total	NA	NA	NA	NA	NA	NA	NA	NA	250 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	250 U	NA	NA	NA
Total Dx (DRO + ORO)	See TPH Dx difference	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	NA	NA	NA
Total Dx (DRO + ORO) w/ SGC	500	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA
Total Dx Difference*	500	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA
VOCs																								
Benzene	1.6	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA
Toluene	102	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA
Ethylbenzene	21	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA
Xylenes, Total	106	NA	NA	NA	NA	NA	NA	NA	NA	3 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3 U	NA	NA	NA
Chloroethane	14666	NA	1 U	NA	1 U	1 U	1 U / 1 U	1 U	NA	1 U	1 U	1 U	1 U	NA	NA	1 U	NA	1 U	NA	NA	1 U	NA	NA	NA
1,1,1-Trichloroethane	5440	NA	1 U	NA	1 U	1 U	1 U / 1 U	1 U	NA	1 U	1 U	1 U	1 U	NA	NA	1 U	NA	1 U	NA	NA	1 U	NA	NA	NA
1,1-Dichloroethane	11	NA	1 U	NA	1 U	1 U	1 U / 1 U	1 U	NA	1 U	1 U	1 U	1 U	NA	NA	1 U	NA	1 U	NA	NA	1 U	NA	NA	NA
1,1-Dichloroethene	130	NA	1 U	NA	1 U	1 U	1 U / 1 U	1 U	NA	1 U	1 U	1 U	1 U	NA	NA	1 U	NA	1 U	NA	NA	1 U	NA	NA	NA
1,2-Dichloroethane (EDC)	3.5	NA	0.2 U	NA	0.2 U	0.2 U	0.2 U / 0.2 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	0.2 U	NA	0.2 U	NA	NA	0.2 U	NA	NA	NA
trans-1,2-Dichloroethene	77	NA	1 U	NA	1 U	1 U	1 U / 1 U	1 U	NA	1 U	1 U	1 U	1 U	NA	NA	1 U	NA	1 U	NA	NA	1 U	NA	NA	NA
cis-1,2-Dichloroethene	182	NA	1 U	NA	1 U	1 U	1 U / 1 U	1 U	NA	1 U	1 U	1 U	1 U	NA	NA	1 U	NA	1 U	NA	NA	1 U	NA	NA	NA
Methylene chloride	100	NA	5 U	NA	5 U	5 U	5 U / 5 U	5 U	NA	5 U	5 U	5 U	5 U	NA	NA	5 U	NA	5 U	NA	NA	5 U	NA	NA	NA
Tetrachloroethene	2.9	NA	1 U	NA	1 U	1 U	1 U / 1 U	1 U	NA	1 U	1 U	1 U	1 U	NA	NA	1 U	NA	1 U	NA	NA	1 U	NA	NA	NA
Trichloroethane	No criteria	NA	1 U	NA	1 U	1 U	1 U / 1 U	NA	NA	NA	1 U	NA	NA	NA	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA
Trichloroethene	0.70	NA	0.5 U	NA	0.5 U	0.5 U	0.5 U / 0.5 U	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	0.5 U	NA	0.5 U	NA	NA	0.5 U	NA	NA	NA
Vinyl chloride	0.18	NA	0.021	NA	0.02 U	0.02 U	0.2 U / 0.2 U	0.02 U	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	0.02 U	NA	0.02 U	NA	NA	0.02 U	NA	NA	NA

**Table 8 Summary of Monitoring Well Groundwater Samples
Bridge - Former Dawn Foods**

Sample ID	PCUL (ug/L)	MW-3										MW-4										
		MW-3										MW-4 / DUP-0124 (duplicate)										
Date Sampled		1/30/22	4/20/22	8/8/22	12/22/22	3/26/23	6/21/23	8/29/23	1/12/24	4/25/24	6/5/24	2/2/22	4/20/22	8/9/22	12/22/22	3/26/23	6/19/23	8/30/23	1/11/24	4/24/24	6/7/24	9/25/24
Sample results are in ug/L																						
Metals Total/Dissolved																						
Arsenic - total	See dissolved	3.06	3.66	3.08	2.74	3.37	2.80	3.32	4.39	2.95	NA	0.586 J	0.410 J	0.204 J	0.162 U	0.163 J	0.204 J	0.276 J	0.162 U / 0.162 U	0.288 J	0.222 U	NA
Cadmium - total	See dissolved	0.168 J	0.293 J	0.254 J	0.148 J	0.152 U	0.246	0.297	0.152 U	0.152 U	NA	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U	0.061 U	0.061 U	NA
Chromium - total	See dissolved	4.29 U	4.29 U	4.29 U	16.4	4.29 U	1.72 U	3.58 J	4.73 J	4.29 U	NA	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.82 J / 1.72 U	1.72 U	1.72 U	NA
Copper - total	See dissolved	1.09 J	3.30	2.20 J	2.60	4.64 U	2.65	4.91	10.9	2.27 U	NA	0.404 U	0.449 J	0.505 U	0.582 J	0.720 J	0.505 U	0.640 J	0.841 J / 0.702 J	1.04 J	0.909 U	NA
Mercury - total	See dissolved	NA	NA	NA	NA	NA	NA	NA	0.00820	0.62	NA	NA	NA	NA	NA	NA	NA	NA	0.00016 J / 0.00019 J	0.13 U	0.00014 U	NA
Nickel - total	See dissolved	NA	3.03 U	3.35 J	8.88	3.03 U	1.34 J	4.17	4.81 J	3.03 U	NA	NA	2.11 J	1.21 U	1.23 J	1.94 J	1.21 U	1.21 U	1.21 U / 1.21 U	1.21 U	1.21 U	NA
Lead - total	See dissolved	0.101 U	0.595	0.292 J	0.351	0.920	0.558	1.59	3.64	0.227 U	NA	0.040 U	0.040 U	0.061 U	0.061 U	0.061 U	0.061 U	0.100 J	0.061 U / 0.061 U	0.091 U	0.091 U	NA
Zinc - total	See dissolved	17.7 U	17.7 U	17.7 U	7.07 U	17.7 U	7.07 U	17.0 J	17.7 U	30.3 U	NA	535	446	106	534	1,380	285	212	687 / 764	1,170	368	145
Arsenic - dissolved	8.00	4.10	3.07	3.10	2.54	2.59	2.28	2.33	1.95	2.45	NA	0.645 J / 0.564 J	0.323 J	0.165 J	0.162 U	0.162 U	0.162 U	0.162 U	0.162 U / 0.162 U	0.222 U	0.222 U	NA
Cadmium - dissolved	1.20	0.221 J	0.247 J	0.296 J	0.175 J	0.152 U	0.180 J	0.258	0.152 U	0.152 U	NA	0.061 U / 0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U	0.061 U	0.061 U	NA
Chromium - dissolved	Cr III: 27.4	4.29 U	4.29 U	4.29 U	2.49 J	4.29 U	1.72 U	1.83 J	4.29 U	4.29 U	NA	1.72 U / 1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U / 1.72 U	1.72 U	1.72 U	NA
Chromium VI - dissolved	Cr VI: 0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper - dissolved	3.10	6.18	1.59 J	1.43 J	1.70	1.37 J	1.33	1.28	1.26 U	2.27 U	NA	0.626 J / 0.635 J	0.514 J	1.66	0.553	1.33	0.505 U	0.505 U	0.505 U / 0.505 U	0.909 U	0.909 U	NA
Mercury - dissolved	0.03	NA	NA	NA	NA	NA	NA	NA	0.00031 J	0.00013 U	NA	NA	NA	NA	NA	NA	NA	NA	0.00014 U / 0.00014 U	0.13 U	0.00014 U	NA
Nickel - dissolved	8.20	NA	3.03 U	4.70 J	4.36	3.03 U	1.21 U	2.48 J	3.03 U	3.03 U	NA	NA	2.02 J	1.76 J	1.45 J	2.04 J	1.21 U	1.21 U	1.21 U / 1.21 U	1.21 U	1.21 U	NA
Lead - dissolved	8.10	1.49	0.101 U	0.152 U	0.061 U	0.152 U	0.061 U	0.089 J	0.152 U	0.227 U	NA	0.040 U / 0.040 U	0.040 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U	0.091 U	0.091 U	NA
Zinc - dissolved	81	17.7 U	17.7 U	17.7 U	7.07 U	17.7 U	7.07 U	11.5 J	17.7 U	30.3 U	NA	515 / 516	399	99.4	533	1310	278	167	627 / 664	1080	332	136
GRO/DRO - NWTPH-Dx/-Gx																						
Gasoline Range Organics	1000	NA	NA	NA	NA	NA	NA	NA	100 U	NA	NA	NA	NA	100 U	NA	NA	NA	NA	100 U / 100 U	NA	NA	NA
Diesel Range Organics	see total	NA	NA	NA	NA	NA	NA	NA	50 U	NA	NA	NA	NA	50 U	NA	NA	NA	NA	50 U / 50 U	NA	NA	NA
Diesel Range Organics w/ SGC	see total	NA	NA	NA	NA	NA	NA	NA	50 U	NA	NA	NA	NA	50 U	NA	NA	NA	NA	50 U / 50 U	NA	NA	NA
Motor Oil Organics (ORO)	see total	NA	NA	NA	NA	NA	NA	NA	250 U	NA	NA	NA	NA	250 U	NA	NA	NA	NA	250 U / 250 U	NA	NA	NA
Motor Oil Organics (ORO) w/ SGC	see total	NA	NA	NA	NA	NA	NA	NA	250 U	NA	NA	NA	NA	250 U	NA	NA	NA	NA	250 U / 250 U	NA	NA	NA
Total Dx (DRO + ORO)	See TPH Dx difference	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	NA	NA	NA
Total Dx (DRO + ORO) w/ SGC	500	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	NA	NA	NA
Total Dx Difference*	500	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	NA	NA	NA
VOCs																						
Benzene	1.6	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U / 1 U	NA	NA	NA
Toluene	102	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U / 1 U	NA	NA	NA
Ethylbenzene	21	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U / 1 U	NA	NA	NA
Xylenes, Total	106	NA	NA	NA	NA	NA	NA	NA	3 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	3 U / 3 U	NA	NA	NA
Chloroethane	14666	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	1 U	NA	1 U	1 U	1 U	1 U	1 U / 1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5440	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	1 U	NA	1 U	1 U	1 U	1 U	1 U / 1 U	1 U	1 U	1 U
1,1-Dichloroethane	11	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	1 U	NA	1 U	1 U	1 U	1 U	1 U / 1 U	1 U	1 U	1 U
1,1-Dichloroethene	130	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	1 U	NA	1 U	1 U	1 U	1 U	1 U / 1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)	3.5	NA	NA	NA	NA	0.2 U	0.2 U	0.2 U	0.2 U	NA	NA	NA	0.2 U	NA	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
trans-1,2-Dichloroethene	77	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	1 U	NA	1 U	1 U	1 U	1 U	1 U / 1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	182	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	2.5	NA	1.8	1 U	1.5	1.5	1 U / 1 U	1 U	1.3	2.1
Methylene chloride	100	NA	NA	NA	NA	5 U	5 U	5 U	5 U	NA	NA	NA	5 U	NA	5 U	5 U	5 U	5 U	5 U / 5 U	5 U	5 U	5 U
Tetrachloroethene	2.9	NA	NA	NA	NA	1 U	1 U	1 U	1 U	NA	NA	NA	1 U	NA	1.2	1.9	2.4	4.8	1 U / 1 U	3.1	3.1	5.8
Trichloroethane	No critera	NA	NA	NA	NA	1 U	1 U	NA	NA	NA	NA	NA	0.5 U	NA	1 U	1 U	NA	NA	NA	NA	NA	NA
Trichloroethene	0.70	NA	NA	NA	NA	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	NA	0.5 U	NA	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U / 0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	0.18	NA	NA	NA	NA	0.02 U	0.02 U	0.02 U	0.02 U	NA	NA	NA	0.59	NA	0.53	0.11	0.35	0.41	0.30 / 0.28	0.19	0.39	0.26

**Table 8 Summary of Monitoring Well Groundwater Samples
Bridge - Former Dawn Foods**

Sample ID	PCUL (ug/L)	MW-5										MW-6											
		MW-5 / DUP-0422 (duplicate)					MW-5 / DUP-0822 (duplicate)					DUP01-0624					DUP02-1222 (duplicate)						
		1/31/22	4/21/22	8/9/22	12/21/22	3/25/23	6/19/23	8/28/23	1/22/24	4/25/24	6/6/24	9/25/24	1/30/22	4/21/22	8/8/22	12/21/22	3/25/23	6/21/2023	8/30/23	1/10/24	4/24/24	6/7/24	
Sample results are in ug/L																							
Metals Total/Dissolved																							
Arsenic - total	See dissolved	2.08	0.681 J / 0.513 J	0.404 U / 0.182 J	0.297 J	0.555 J	0.980	0.719 J	0.162 U	0.434 J	0.43 J / 0.386 J	NA	0.504 J	1.04 J	0.416 J	0.294 J / 0.336 J	0.404 U	0.404 U	0.223 J	0.195 J	0.248 J	NA	
Cadmium - total	See dissolved	0.061 U	0.061 U / 0.061 U	0.152 U / 0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U	NA	0.152 U	0.152 U	0.061 U	0.061 U / 0.061 U	0.152 U	0.152 U	0.061 U	0.061 U	0.061 U	NA	
Chromium - total	See dissolved	1.72 U	1.72 U / 1.72 U	4.29 U / 1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U / 1.72 U	NA	4.29 U	4.29 U	2.29 J	1.72 U / 1.72 U	4.29 U	4.29 U	1.85 J	1.72 U	1.72 U	NA	
Copper - total	See dissolved	1.3	0.404 U / 0.404 U	1.26 U / 0.505 U	0.505 U	0.595 J	0.505 U	0.505 U	0.505 U	0.505 U	0.909 U	0.909 U / 0.909 U	NA	1.01 U	1.30 J	0.505 U	0.990 J / 0.945 J	1.26 U	1.26 U	0.505 U	0.505 U	0.909 U	NA
Mercury - total	See dissolved	NA	NA	NA	NA	NA	NA	0.00016 J	0.14 U	0.00014 U / 0.00014 U	NA	NA	NA	NA	NA	NA	NA	NA	0.00031 J	0.30 J	NA	NA	
Nickel - total	See dissolved	NA	1.21 U / 1.21 U	3.03 U / 1.21 U	1.21 U	1.86 J	1.21 U	1.21 U	1.21 U	1.21 U	1.21 U / 1.21 U	NA	NA	3.03 U	1.21 U	1.21 U / 1.21 U	3.03 U	3.03 U	1.32 J	1.21 U	1.21 U	NA	
Lead - total	See dissolved	2.09	0.142 / 0.040 U	0.152 U / 0.061 U	0.063 J	0.074 J	0.061 U	0.075 J	0.061 U	0.091 U	0.091 U / 0.091 U	NA	0.101 U	0.414	0.062 J	0.061 U / 0.061 U	0.599	0.152 U	0.061 U	0.061 U	0.091 U	NA	
Zinc - total	See dissolved	1,930	268 / 195	32.8 J / 36.9	240	684	638	286	108	56.3	178 / 163	69.2	17.7 U	17.7 U	7.07 U	7.07 U / 7.07 U	17.7 U	17.7 U	7.07 U	7.07 U	12.1 U	NA	
Arsenic - dissolved	8.00	1.98	0.568 J / 0.473 J	0.404 U / 0.182 J	0.309 J	0.443 J	0.860	0.584 J	0.162 U	0.408 J	0.396 J / 0.427 J	NA	0.286 J	0.241 J	0.367 J	0.189 J / 0.216 J	0.404 U	0.404 U	0.251 J	0.162 U	0.222 U	NA	
Cadmium - dissolved	1.20	0.061 U	0.061 U / 0.061 U	0.152 U / 0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U	NA	0.152 U	0.152 U	0.061 U	0.061 U / 0.061 U	0.152 U	0.152 U	0.061 U	0.061 U	0.061 U	NA	
Chromium - dissolved	Cr III: 27.4	1.72 U	1.72 U / 1.72 U	4.29 U / 1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U / 1.72 U	NA	4.29 U	4.29 U	1.90 J	1.72 U / 1.72 U	4.29 U	4.29 U	1.72 U	1.72 U	1.72 U	NA	
Chromium VI - dissolved	Cr VI: 0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Copper - dissolved	3.10	0.404 U	0.404 U / 0.983 J	1.26 U / 0.866 J	1.46	0.505 U	0.505 U	0.505 U	0.505 U	0.909 U	0.909 U / 0.909 U	NA	1.01 U	1.01 U	0.505 U	0.653 J / 0.707 J	1.26 U	1.26 U	0.505 U	0.505 U	0.909 U	NA	
Mercury - dissolved	0.03	NA	NA	NA	NA	NA	NA	NA	0.00013 U	0.14 U	0.00014 U / 0.00014 U	NA	NA	NA	NA	NA	NA	NA	0.00013 U	0.13 U	NA	NA	
Nickel - dissolved	8.20	NA	1.21 U / 1.21 U	3.03 U	1.52 J	1.21 U	1.21 U	1.21 U	1.21 U	1.21 U	1.21 U / 1.21 U	NA	NA	3.03 U	1.21 U	1.21 U / 1.21 U	3.03 U	3.03 U	1.23 J	1.21 U	1.21 U	NA	
Lead - dissolved	8.10	0.147	0.078 J / 0.093 J	0.152 U / 0.061 U	0.116 J	0.061 U	0.061 U	0.093 J	0.061 U	0.091 U	0.091 U / 0.091 U	NA	0.101 U	0.101 U	0.061 U	0.061 U / 0.061 U	0.152 U	0.152 U	0.061 U	0.061 U	0.091 U	NA	
Zinc - dissolved	81	1,880	122 / 103	34.9 J / 33.6	241	700	633	202	76.0	37.0	47.5 / 48.2	12.3 J	17.7 U	17.7 U	7.07 U	7.07 U / 7.07 U	17.7 U	17.7 U	7.07 U	7.07 U	12.1 U	NA	
GR0/DRO - NWTPH-Dx/-Gx																							
Gasoline Range Organics	1000	NA	100 U	100 U	NA	NA	NA	NA	100 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100 U	NA	NA	
Diesel Range Organics	see total	NA	2,100 x	330 x	120x / 96x *	NA	NA	NA	69x	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	NA	
Diesel Range Organics w/ SGC	see total	NA	50 U	NA	NA	NA	NA	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50 U	NA	NA	
Motor Oil Organics (ORO)	see total	NA	540 x	250 U	250 U / 250 U *	NA	NA	NA	250 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	250 U	NA	NA	
Motor Oil Organics (ORO) w/ SGC	see total	NA	250 U	NA	NA	NA	NA	NA	250 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	250 U	NA	NA	
Total Dx (DRO + ORO)	See TPH Dx difference	NA	2,640	330	120 / 96 *	NA	NA	NA	69 x	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	
Total Dx (DRO + ORO) w/ SGC	500	NA	250 U	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	
Total Dx Difference*	500	NA	2390	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	
VOCs																							
Benzene	1.6	NA	1 U	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	
Toluene	102	NA	1 U	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	
Ethylbenzene	21	NA	1 U / 1 U	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	NA	NA	
Xylenes, Total	106	NA	3 U	NA	NA	NA	NA	NA	3 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3 U	NA	NA	
Chloroethane	14666	NA	1 U / 1 U	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	1 U	1 U / 1 U *	1 U	NA	1 U	1 U	1 U	
1,1,1-Trichloroethane	5440	NA	1 U / 1 U	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	1 U	1 U / 1 U *	1 U	NA	1 U	1 U	1 U	
1,1-Dichloroethane	11	NA	1 U / 1 U	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	1 U	1 U / 1 U *	1 U	NA	1 U	1 U	1 U	
1,1-Dichloroethene	130	NA	1 U / 1 U	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	1 U	1 U / 1 U *	1 U	NA	1 U	1 U	1 U	
1,2-Dichloroethane (EDC)	3.5	NA	0.2 U / 0.2 U	NA	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	NA	NA	0.2 U	0.2 U / 0.2 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	
trans-1,2-Dichloroethene	77	NA	1.9 / 1.8	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	1 U	1 U / 1 U *	1 U	NA	1 U	1 U	1 U	
cis-1,2-Dichloroethene	182	NA	5.0 / 4.7	NA	10	6.3	4.1	2.8	1.6	1 U	1 U	1 U	1 U	NA	NA	1 U	1 U / 1 U *	1 U	NA	1 U	1 U	1 U	
Methylene chloride	100	NA	5 U / 5 U	NA	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NA	NA	7.1lc	5 U / 5 U *	5 U	NA	5 U	5 U	5 U	
Tetrachloroethene	2.9	NA	6.1 / 6.0	NA	5.9	9.8	9.1	20	1.0	8.4	11.0	11	NA	NA	NA	1 U	1 U / 1 U *	1 U	NA	1 U	1 U	1 U	
Trichloroethane	No critera	NA	1 U / 1 U	NA	1 U	1 U	NA	NA	1 U	1 U	1 U	NA	NA	NA	NA	1 U	1 U / 1 U *	1 U	NA	NA	1 U	1 U	
Trichloroethene	0.70	NA	1.7 / 1.7	NA	0.5 U	0.53	0.5 U	0.58	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA	NA	0.5 U	0.5 U / 0.5 U *	0.5 U	NA	0.5 U	0.5 U	0.5 U	
Vinyl chloride	0.18	NA	2.1 / 1.4	NA	6.9	5.0	6.8	8.2	4.9	2.3	5.8	5.5	NA	NA	NA	0.12	0.057 / 0.051 *	0.02 U	NA	0.094	0.02 U	0.020	

**Table 8 Summary of Monitoring Well Groundwater Samples
Bridge - Former Dawn Foods**

Sample ID	PCUL (ug/L)	MW-7						MW-8						MW-9						
		DUP03-0323 (duplicate)	DUP01-0823		DUP-0424		DUP01-0323 (duplicate)						DUP02-0323 (duplicate)							
Date Sampled		3/28/23	6/21/23	8/28/23	1/12/24	4/26/24	6/6/24	3/25/23	6/19/23	8/28/23	1/10/24	4/24/24	6/5/24	9/23/24	3/28/23	6/19/23	8/28/23	1/9/24	4/25/24	6/7/24
Sample results are in ug/L																				
Metals Total/Dissolved																				
Arsenic - total	See dissolved	0.448 J	0.439 J	0.669 J	0.497 J	0.772	0.628 J	8.12 / 8.55 *	4.94	9.72	5.08	2.99	4.12	NA	3.59	8.83	13.1	9.05	10.4	6.66
Cadmium - total	See dissolved	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U *	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	NA	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Chromium - total	See dissolved	1.72 U	1.97 J	4.82 J	1.72 U	1.72 U	1.72 U	1.72 U / 1.72 U *	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	NA	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U
Copper - total	See dissolved	0.655 J	0.505 U	0.506 J	0.570 J	1.21 J	0.926 J	0.966 J / 1.04 *	0.505 U	0.505 U	0.505 U	0.505 U	1.15 J	0.963 J	NA	0.556 J	2.58	0.505 U	0.699 J	0.909 U
Mercury - total	See dissolved	NA	NA	NA	0.00014 U	0.40 J	0.00014 U	NA	NA	0.00080	0.16 J	0.00014 U	NA	NA	NA	NA	0.00036 J	0.14 U	0.00029 J	
Nickel - total	See dissolved	1.21 U	1.21 J	1.21 U	1.12 U	1.21 U	1.21 U	2.08 J / 2.17 J *	1.84 J	1.87 J	1.72 J	1.94 J	1.21 U	NA	1.23 J	1.21 U	1.21 U	1.21 U	1.59 J	1.26 J
Lead - total	See dissolved	0.061 U	0.061 U	0.113 J	0.061 U	0.105 J	0.091 U	0.061 U / 0.061 U *	0.061 U	0.098 J	0.061 U	0.091 U	0.091 U	NA	0.061 U	0.132	0.081 J	0.099 J	0.091 U	0.091 U
Zinc - total	See dissolved	7.07 U	7.07 U	9.39 J	7.07 U	12.1 U	12.1 U	7.07 U / 7.07 U *	7.07 U	10.8 J	7.07 U	12.1 U	12.1 U	NA	7.07 U	9.03 J	8.84 J	7.07 U	12.1 U	12.1 U
Arsenic - dissolved	8.00	0.415 J	0.311 J	0.562 J	0.162 U	0.222 U	0.222 U	8.26 / 8.40 *	4.61	9.07	5.61	2.74	4.25	NA	3.31	9.62	13.4	8.50	10.6	6.6
Cadmium - dissolved	1.20	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U / 0.061 U *	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	NA	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U	0.061 U
Chromium - dissolved	Cr III: 27.4	1.72 U	1.72 U	4.31 J	1.72 U	1.72 U	1.72 U	1.72 U / 1.72 U *	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	NA	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U	1.72 U
Chromium VI - dissolved	Cr VI: 0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper - dissolved	3.10	0.521 J	0.505 U	0.505 U	0.505 U	0.909 U	0.909 U	0.748 J / 0.907 J *	0.505 U	0.505 U	0.505 U	0.909 U	0.909 U	NA	0.505 U	0.505 U	0.505 U	0.505 U	0.909 U	0.909 U
Mercury - dissolved	0.03	NA	NA	NA	0.00019 J	0.13 U	0.00014 U	NA	NA	0.00039 J	0.00014 U	0.00014 U	0.00014 U	NA	NA	NA	NA	0.00014 U	0.14 U	0.00014 U
Nickel - dissolved	8.20	1.40 J	1.21 U	1.21 U	1.21 U	1.21 U	1.21 U	2.10 J / 2.31 J *	1.88 J	1.71 J	1.59 J	1.91 J	1.21 U	NA	1.21 U	1.21 U	1.21 U	1.21 U	1.59 J	1.21 U
Lead - dissolved	8.10	0.061 U	0.061 U	0.225	0.061 U	0.091 U	0.091 U	0.061 U / 0.061 U *	0.061 U	0.112 J	0.061 U	0.091 U	0.091 U	NA	0.061 U	0.061 U	0.102 J	0.061 U	0.091 U	0.091 U
Zinc - dissolved	81	7.07 U	7.07 U	10.6 J	7.07 U	12.1 U	12.1 U	7.07 U / 7.07 U *	7.07 U	10.1	7.07 U	12.1 U	12.1 U	NA	7.07 U	7.07 U	9.71 J	7.07 U	12.1 U	12.1 U
GR0/DRO - NWTPH-Dx/-Gx																				
Gasoline Range Organics	1000	NA	NA	NA	100 U	NA	NA	2,300	1,500	1,300	1,900 U	2,900	2,900	NA	100 U / 100 U *	NA	100 U	100 U	100 U	100 U
Diesel Range Organics	see total	NA	NA	NA	50 U	NA	NA	NA	380 x	NA	650 x	760 x	1200x	NA	NA	NA	NA	50 U	50 U	50 U
Diesel Range Organics w/ SGC	see total	NA	NA	NA	50 U	NA	NA	NA	NA	NA	550 x	810 x	1000x	NA	NA	NA	NA	50 U	NA	NA
Motor Oil Organics (ORO)	see total	NA	NA	NA	250 U	NA	NA	NA	590	NA	250 U	250 U	250 U	NA	NA	NA	NA	250 U	250 U	250 U
Motor Oil Organics (ORO) w/ SGC	see total	NA	NA	NA	250 U	NA	NA	NA	NA	NA	250 U	250 U	250 U	NA	NA	NA	NA	250 U	NA	NA
Total Dx (DRO + ORO)	See TPH Dx difference	NA	NA	NA	ND	NA	NA	NA	590	NA	650 x	760	1200x	NA	NA	NA	NA	ND	NA	NA
Total Dx (DRO + ORO) w/ SGC	500	NA	NA	NA	ND	NA	NA	NA	NA	NA	550 x	810	1000x	NA	NA	NA	NA	ND	NA	NA
Total Dx Difference*	500	NA	NA	NA	ND	NA	NA	NA	590	NA	100	50	200	NA	NA	NA	NA	ND	NA	NA
VOCs																				
Benzene	1.6	NA	NA	NA	1 U	NA	NA	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	1 U	NA	NA
Toluene	102	NA	NA	NA	1 U	NA	NA	NA	NA	NA	6.5	NA	NA	NA	NA	NA	NA	1 U	NA	NA
Ethylbenzene	21	NA	NA	NA	1 U	NA	NA	NA	NA	NA	2.5	NA	NA	NA	NA	NA	NA	1 U	NA	NA
Xylenes, Total	106	NA	NA	NA	3 U	NA	NA	NA	NA	NA	6.1	NA	NA	NA	NA	NA	NA	3 U	NA	NA
Chloroethane	14666	1 U / 1 U *	NA	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	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5440	1 U / 1 U *	NA	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	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	11	1 U / 1 U *	NA	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	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	130	1 U / 1 U *	NA	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	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)	3.5	0.2 U / 0.2 U	NA	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	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,2-Dichloroethene	77	1 U / 1 U *	NA	1 U / 1 U	1 U	1 U / 1 U	1 U	1 U	1.5	1 U	1.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	182	1 U / 1 U *	NA	1 U / 1 U	1 U	1 U / 1 U	1 U	9.0	14	4.4	30	3.6	3.8	4.6	6.1	12	6.1	11	18	41 / 39
Methylene chloride	100	5 U / 5 U *	NA	5 U / 5 U	5 U	5 U / 5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	2.9	1 U / 1 U *	NA	1 U / 1 U	1 U	1 U / 1 U	1 U	2.6	2.2	5.6	1 U	3.6	2.6	4.3	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethane	No criteria	1 U / 1 U *	NA	1 U / 1 U	1 U	1 U / 1 U	NA	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U	NA
Trichloroethene	0.70	0.5 U / 0.5 U *	NA	0.5 U / 0.5 U	0.5 U	0.5 U / 0.5 U	0.5 U	0.98	1.8	1.1	1.2	1.0	1.0	0.9	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Vinyl chloride	0.18	0.14 / 0.15	NA	0.61 / 0.59	0.02 U	0.02 U / 0.02 U	0.02 U	1.5	5.0	1.4	22	5.2	2.7	0.95	12	26	19	19	36	47 / 44

**Table 8 Summary of Monitoring Well Groundwater Samples
Bridge - Former Dawn Foods**

Sample ID	PCUL (ug/L)	MW-10	MW-11	PD/PD1					SEEP (Vicinity of MW-1)		SEEP-MW1	SEEP-MW2	LDW
		Date Sampled	9/23/24	9/23/24	10/19/23	1/10/24	4/26/24	6/6/24	9/24/24	4/26/24	6/6/24	9/24/24	9/23/24
Sample results are in ug/L													
Metals Total/Dissolved													
Arsenic - total	See dissolved	NA	NA	0.290 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium - total	See dissolved	NA	NA	0.061 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium - total	See dissolved	NA	NA	1.72 U	NA	NA	NA	NA	NA	NA	1.72 U	4.29 U	NA
Copper - total	See dissolved	NA	NA	0.505 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury - total	See dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel - total	See dissolved	NA	NA	1.21 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead - total	See dissolved	NA	NA	0.061 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc - total	See dissolved	NA	12.1 U	7.07 U	7.07 U	NA	12.1 U	1.72 U	28.3	242	NA	NA	NA
Arsenic - dissolved	8.00	NA	NA	0.226 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium - dissolved	1.20	NA	NA	0.061 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium - dissolved	Cr III: 27.4	NA	NA	1.72 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium VI - dissolved	Cr VI: 0.36	NA	NA	NA	NA	NA	0.113	0.057	NA	0.051 U	0.89	0.642	0.129
Copper - dissolved ^b	3.10	NA	NA	0.505 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury - dissolved	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel - dissolved	8.20	NA	NA	1.21 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead - dissolved	8.10	NA	NA	0.061 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc - dissolved	81	NA	12.1 U	7.07 U	7.07 U	12.1 U	12.1 U	NA	26.6	12.1 U	NA	NA	NA
GRO/DRO - NWTPH-Dx/-Gx													
Gasoline Range Organics	1000	NA	NA	NA	100 U	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	see total	NA	NA	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics w/ SGC	see total	NA	NA	NA	50 U	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil Organics (ORO)	see total	NA	NA	NA	250 U	NA	NA	NA	NA	NA	NA	NA	NA
Motor Oil Organics (ORO) w/ SGC	see total	NA	NA	NA	250 U	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx (DRO + ORO)	See TPH Dx difference	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx (DRO + ORO) w/ SGC	500	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Total Dx Difference*	500	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
VOCs													
Benzene	1.6	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	102	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	21	NA	NA	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, Total	106	NA	NA	NA	3 U	NA	NA	NA	NA	NA	NA	NA	NA
Chloroethane	14666	1 U	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	5440	1 U	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	11	1 U	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	130	1 U	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane (EDC)	3.5	0.2 U	0.2 U	NA	0.2 U	NA	NA	NA	NA	NA	NA	NA	NA
trans-1,2-Dichloroethene	77	1 U	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	182	48	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	100	5 U	5 U	NA	5 U	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	2.9	1.7	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethane	No critiera	NA	1 U	NA	1 U	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	0.70	0.56	0.5 U	NA	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	0.18	24	0.54	NA	0.037	NA	NA	NA	NA	NA	NA	NA	NA

**Table 8 Summary of Monitoring Well Groundwater Samples
Bridge - Former Dawn Foods**

Notes:

All results in ug/L (micrograms per liter)

Bold = detection

Shading denotes a detected exceedance of a screeni

Cr VI = Chromium VI (hexavalent chromium); Cr III = Chromium trivalent. Both screening levels are presented, the lowest is used for shading.

* Indicates duplicate value with associated normal sample.

^b - Filter blank results from February 2022 sampling included dissolved copper results greater than the method reporting limit.

g - The presence of the analyte may be due to carryover from previous sample injections.

Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW. These are based on the Feb 5, 2025 version. Source: <https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

MTCA - Model Toxics Control Act

ND = Not detected

U = laboratory detection limit

J = reported concentration is an estimate.

NC - No Criterion

NA = Not analyzed

Ca = The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

x = Sample chromatographic pattern does not resemble the fuel standard used for quantitation.

lc - The presence of the analyte is likely due to laboratory contamination.

ht - The re-run analysis was performed outside the method holding time requirement.

H - The analysis was performed outside of the method holding time requirement

Total Dx - Total Diesel; SGC - Silica Gel Cleanup

TPH GRO - Total Petroleum Hydrocarbons Gasoline Range Organics; TPH DRO - Total Petroleum Hydrocarbons Diesel Range Organics

TPH Dx difference is the difference of total Dx with and without SGC. If no SGC value is available, zero is assumed for that component.

VOCs -Volatile Organic Compounds

**Table 9 First Quarter Monitoring Well Groundwater Sample Results - Metals Testing Methods
Bridge - Former Dawn Foods**

Sample ID	PCUL (ug/L)	MW-1		MW-2		MW-3		MW-4		MW-5		MW-6	
		2/1/2022	2/1/2022	1/31/2022	1/31/2022	1/30/2022	1/30/2022	2/2/2022	2/2/2022	1/31/2022	1/31/2022	1/30/2022	1/30/2022
Specific Conductance (uS/cm)		8,160		12,300		22,900		1,670		3,300		19,600	
Sample results are in ug/L													
Metals Total/Dissolved													
<i>Laboratory - Analytical Method for Metals Only</i>		6020B	1638 Mod	6020B	1638 Mod	6020B	1638 Mod	6020B	1638 Mod	6020B	1638 Mod	6020B	1638 Mod
Arsenic - total	See dissolved	12.5	1.70	20.1	3.14	37.2	3.06	3.38 / 3.18	0.586 J	9.51	2.08	31.1	0.504 J
Cadmium - total	See dissolved	10 U	0.179 J	10 U	0.061 U	10 U	0.168 J	1 U / 1 U	0.061 U	1 U	0.061 U	10 U	0.152 U
Chromium - total	See dissolved	10 U	2.27 J	10 U	1.72 U	10 U	4.29 U	5 U / 5 U	1.72 U	10 U	1.72 U	10 U	4.29 U
Copper - total	See dissolved	8.42	4.12	6.88	1.10	50 U	1.09 J	5 U / 5 U	0.404 U	5 U	1.3	6.48	1.01 U
Mercury - total	See dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel - total	See dissolved	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead - total	See dissolved	1 U	0.332	10 U	0.081 J	10 U	0.101 U	1 U / 1 U	0.040 U	1.72	2.09	10 U	0.101 U
Zinc - total	See dissolved	234	278	5 U	7.07 U	50 U	17.7 U	522 / 537	535	2,020	1,930	5 U	17.7 U
Arsenic - dissolved	8.0	10.4	1.23	19.8	3.37	36.0	4.10	2.14 / 2.22	0.645 J / 0.564 J	5.25	1.98	28.2	0.286 J
Cadmium - dissolved	1.2	10 U	0.175 J	10 U	0.071 J	10 U	0.221 J	1 U / 1 U	0.061 U / 0.061 U	1 U	0.061 U	10 U	0.152 U
Chromium - dissolved	Cr III: 27.5	10 U	1.72 U	10 U	1.72 U	10 U	4.29 U	1.02 / 1 U	1.72 U / 1.72 U	1 U	1.72 U	10 U	4.29 U
Chromium VI - dissolved	Cr VI: 0.36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper - dissolved ^a	3.1	5 U	2.30	50 U	1.13	50 U	6.18	5 U / 5 U	0.626 J / 0.635 J	5 U	0.404 U	50 U	1.01 U
Mercury - dissolved	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel - dissolved	8.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead - dissolved	5.6	10 U	0.040 U	10 U	0.040 U	10 U	1.49	1 U / 1 U	0.040 U / 0.040 U	1 U	0.147	10 U	0.101 U
Zinc - dissolved	81	217	260	50 U	7.07 U	50 U	17.7 U	500 / 509	515 / 516	1,900	1,880	50 U	17.7 U

Notes:

All results in ug/L (micrograms per liter)

Bold = detection

Shading denotes a detected exceedance of a screeni

Cr VI = Chromium VI (hexavalent chromium); Cr III = Chromium trivalent. Both screening levels are presented, the lowest is used for shading.

^a - Filter blank results from February 2022 sampling included dissolved copper results greater than the method reporting limit.

Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW.

<https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

MTCA - Model Toxics Control Act

ND = Not detected

U = laboratory detection limit

J = reported concentration is an estimate.

NA = Not analyzed

uS/cm = microsiemens per centimeter

**Table 10 Hexavalent Chromium Groundwater and Soil Results
Bridge - Former Dawn Foods**

Sample ID		RI-SB-08	RI-SB-07	MW-1	MW-1	MW-1	MW-1	MW-2	MW-2	MW-2	MW-5/Dup01-0225	PD-1	PD-1	SEEP	SEEP-MW1	SEEP-MW2	DW-River	
Sample Depth		5-10	10-15															
Sample Date		2/29/24	2/29/24	4/26/24	6/6/24	9/24/24	2/26/25	4/24/24	6/5/24	9/23/24	2/26/25	6/6/24	9/24/24	6/6/24	9/24/24	9/23/24	6/6/24	
Compound	PCUL (Vadose/Saturated for soil)	Units	Saturated	Saturated														
Hexavalent Chromium - soil	Cr III: 550/27 Cr VI: 0.14/0.0069	mg/kg	0.648	0.688	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Chromium - soil	Cr III: 550/27 Cr VI: 0.14/0.0069	mg/kg	20.8	19.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Hexavalent Chromium - water (dissolved)	Cr III: 27.4 Cr VI: 0.36	ug/L	0.5 U	0.5 U	1.49	0.265	0.204	0.25	1.51	0.522	0.645	0.025 U/0.025 U	0.113	0.057	0.051 U	0.89	0.642	0.129
Chromium - water (dissolved)	Cr III: 27.4 Cr VI: 0.36	ug/L	1.72 U	NA	1.72 U	1.72 U	1.72 U *	1.72 U	1.72 U	1.72 U	4.29 U *	1.72 U/1.72 U	NA	1.72 U *	NA	1.72 U *	4.29 U *	NA

Notes:

Bold = detection

Shading indicates a detected exceedance of a screen

Preliminary Cleanup Levels (pCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW.

Source: <https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

Cr VI = Chromium VI (hexavalent chromium); Cr III = Chromium three. Both screening levels are presented, the lowest is used for shading.

ug/L = micrograms per liters

mg/kg = milligrams per kilograms

U = laboratory detection limit

MTCA - Model Toxics Control Act

NA = Not analyzed

* only total analyzed

Table 11 SVOC Monitoring Well Groundwater Sample Results
Bridge - Former Dawn Foods

Sample ID	PCUL (ug/L)	MW-1	MW-2	MW-3	MW-3	MW-4	MW4 (DUP-0124)	MW-5	MW-5	MW-6	MW-7	MW-8	MW-9	PD-1
Date Sampled		1/10/2024	1/22/2024	1/12/2024	2/26/2025	1/11/2024	1/11/2024	1/22/2024	4/21/2022	1/10/2024	1/12/2024	1/10/2024	1/9/2024	1/10/2024
SVOCs - PAHs														
Acenaphthene	5.3	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.03	0.034	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Acenaphthylene	No criteria	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Anthracene	2.1	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(ghi)perylene	No criteria	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Dibenzofuran	3.1	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Fluoranthene	1.8	0.02 U	0.02 U	0.026	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Fluorene	3.7	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
1-Methylnaphthalene	0.17	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	5.9	0.2 U	0.2 U
2-Methylnaphthalene	14.0	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
Naphthalene	1.4	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
Phenanthrene	No criteria	0.02 U	0.02 U	0.023	0.05 U	0.02 U	0.02 U	0.024	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Pyrene	2.0	0.02 U	0.02 U	0.024	0.02 U	0.02 U	0.02 U	0.02	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(a)pyrene	0.00016	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(a)anthracene	0.000160	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(b)fluoranthene	0.000160	0.02 U	0.02 U	0.024 J	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Benzo(k)fluoranthene	0.001300	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Chrysene	0.016000	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Dibenzo(a,h)anthracene	0.000016	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Indeno(1,2,3-cd)pyrene	0.000160	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Total cPAH TEQ	PQL = 0.009	ND	ND	0.0024	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Other SVOCs														
Benzoic acid	589.3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA	10 U	10 U	10 U	10 U	10 U
Benzyl alcohol	56.4	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
Bis(2-chloroethoxy)methane	No criteria	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bis(2-chloroethyl) ether	0.06	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Bis(2-ethylhexyl) phthalate	0.046	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	NA	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
4-Bromophenyl phenyl ether	No criteria	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Butylbenzyl phthalate	0.013	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
Carbazole	No criteria	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	NA	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
4-Chloroaniline	No criteria	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA	20 U	20 U	20 U	20 U	20 U
4-Chloro-3-methylphenol	36.0	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
2-Chloronaphthalene	100.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Chlorophenol	17.0	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
4-Chlorophenyl phenyl ether	No criteria	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichlorobenzene	4.5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichlorobenzene	2.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene	5.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4-Dichlorophenol	10.0	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
Diethyl phthalate	92.6	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
Dimethyl phthalate	59.0	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
2,4-Dimethylphenol	No criteria	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
2,4-Dinitrophenol	100.0	6 U	6 U	6 U	6 U	6 U	6 U	6 U	NA	6 U	6 U	6 U	6 U	6 U
2,4-Dinitrotoluene	0.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
2,6-Dinitrotoluene	No criteria	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Di-n-butyl phthalate	No criteria	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
Di-n-octyl phthalate	2.3	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
Hexachlorobenzene	0.000005	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Hexachlorobutadiene	0.01	0.2 Ujl	0.2 U	0.2 Ujl	0.2 Ujl	0.2 Ujl	0.4 U	0.2 U	NA	0.2 Ujl	0.2 Ujl	0.2 Ujl	0.2 Ujl	0.2 Ujl
Hexachlorocyclopentadiene	1.00	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	1.2 U	0.6 U	NA	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Hexachloroethane	0.020	0.2 Ujl	0.2 U	0.2 Ujl	0.2 Ujl	0.2 Ujl	0.4 U	0.2 U	NA	0.2 Ujl	0.2 Ujl	0.2 Ujl	0.2 Ujl	0.2 Ujl
Isophorone	110.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Methylphenol	9.8	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
3-Methylphenol + 4-Methylphenol	No criteria	4 U	4 U	4 U	4 U	4 U	4 U	4 U	NA	4 U	4 U	4 U	4 U	4 U
2-Nitroaniline	No criteria	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
3-Nitroaniline	No criteria	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA	20 U	20 U	20 U	20 U	20 U
4-Nitroaniline	No criteria	20 U	20 U	20 U	20 U	20 U	20 U	20 U	NA	20 U	20 U	20 U	20 U	20 U
Nitrobenzene	100.0	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2-Nitrophenol	No criteria	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
4-Nitrophenol	No criteria	6 U	6 U	6 U	6 U	6 U	6 U	6 U	NA	6 U	6 U	6 U	6 U	6 U
N-Nitrosodiphenylamine	0.6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
N-Nitroso-di-n-propylamine	0.058	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
4,6-Dinitro-2-methylphenol	No criteria	6 U	6 U	6 U	6 U	6 U	6 U	6 U	NA	6 U	6 U	6 U	6 U	6 U
Pentachlorophenol	0.002	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1 U	1 U	1 U	1 U	1 U
Phenol	101.1	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
2,2'-Oxybis(1-chloropropane)	No criteria	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
2,4,5-Trichlorophenol	600.0	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
2,4,6-Trichlorophenol	0.28	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2 U	2 U	2 U	2 U	2 U
1,2,4-Trichlorobenzene	0.037	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	NA	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U

Notes:

All results in ug/L.

Bold = detection

Shading denotes a detected exceedance of a screen

MTCA screening levels are from Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW.

Source: <https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

MTCA - Model Toxics Control Act

SVOCs - Semi Volatile Organic Compounds

ug/L = micrograms per liters

NA = Not analyzed

U = laboratory detection limit

ND = Not detected

J = reported concentration is an estimate.

**Table 12 TBT and PCB Monitoring Well Groundwater Sample Results
Bridge - Former Dawn Foods**

Sample ID	Screening Level (ug/L)	MW-1	MW-2	MW-3	MW-3	MW-3	MW-4 / DUP-0124 (duplicate)	MW-5 / DUP-0422 (duplicate)	MW-5	MW-6	MW-7	MW-8	MW-9	PD/PD-1
Date Sampled		1/10/2024	1/22/2024	1/12/2024	4/25/2024	6/5/2024	1/11/2024	4/21/2022	1/22/2024	1/10/2024	1/12/2024	1/10/2024	1/9/2024	1/10/2024
Butyl Tins (ug/L)														
Tributyltin	7.40E-03	0.0052 U	0.0052 U	NA	NA	NA	0.0052 U	NA	0.0052 U	0.0052 U	NA	NA	NA	0.0052 U
Dibutyltin	NC	0.0077 U	0.0077 U	NA	NA	NA	0.0077 U	NA	0.0077 U	0.0077 U	NA	NA	NA	0.0157
Butyltin	NC	0.0559	0.0226	NA	NA	NA	0.0094	NA	0.0079	0.0180	NA	NA	NA	0.0077
Tetrabutyltin	NC	0.0300 U	0.0300 U	NA	NA	NA	0.0300 U	NA	0.0300 U	0.0300 U	NA	NA	NA	0.0300 U
PCBs (ug/L)														
Aroclor 1221	see total	0.03 JU	0.03 JU	0.03 UJ	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Aroclor 1232	see total	0.03 JU	0.03 JU	0.03 UJ	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Aroclor 1016	see total	0.03 JU	0.03 JU	0.03 UJ	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Aroclor 1242	see total	0.03 JU	0.03 JU	0.03 UJ	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Aroclor 1248	see total	0.03 JU	0.03 JU	0.03 UJ	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Aroclor 1254	see total	0.03 JU	0.03 JU	0.04 J	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Aroclor 1260	see total	0.03 JU	0.03 JU	0.03 UJ	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Aroclor 1262	see total	0.03 JU	0.03 JU	0.03 UJ	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Aroclor 1268	see total	0.03 JU	0.03 JU	0.03 UJ	0.1 U	0.013 UJ	0.03 UJ / 0.03 UJ	0.1 U	0.03 JU	0.03 JU	0.03 JU	0.03 JU	0.03 JU	NA
Total PCBs	PQL = 0.052	ND	ND	0.04 J	ND	ND	ND / ND	0.1 U	ND	ND	ND	ND	ND	NA

Notes:

All results in ug/L (micrograms per liter)

Bold = detection

Shading denotes a detected exceedance of a screeni

* Indicates duplicate value with associated normal sample.

MTCA screening levels are from Preliminary Cleanup Levels (PCUL) for Lower Duwamish Waterway workbook, these have been developed by Ecology specifically for the LDW. Source: <https://apps.ecology.wa.gov/cleanupsearch/site/1643#site-documents>.

MTCA - Model Toxics Control Act

ND = Not detected

U = laboratory detection limit

NC - No Criterion

J = reported concentration is an estimate.

PQL for tributyltin is based on Analytical Resources confirmation on April 2024

PCB = polychlorinated biphenyls

TBT = Tributyltin

**Table 13 Dioxin and Furan Monitoring Well Groundwater Sample Results
Bridge - Former Dawn Foods**

	Screening Level (pg/L)	MW-4	MW-3	MW-3	MW-3	MW-3	MW-3	SEEP-MW-3	Duwamish Waterway
Date Sampled		1/11/2024	1/11/2024	4/25/2024	6/5/2024	6/5/2024	9/23/2024	9/23/2024	4/26/2024
Sample results are in pg/L									
Dioxins/Furans									
OCDF	See Total Dioxin/Furan TEQ	ND	1330	151	ND	7.18 J	160	25.7	ND
OCDD	See Total Dioxin/Furan TEQ	ND	18900 B	2290	378 B	143 B	1100	313	62.1 B
Total Dioxin/Furan TEQ	0.005	ND	24.16	2.41	0.4	0.14	1.41	0.52	0.09

Notes:

B - This analyte was detected in the method blank.

J - Estimated concentration value detected below the reporting limit.

Total Dioxin/Furan TEQ are calculated with the EMPC value treated as a ND consistent with guidance (Implementation Memo #11, dated July 22, 2025). ND = 1/2 EDL.

ND = analyte not detected at or above reporting limit.

All results are in pg/L (picogram/liter)

**Table 14 Summary of SubSlab Vapor Intrusion Assessment Results
Bridge - Former Dawn Foods**

Compounds	Method C Screening Level (sub slab) ug/m ³	Restroom		Office		Warehouse - IA4		Warehouse - IA5	Warehouse - IA6
		BR-SS-0620	BR-SS-0524	OF-SS-0620	OF-SS-0524	WH-SS-0620	WH04-SS-0524	WH05-SS-0524	WH06-SS-0524
		6/27/2020	5/2/2024	6/27/2020	5/2/2024	6/27/2020	5/2/2024	5/2/2024	5/2/2024
		ug/m ³	ug/m ³	ug/m ³	ug/m ³	ug/m ³	ug/m ³	ug/m ³	ug/m ³
cis-1,2-Dichloroethene	1,300	150	82	29	68	3.2 U	2.9 U	2.9 U	5.9 U
1,2-Dichloroethane (EDC)	32	1.6 U	15 U	1.7 U	15 U	0.33 U	7.3	3 U	6.1 U
Tetrachloroethene	1,300	5,900	6,900 E	2,100	6,600 E	570	460	240	3,100 E
Trichloroethene	67	810	650	290	790	220	130	3	88
Vinyl chloride	95	10 U	9.2 U	10 U	9.2 U	2.1 U	1.8 U	1.9 U	3.8 U
Benzene	110	12 U	12 U	13 U	12 U	2.6 U	2.3 U	2.3 U	4.8 U
Ethylbenzene	33,000	17 U	11,000 E	18 U	1,800	3.5 U	3.1 U	3.2 U	6.5 U
m,p-Xylene	3,300	34 U	31,000 E	36 U	12,000 E	7 U	6.3 U	6.3 U	13 U
o-Xylene	3,300	17 U	9,300 E	18 U	4,200	3.5 U	3.1 U	3.2 U	6.5 U
Naphthalene	25	10 U	9.4 U	11 U	9.4 U	2.1 U	1.9 U	1.9 U	3.9 U
<i>Analysis For Volatile Compounds By Method MA-APH</i>									
APH EC5-8 aliphatics/ACGIH C5-8 aliphatics	NV	6,400	3,200	2,000	2,800	990	760	620	1,200
APH EC9-12 aliphatics/ACGIH C9-15 aliphatics	NV	1,400 U	900	1,400 U	1,100	580	180 U	180 U	850
APH EC9-10 aromatics/ACGIH C9-15 aromatics	NV	970 U	900 U	1,000 U	900 U	200 U	180 U	180 U	370 U
Total TPH	NV ^a	6,400	4,100	2,000	3,900	1,570	760	620	2,050

Notes:

ug/m³ = micrograms per cubic meter

Bold = detected compound

TPH = Total Petroleum Hydrocarbons

µg/m³ = micrograms per cubic meter of air

E = The result is estimated and above the instrument calibration range

a Ecology has not developed a TPH vapor intrusion screening level for commercial or industrial land use. In the absence of a MTCA screening level, indoor vapor sample results from July 2023 were evaluated on a point-by-point basis against vapor risk using spreadsheets developed by Ecology and provided in the December 11, 2023 comments (Ecology 2023). See Appendix E.

neg = average ambient concentrations exceed the indoor air measured value.

Shade = detection exceeds indoor air Method C

TPH = Total Petroleum Hydrocarbons (sum of detected aliphatics and aromatic results)

**Table 15 Summary of Vapor Intrusion Assessment Results
Bridge - Former Dawn Foods**

Compounds	MTCA Screening Level (indoor air) Method C ug/m ³	IA3 - Warehouse SE				Woman's Restroom				Office				IA4 - Warehouse Center/Eastern			IA5 - Warehouse Center/Stairs to Office			IA6 - Warehouse Center			IA7 - Indoor Warehouse Fire Sprinkler		IA8 Indoor Warehouse Outside Test Kitchen		
		WH-IA-0620	IA3-061221	IA3-070423	IA3-050124	BR-IA-0620	IA1-061221	IA1-070423	IA1-050124	OF-IA-0620	IA2-061221	IA2-070423	IA2-050124	IA4-061221	IA4-070423	IA4-050124	IA5-061221	IA5-070423	IA5-050124	IA6-061221	IA6-070423	IA6-050124	IA7-070423	IA7-050124	IA8-070423	IA8-050124	
		6/27/2020	6/21/2021	7/4/2023	5/1/2024	6/27/2020	6/21/2021	7/4/2023	5/1/2024	6/27/2020	6/21/2021	7/4/2023	5/1/2024	6/21/2021	7/4/2023	5/1/2024	6/21/2021	7/4/2023	5/1/2024	6/21/2021	7/4/2023	5/1/2024	7/4/2023	5/1/2024	7/4/2023	5/1/2024	
cis-1,2-Dichloroethene	40	0.4 U	0.4 U	0.4 U	0.4 U	0.56 U	0.4 U	0.4 U	0.4 U	<0.53	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U		
1,2-Dichloroethane (EDC)	0.96	0.265	0.2	0.382	0.205	0.175	0.09	0.12	0.085	0.185	0.08	0.122	0.045	0.26	0.352	0.205	0.11	0.272	0.125	0.06	0.072	0.045	0.008	0.052	0.012		
Tetrachloroethene	40	6.8 U	6.8 U	6.8 U	6.8 U	9.5 U	7.1	6.8 U	6.8 U	6.8 U	8.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U	6.8 U		
Trichloroethene	2.00	0.27 U	0.13	0.14	0.11 U	0.37	0.38	0.17	0.11	0.33	0.34	0.19	0.11 U	0.15	0.12	0.11 U	0.14 U	0.14	0.11 U	0.11 U	0.11 U	0.11 U	0.13	0.11 U	0.11 U		
Vinyl chloride	2.84	0.26 U	0.26 U	0.13 U	0.26 U	0.36 U	0.26 U	0.13 U	0.26 U	0.26 U	0.13 U	0.13 U	0.26 U	0.13 U	0.26 U	0.13 U	0.13 U	0.13 U	0.26 U	0.13 U	0.26 U	0.13 U	0.26 U	0.13 U	0.26 U		
Benzene	3.210	0.75	0.06	0.62	0.32 U	0.63	neg	neg	0.42	0.68	0.42 U	neg	1	0.06	0.62	0.32 U	neg	0.52	0.32	neg	0.01	0.32 U	0.02	0.32 U	0.01		
Ethylbenzene	1000	0.43 U	0.43 U	0.08	0.46	0.61 U	0.43 U	neg	0.58	0.43 U	0.56 U	neg	0.57	0.43 U	0.08	0.43 U	0.56 U	0.1	0.43 U	0.43 U	0.09	0.43 U	0.1	0.43 U	0.1		
m,p-Xylene	100	1.1	0.87 U	0.75	1.7	1.2	0.87 U	neg	2.1	1.1	1.1 U	neg	2.1	0.87 U	0.65	1.4	1.1 U	0.75	1.3	0.87 U	0.55	1.1	0.65	1.1	0.65		
o-Xylene	100	0.44	0.43 U	0.19	0.65	0.61 U	0.43 U	neg	0.76	0.46	0.56 U	neg	0.76	0.43 U	0.23	0.5	0.56 U	0.28	0.46	0.43 U	0.18	0.43 U	0.22	0.43 U	0.25		
Naphthalene	0.74	0.23	0.04	0.13	0.17	0.25	0.08	neg	0.14	0.34	0.13	neg	0.29	0.02	neg	0.17	0.005	0.170	0.22	0.09	neg	0.18	0.200	0.12	0.17		
<i>Analysis For Volatile Compounds By Method MA-APH</i>																											
APH EC5-8 aliphatics/ACGIH C5-8 aliphatics	NV	140	11	102	75 U	120	31	22	75 U	130	21	12	88	21	122	83	11	142	75 U	31	82	77	82	76	72	75 U	
APH EC9-12 aliphatics/ACGIH C9-15 aliphatics	NV	130	200	25 U	25 U	130	73	25 U	25 U	110	91	25 U	25 U	240	25 U	25 U	320	25 U	25 U	310	25 U	25 U	68	25 U	55	25 U	
APH EC9-10 aromatics/ACGIH C9-15 aromatics	NV	25 U	25 U	25 U	45	35 U	25 U	25 U	47	25 U	32 U	25 U	36	25 U	25 U	48	32 U	25 U	53	27	25 U	37	25 U	27	25 U	31	
TPH	NV ^a	272.5	211.1	103.8	45.0	252.1	104.1	22.0	47.0	242.6	112.1	12.0	124.0	261.1	123.6	131.0	331.0	143.8	53.0	341.1	82.8	114.0	151.2	103.0	128.2	31.0	
TPH - Risk Factors	MTCA Commercial/Industrial	Not Evaluated	Not Evaluated	pass	pass	Not Evaluated	Not Evaluated	pass	pass	Not Evaluated	Not Evaluated	pass	pass	Not Evaluated	pass	pass	Not Evaluated	pass	pass	Not Evaluated	pass	pass	pass	pass	pass	pass	

Notes:
 Shade = detection exceeds indoor air Method C
 U = laboratory detection limit
 µg/m³ = micrograms per cubic meter of air
 NV = no value available
Bold = detected compound
 neg = average ambient concentrations exceed the indoor air measured value.
 TPH = Total Petroleum Hydrocarbons (sum of detected aliphatics and aromatic results)
 Results shown have been corrected for ambient air affects and duplicates are not shown. Only detected compounds - detected in indoor air or subsurface vapor - are shown.
 a Ecology has not developed a TPH vapor intrusion screening level for commercial or industrial land use. In the absence of a MTCA screening level, indoor vapor sample results from July 2023 were evaluated on a point-by-point basis against vapor risk using spreadsheets developed by Ecology and provided in the December 11, 2023 comments (Ecology 2023). See Appendix E.

Table 16 Potentially Applicable Requirements

Potentially Applicable Requirements for Cleanup Levels			
Medium	Standard/ Criterion	Citation	Comments
Soil	State of Washington requirements for establishing numeric or risk-based goals and selecting cleanup actions.	Model Toxics Control Act (WAC 173-340, Sections 740 and 745, 747)	Relevant and appropriate to site remediation.
Groundwater and surface water	State of Washington requirements for establishing numeric or risk-based goals and selecting cleanup actions.	Model Toxics Control Act (WAC 173-340, Sections 720 and 730)	Relevant and appropriate to site remediation.
Surface Water	State water quality standards; conventional water quality parameters and toxic criteria.	Washington Water Pollution Control Act - State Water Quality Standards for Surface Water (RCW 90.48) WAC 173-201A	Narrative and quantitative limits for surface water protection.
Surface Water	Ambient water quality criteria for the protection of aquatic organisms and human health.	Federal Water Pollution Control Act/ Clean Water Act (CWA) §304 (33 USC 1251B1376;40 CFR 100B149) 40 CFR 131	Ambient water criteria and Water Quality Standards for the human consumption of organisms at 1 X 10 ⁻⁶ risk.
Surface Water	Ambient water quality criteria for the protection of aquatic organisms and human health.	National Toxics Rule 40 CFR 131	Relevant and appropriate to site remediation.
Groundwater (Protective of Drinking Water)	SDWA National Primary Drinking Water Standards: Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), Proposed MCLs and MCLGs.	Safe Drinking Water Act (SDWA) 40 CFR 141	Not anticipated as applicable since WAC 173-160-205(2) specifies 100-foot minimum setback distances for water supply wells from storm or sanitary sewers, public rights of way, and buildings.
Potentially Applicable Requirements for Disposal			
Activity	Requirement	Citation	Comments
General Remediation	State hazardous waste management requirements. Management of wastes that pass criteria for Washington hazardous waste as specified in WAC 173-303-070.	General Facility Standards (WAC 173-303-280-395)	Relevant and appropriate to site remediation.
Designation of Waste for Disposal	State criteria for dangerous waste, which are broader than federal criteria and include toxicity and persistence.	Washington Dangerous Waste Regulations (WAC 173-303) Designation procedures (Section -070) and WAC 173-350 (solid waste regulations).	The appropriate waste designation should be made for IDW or other waste generated during remedial actions, according to WAC 173-303-100. Soils with PCE, TCE and VC are considered a listed F002 dangerous waste unless Ecology determines that these materials do not warrant management as a dangerous waste. Soils and groundwater that are not classified as dangerous waste will be considered 'contaminated soils', according to WAC 173-350-100. Soil and groundwater with solvents present will require Ecology to make a contained-in determination, which will determine if the media contains hazardous waste for disposal.
Treatment, Storage, or Disposal of Hazardous Wastes	Effective November 8, 1988, disposal of contaminated soil or debris is subject to land disposal prohibitions or treatment standards.	40 CFR 268 Federal Land Disposal Restrictions; WAC 173-303-140, -141 Land Disposal Restrictions	Anticipated to be relevant for qualifying treatment of residues/sludges.
Discharge to POTWs (Publicly Owned Treatment Works)	Contaminated water must be pretreated to certain limits prior to discharge.	National Pretreatment Standards (40 CFR 403); Metro District Wastewater Discharge Ordinance	Discharges to POTWs are considered off-site activities; pretreatment and permitting requirements would be applicable.
Point Source or Other Defined Emission Source	State implementation of ambient air quality standards.	Washington State Clean Air Act (70-94 RCW) General Requirements for Air Pollution Sources (WAC 173-400)	Potentially applicable to remedial actions.
	PSAPCA ambient and emission standards.	PSAPCA Regulations I and III	
Potentially Applicable Requirements for Remediation Activities			
Location/Activity	Requirement/Prerequisite	Citation	Comments
General Remediation	Site worker health and safety.	WISHA (WAC 296-62) OSHA (29 CFR 1910.120)	Relevant requirement.
	Erosion and sedimentation controls.	Puget Sound Water Quality Management Plan (RCW 90.70.070)	Relevant requirement.
Monitoring Wells	Standards for construction, testing, and abandonment of water and resource protection wells.	WAC 173-160-010 through -303, -050 through -060	Applicable requirement for remediation activities.
Washington Underground Injection Control Program	Requirements for underground injection control applicable to cleanup alternatives that include injection of materials into subsurface groundwater and soil.	WAC 173-218	Potentially relevant depending on remedial activities selected.
Noise Control	Maximum noise levels	Noise Control Act of 1974 (RCW 70.107; WAC 173-60)	Potentially relevant depending on remedial activities selected.
Air Emissions	Regional ambient air quality standards applicable to regulated air contaminant.	Puget Sound Air Pollution Control Agency (PSAPCA) Regulation III	Emissions from site not expected to qualify as major source unless: a) emissions are greater than 100 tons/yr; or b) emissions of a specified air contaminant occur.
	New Source Pretreatment Standards applicable to new source of hazardous air pollutants.	40 CFR 60	Potentially applicable to releases from remedial actions.
	Controls for New Sources of Toxic Air Pollutants for emission of any Class A or Class B toxic air pollutant (identified in WAC 173-460-150 through -160) into ambient air.	WAC 173-460	Potentially applicable to releases from remedial actions.
	Regional Emission Standards for Toxic Air Pollutants. Source of toxic air contaminant requires a notice of construction.	PSAPCA Regulation III	Potentially applicable depending on remedial technology used.
	Regional Emission Standards for fugitive dust. BACT to control dust.	PSAPCA Regulation I	Potentially applicable to releases from remedial actions.
Disturbance of Greater than 5 Acres	NPDES Stormwater Permit for construction activity.	WAC 173-226, RCW 90.48	Potentially applicable depending on remedial technology used and footprint of remedial action.
Archaeological and Historic Preservation Act	Establishes procedures for the preservation of historical and archeological data that might be destroyed through alteration of terrain because of a federally licensed activity or program.	16 USC 469	Potentially applicable depending on remedial technology used.
Archaeological Resources Protection Act	Specifies the steps that must be taken to protect archaeological resources and sites that are on public and Native American lands and to preserve data uncovered.	16 USC 470aa; 43 CFR 7	Potentially applicable depending on remedial technology used.
Within State Siting Criteria for Waste Management Facilities	Siting criteria to be used as initial screen for consideration of solid or dangerous waste facility sites.	WAC 173-304, WAC 173-303-282(2)(b)(iii)	No new solid or dangerous waste management facilities are planned.
State Environmental Policy Act	State law intended to ensure state and local government officials consider environmental values when making decisions or taking an official action such as approving the Cleanup Action Plan.	RCW 43.21C; WAC 197-11; WAC 173-802	Potentially applicable depending on remedial technology used.

Notes:

CFR – code of federal regulations; CULS – cleanup levels; MTCA – Model Toxics Control Act; RCW – Revised Code of Washington; WAC – Washington Administrative Code; WISHA – Washington State Department of Labor and Industries;

**Table 17 Proposed Cleanup Levels
Bridge - Former Dawn Foods**

COI - Soil (mg/L)					COCs - Soil (mg/L)		
Compound	Vadose PCUL	Basis	Saturated PCUL	Basis	Selected as a COC?	Vadose/Saturated CUL	Basis
Metals							
Arsenic	7.3	Natural Background	7.3	Natural Background	No	NA	
Cadmium	0.77	Natural Background	0.77	Natural Background	No	NA	
Total Chromium	48	Natural Background	48	Natural Background	No	NA	
Hexavalent Chromium	0.14	Protect SW via GW (vadose)	0.0069	Protect SW via GW (sat)	Yes	0.14/0.0069	Protect SW via GW (vadose & saturated)
Copper	36	Natural Background	36	Natural Background	No	NA	
Lead	1620	Protect SW via GW (vadose)	81	Protect SW via GW (sat)	No	NA	
Mercury	0.07	Natural Background	0.07	Natural Background	No	NA	
Nickel	48	Natural Background	48	Natural Background	No	NA	
Zinc	100	Protect SW via GW (vadose)	85	Natural Background	Yes	100/85	Protect SW via GW (vadose)/Natural Background
Petroleum-Related Compounds							
Gasoline Range	100	Protect SW via GW (vadose)	100	Protect SW via GW (sat)	Yes	100	Protect SW via GW
DRO/ORO (Diesel + Lube Oil)	2,000	Protect SW via GW (vadose)	2,000	Protect SW via GW (sat)	Yes	2,000	Protect SW via GW
Volatile Organic Compounds							
Trichloroethene	0.0044	Protect SW via GW (vadose)	0.00027	Protect SW via GW (vadose)	Yes	0.0044/ 0.00027	Protect SW via GW
Tetrachloroethene	0.029	Protect SW via GW (vadose)	0.0016	Protect SW via GW (vadose)	Yes	0.029/ 0.0016	Protect SW via GW
Semi-Volatile Organic Compounds							
Fluorene	1	sed-erosion/sed-gw sat zone	0.029	sed-erosion/sed-gw sat zone	No	NA	
Benzo(a)pyrene	0.0003	sed-gw vadose/sed-gw sat zone	0.00016	sed-gw vadose/sed-gw sat zone	No	NA	
Total cPAHs TEQ	0.0003	sed-gw vadose/sed-gw sat zone	0.00016	sed-gw vadose/sed-gw sat zone	No	NA	
Polychlorinated Biphenyl Aroclors®							
Total PCBs	0.030	PQL	0.030	PQL	No	NA	
COI-Groundwater (ug/L)					COC-Groundwater (ug/L)		
Compound	PCUL	Basis		Selected as a COC?	CUL	Basis	
Metals							
Arsenic - dissolved	8.00	Natural Background		Yes	8.00	Natural Background	
Cadmium - dissolved	1.20	Protect Sediment		No	NA		
Total Chromium - dissolved	Cr III: 27.4	Protect Surface Water		No	NA		
Chromium VI - dissolved	Cr VI: 0.36	Protect Surface Water		Yes	Cr VI: 0.36	Protect Surface Water	
Copper - dissolved ^b	3.10	Protect Surface Water		No	NA		
Mercury - dissolved	0.03	Protect Surface Water		No	NA		
Nickel - dissolved	8.20	Protect Surface Water		No	NA		
Zinc - dissolved	81	Protect Surface Water		Yes	81	Protect Surface Water	
Petroleum-Related Compounds							
Gasoline Range Organics	1700	Protect Surface Water		Yes	1700	Protect Surface Water	
Total Dx (DRO + ORO)	2100	Protect Surface Water		Yes	2100	Protect Surface Water	
Volatile Organic Compounds							
Tetrachloroethene	2.9	Protect Surface Water		Yes	2.9	Protect Surface Water	
Trichloroethene	0.70	Protect Surface Water		Yes	0.70	Protect Surface Water	
Vinyl chloride	0.18	Protect Surface Water		Yes	0.18	Protect Surface Water	
Semi-Volatile Organic Compounds							
1-methylnaphthalene	0.2	Protection of indoor air		No	NA		
Benzo(b)fluoranthene	0.00016	Protect Surface Water		No	NA		
Halogenated Aromatic Hydrocarbons							
Total dioxin/furan TEQ	5.10E-09	Protect Surface Water		Yes	5.10E-09	Protect Surface Water	
COI -Vapor (ug/m3)					COC-Vapor (ug/m3)		
Compound	PCUL	Basis		Selected as a COC?	CUL	Basis	
Volatile Organic Compounds							
Tetrachloroethene	40	MTCA Method C Industrial		Yes	40	MTCA Method C Industrial	
Trichloroethene	2.00	MTCA Method C Industrial		Yes	2.00	MTCA Method C Industrial	
m,p-Xylene	100	MTCA Method C Industrial		Yes	100	MTCA Method C Industrial	
o-Xylene	100	MTCA Method C Industrial		Yes	100	MTCA Method C Industrial	
Naphthalene	0.74	MTCA Method C Industrial		No	NA		
TPH	TPH risk factors	MTCA Method C Industrial		No	NA		

Notes

*Values based on Ecology's Implementation Memorandum #23 for Petroleum Hydrocarbon Contaminants

COI - constituents of interest

mg/kg - milligram per kilogram

COC - contaminant of concern

ug/L - microgram per liter

TEQ - Toxic equivalency

NA - not applicable

µg/m³ = micrograms per cubic meter of air

PCUL - Preliminary Cleanup Levels

**Table 18 Upper Confidence Level Summary Analysis - Soil Results
Bridge - Former Dawn Foods**

Sample ID	Arsenic	Cadmium	Chromium	Copper	Mercury	Nickel	Zinc
PRO UCL 95% UCL	4.4	0.042	14.85	21.75	0.0427	10.01	45.21
UCL Test Method	95% KM (t)	95% KM (t) UCL	95% Student's-t UCL	95% KM (t)	95% KM (t) UCL	95% Approximate Gamma UCL	KM H-UCL
Max Value	13.60	0.50	98.40	35.00	0.07	22.90	140.00
Sample Set Size	61	61	56	15	61	61	61
No. of Exceedances in Data Set	5	0	1	0	0	0	4
Max Allowable Concentration	20	2	132	72	0.1925	132	234
No. Allowed Exceedances	9	9	9	4	9	9	9
Natural Background (NB)	7.30	0.77	48.00	36	0.070	48	85
Is UCL below the NB value?	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.
Is the max value below 2x NB?	Yes.	Yes.	No.	Yes.	Yes.	Yes.	Yes.
Is max value below max allowable?	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.
Is number of exceedances below allowable?	Yes.	NA - all below	Yes.	NA - all below	NA - all below	NA - all below	Yes.

Notes:

1. Max value excludes filtered samples. Filtered samples include all soil samples from the following locations: MW-5, GP-SB-05, GP-SB-08, GP-SB-11, RI-SB-04, RI-SB-07, RI-SB-08, RI-SB-10, and RI-SB-11
2. Number of allowable exceedances and max allowable concentration is based on the following:
Statistical Guidance for Ecology Site Managers. Washington Department of Ecology. August 1992.
<https://apps.ecology.wa.gov/publications/documents/9254.pdf>

**Table 19 Summary of Soil Protective of Groundwater Analysis
Dawn Foods Site**

COI	Soil			Groundwater (GW)				Notes
	Soil PCUL (saturated; mg/kg)	Max Concentration Saturated Samples (mg/kg)	Max Soil Sample ID	GW PCUL (ug/L)	Max Concentration (ug/L)	Max GW Sample ID	Is compound detected at any shoreline well above PCUL (MW-1, MW-2, MW-3)*	
arsenic	7.3	28.7	RI-SB-10 5-8'	8	1.13	RI-SB-10	No	
lead	81	580	HC-4**	8.1	0.257	RI-SB-11	No	
copper	36	460	RI-SB-11 5-7.5'	3.1	1.14	RI-SB-11	No	Soil sample is vadose, the sample interval is just above the saturated depth. No saturated soil sample from this boring.
mercury	0.07	2	GP-SB-5-7	0.03	ND (<1.0)	GP-SB-5	No	
total chromium	Cr III: 27	698	RI-SB-10 5-8'	Cr III: 27.4	1.92 J	RI-SB-10	No	Hexavalent Chromium is present at shoreline wells (MW-2)
nickel	48	477	RI-SB-10 5-8'	8.2	ND (<1.21)	RI-SB-10	No	
PCBs	0.03	0.057	GP-SB-30-13.3	0.052	Not detected at any site monitoring well above the PCUL		No	MW-3 was resampled and initial results were not replicated
cPAHs	0.00016	0.188	GP-SB-25-08	0.009 (PQL)	ND (<0.04)	GP-SB-25	No	MW-3 was resampled and initial results were not replicated
fluorene	0.029	0.67	GP-SB-25-08	3.7	ND (<0.04)	GP-SB-25	No	Soil sample is vadose, the sample interval is just above the saturated depth. The saturated sample was ND (<0.01)

Notes:

Bold = detection

mg/kg = milligrams per kilograms

ug/L = micrograms per liter

< = less than the laboratory detection limit

* For metals, dissolved groundwater data used, for all COIs, data from most recent sampling evaluated.

** HC-4 soil data was collected in 1996. This sample was repopulated in 2024 with RI-SB-11.

PCUL - Preliminary Cleanup Levels

ND - not detected

**Table 20 Interim Action Performance Data - Groundwater Sampling
Bridge - Former Dawn Foods**

Sample ID	PCUL (ug/L)	MW-1		MW-4		MW-5		MW-8		MW-10		MW-11	
		9/24/24	2/26/25	9/25/24	2/25/25	9/25/24	DUP01-0225 2/26/25	9/23/24	2/25/25	9/23/24	2/25/25	9/23/24	2/25/25
Sample results are in ug/L													
Metals Total/Dissolved													
Chromium - total	See dissolved	1.72 U	1.72 U	NA	NA	NA	1.72 U/1.72	NA	NA	NA	NA	NA	NA
Zinc - total	See dissolved	487	319	145	256	69.2	3010/2950	NA	NA	NA	NA	12.1 U	12.1 U
Chromium VI - dissolved	Cr VI: 0.36	0.204	0.25	NA	NA	NA	0.025 U/0.025 U	NA	NA	NA	NA	NA	NA
Zinc - dissolved	81	508	289	136	12.1 U	12.3 J	2660/2310	NA	NA	NA	NA	12.1 U	12.1 U
VOCs													
Chloroethane	14666	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
1,1,1-Trichloroethane	5440	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
1,1-Dichloroethane	11	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
1,1-Dichloroethene	130	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
1,2-Dichloroethane (EDC)	3.5	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
trans-1,2-Dichloroethene	77	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
cis-1,2-Dichloroethene	182	1 U	1 U	2.1	1	1 U	12/13	4.6	3.4	48	11	1 U	1 U
Methylene chloride	100	5 U	5 U	5 U	5 U	5 U	5 U/5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	2.9	1 U	1 U	5.8	0.94	11	3.8/3.7	4.3	1.8	1.7	7.6	1 U	1 U
Trichloroethane	No critiera	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1 U	1 U
Trichloroethene	0.70	0.5 U	0.5 U	0.5 U	0.16	0.5 U	0.98/0.97	0.9	0.05 U	0.56	1.6	0.5 U	0.12
Vinyl chloride	0.18	0.02 U	0.02 U	0.26	0.57	5.5	1.8/1.9	0.95	4	24	4.6	0.54	0.18

Notes:

All results in ug/L (micrograms per liter)

Bold = detection

Shading denotes an exceedance of a screening level

Cr Vi = Chromium VI (hexavalent chromium); Cr III = Chromium trivalent. Both screening levels are presented, the lowest is used for shading.

Preliminary Cleanup Levels (PCUL) for Lower Duwamish

Waterway workbook, these have been developed by Ecology

MTCA - Model Toxics Control Act

ND = Not detected

U = laboratory detection limit

J = reported concentration is an estimate.

NC - No Criterion

NA = Not analyzed

VOCs -Volatile Organic Compounds

Table 21 Interim Action Performance Data - Geochemical Results
Bridge - Former Dawn Foods

Compound	MW-1		MW4		MW5		MW-8		MW-10		MW-11	
	9/24/2024	2/26/2025	9/25/2024	2/25/2025	9/25/2024	2/26/2025	9/23/2024	2/25/2025	9/23/2024	2/25/2025	9/23/2024	2/25/2025
Methane - mg/L	0.005 U	0.005 U	0.34	2.91	1.68	10.5	2.42	6.35	0.051	0.0206	1.31	0.68
Ethylene - mg/L	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
Ethane - mg/L	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
Chloride - mg/L	5090	3700	50.5	400	235	17.4	59.5	35.9	10.4	4.13	61	844
Nitrite - mg/L	0.2 U	20 U	0.4 U	2 U	0.4 U	1 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U
Nitrate - mg/L	0.314	20 U	0.4 U	2 U	0.4 U	1 U	0.2 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U
Phosphorus, Total Orthophosphate (As PO4) - mg/L	0.4 U	40 U	0.8 U	4 U	0.8 U	2 U	0.4 U	0.8 U	0.4 U	0.4 U	0.4 U	0.4 U
Sulfate - mg/L	739	518	11.7	10 U	14.9	10 U	6.11	2 U	15	25.6	3.27	122
Total Organic Carbon - mg/L	0.93	0.974	3.26	88.2	4.53	144	8.56	12.3	5.41	1.55	2.45	2.89
Ammonia - mg/L	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Iron - Dissolved - ug/L	560	18.2 U	14000	63800	8500	16300	28000	43100	1600	18.2 U	20000	54000
Manganese - Dissolved - ug/L	10 U	0.909 U	730	575	660	1260	7200	4520	660	61.4	600	2040

Notes:

ug/L - micrograms per liter

mg/L - milligrams per liter

Bold = detection

Table 22 Disproportionate Cost Analysis for Remedial Alternatives

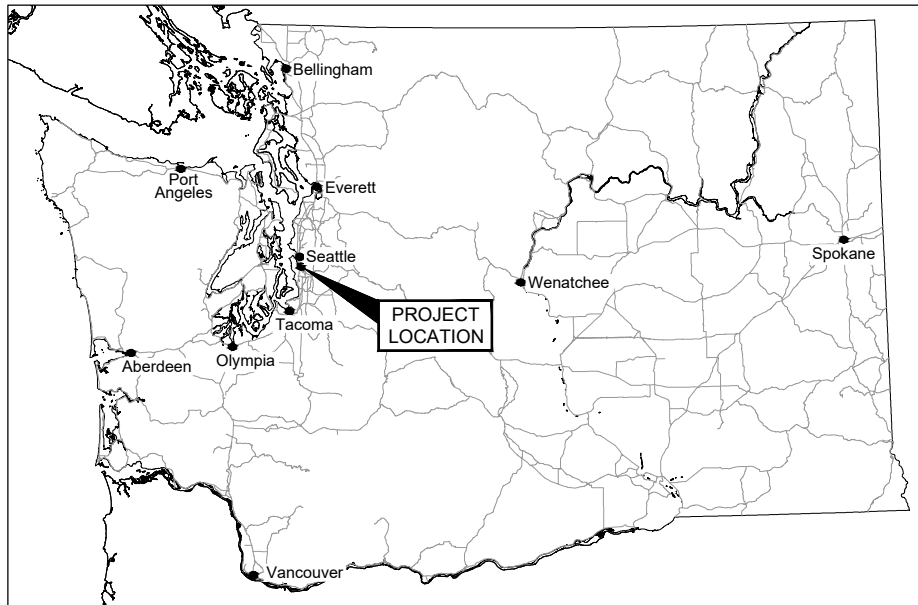
Alternative Number	Alternative #1 ERD (CVOCs and zinc), Institutional Controls and Monitoring and Capping	Alternative #2 ERD (CVOCs, zinc and hexavalent chromium), Target Excavation of Soil Contamination, MNR, Cap, and Long Term Monitoring	Alternative #3 ERD (CVOCs, zinc and hexavalent chromium), Excavation to the Extent Practicable and Off-Site Disposal, Capping, and Institutional Controls and Monitoring
Probable Cost	\$922,000	\$2,406,000	\$7,768,000
Alternative Description	Estimated cost including long term monitoring and contingency. ERD, capping, monitoring, and institutional controls Limited subsurface disturbance, ERD injections can be placed around existing utilities, to minimize disturbance.	Estimated cost including long term monitoring and contingency. Includes all elements of Alt. 1 and target excavation and disposal of soil with the highest VOC contamination. Avoids major utility conflicts and shoreline removal which would undermine the riverbank and potentially the building. Includes shoring along the riverbank and building and dewatering to manage groundwater.	Includes performance monitoring and 8 quarters of groundwater monitoring. Includes all elements of Alt. 2, and includes additional excavation and disposal of soil above the cleanup levels for VOCs (TCE and PCE), metals (zinc), dioxin and furans and TPH. Includes removals within the major utility footprints and shoreline. Requires significant shoring and dewatering to manage groundwater and river water. Includes connection of new utilities to facilitate removal action.
Volume of Soil Excavated and Disposed (Off-Site Landfill) - Tons	-	1,329	11,429
Overall Ranking	Medium	Medium	High
Basis for Alternative Ranking Under MTCA Restoration Time-Frame	2 to 50 years	2 to 50 years	3 to 12 months
<i>(WAC 173-340-360(3)(a)(ix))</i>			
Evaluation of Permanence Using MTCA Disproportionate Cost Analysis			
<i>(WAC 173-340-360(5)(c) and (d))</i>			
<i>Not rely primarily on dilution and dispersion</i>			
<i>Overall Protectiveness</i>	Ranking Value 1 Medium - Exposure pathway eliminated from humans, terrestrial biota and groundwater. Soil impacts remain in place but controlled by eliminating exposure pathway. Downgradient groundwater monitored to ensure protection of groundwater and surface water.	Ranking Value 2 Medium - Exposure pathway eliminated from humans, terrestrial biota and groundwater. Small impacts of soil remain in place but controlled by eliminating exposure pathway. Downgradient groundwater monitored to ensure protection of groundwater and surface water.	Ranking Value 3 High - Exposure pathway eliminated from humans, terrestrial biota and groundwater.
<i>Permanence</i>	1 Medium - Reduces the mobility of contaminants by reducing groundwater infiltration, monitors groundwater for potential release.	2 Medium - Removes highest contamination from site.	3 High - Removes the largest volume of contamination from site.
<i>Long-Term Effectiveness</i>	1 Medium - Uses containment, institutional controls and monitoring for effective long-term solution.	2 Medium - Uses institutional controls and removal for long-term effectiveness.	3 High - Uses removal as long term solution.
Management of implementation risks (short-term risk)	3 High - Regulate worker exposure during construction. Lowest impact to community during implementation.	2 Medium - Regulate worker exposure during construction. Modert impact to community during implementation.	1 Highest impact to community during implementation (largest number of trucks, equipment and duration).
Technical/administrative implementability	3 High - Materials and expertise locally available and readily implementable as part of property redevelopment.	2 Medium - Materials and expertise locally available and readily implementable; relies on off-site disposal facility.	1 Low - Lowest as this relies on off-site disposal facility to the largest extent and includes the largest footprint of work to manage. Materials and expertise locally available and readily implementable.
Consider of Public Concerns	1 Low - Allows for consideration of public concerns. Contamination remains on site, with little to no short-term inconvenience.	2 Medium - Allows for consideration of public concerns. Moderate short-term inconvenience to community during implementation.	3 High - Allows for consideration of public concerns. Highest short-term inconvenience to community during implementation due to volume of material removed and timeframe for construction.
Total Benefit Score	10	12	14
Total Estimated Cost (Millions)	\$0.92	\$2.41	\$7.77
Benefit/Cost Ratio	10.8	5.0	1.8

Notes:

Notes: 1 = Lowest Relative Ranking, 3=Highest Relative Ranking; Benefit/Cost Ratio =Total Benefit Score/Cost (in millions of dollars;e.g. Alt-3 - 14/\$6.12=2.3)

RRD = Enhanced in-situ reductive dichlorination

Figures



WASHINGTON LOCATION MAP



VICINITY MAP

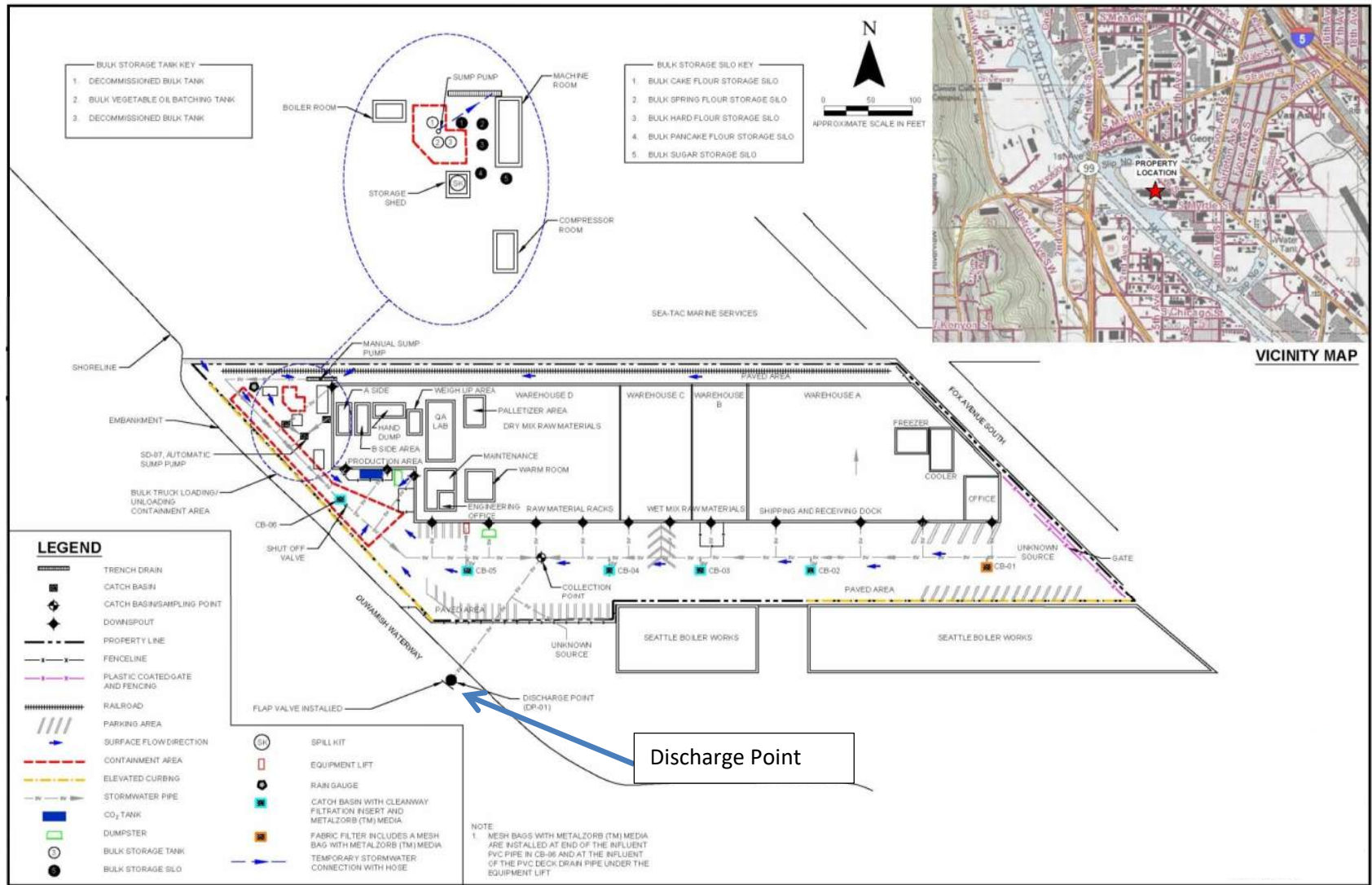


Source: Google Earth. Image date 8/22/2022

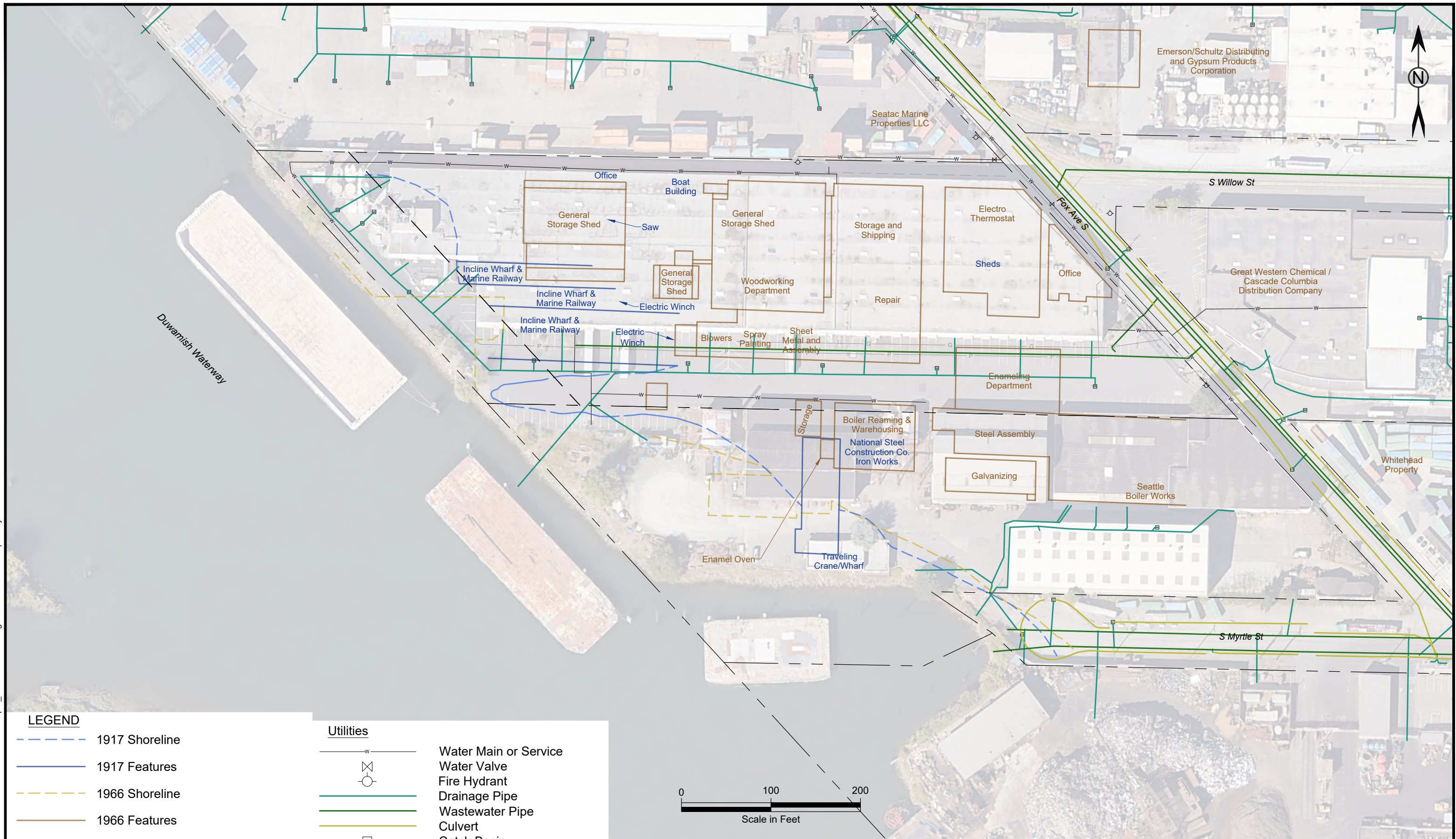


Former Dawn Foods Facility
 Bridge Point Seattle 130, LLC
 June 12, 2025

Figure 1
 Vicinity Map



Source of Figure –Stormwater Treatment Engineering Design Report. Perpared by Clear Water Services and Landau Associates, Inc. May 2021.

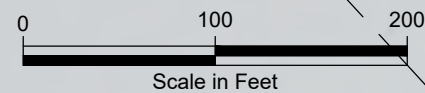


LEGEND

	1917 Shoreline
	1917 Features
	1966 Shoreline
	1966 Features

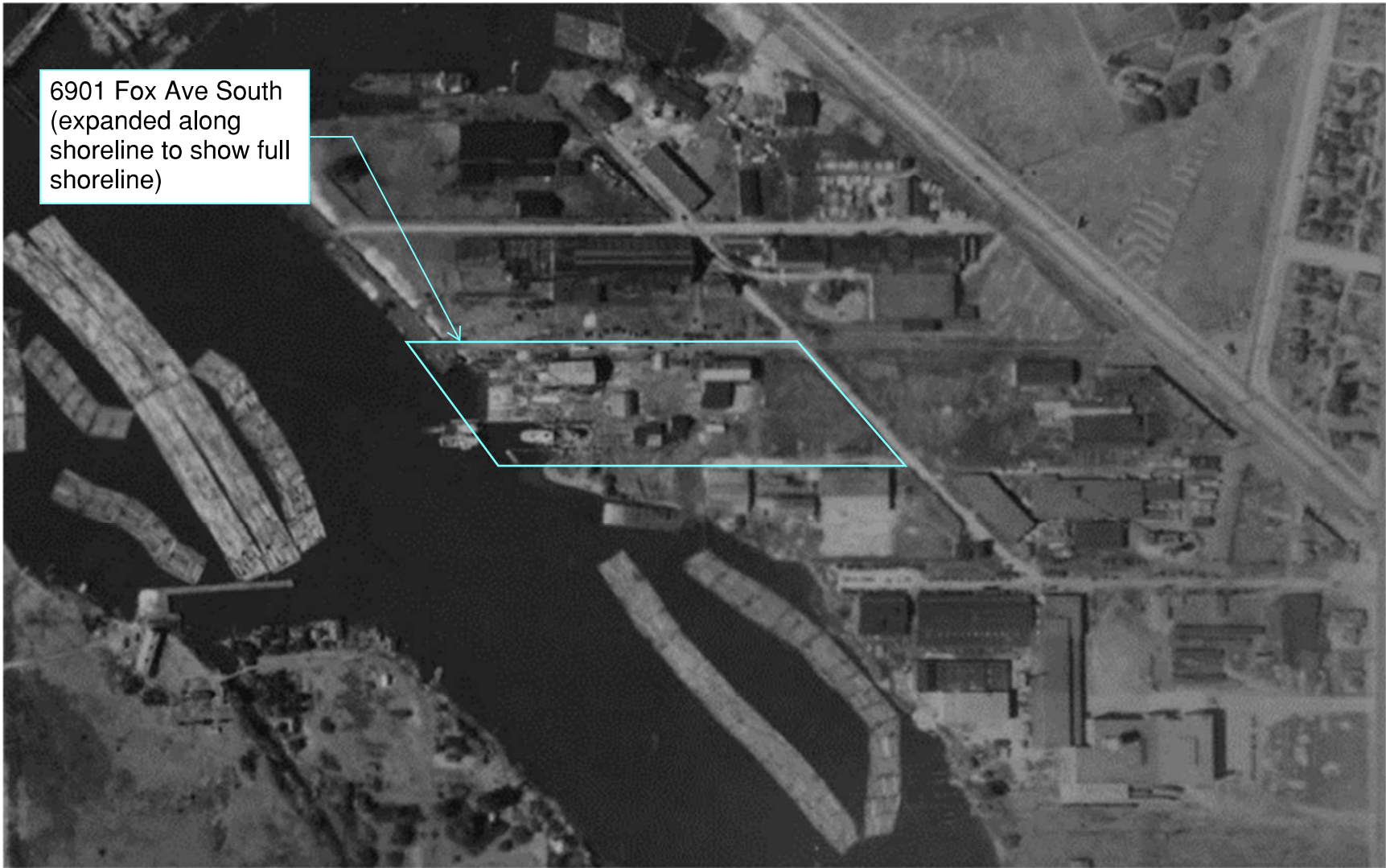
Utilities

	Water Main or Service
	Water Valve
	Fire Hydrant
	Drainage Pipe
	Wastewater Pipe
	Culvert
	Catch Basin
	Manhole
	Powerline - Overhead
	Powerline - Underground
	Power Pole
	Gasline



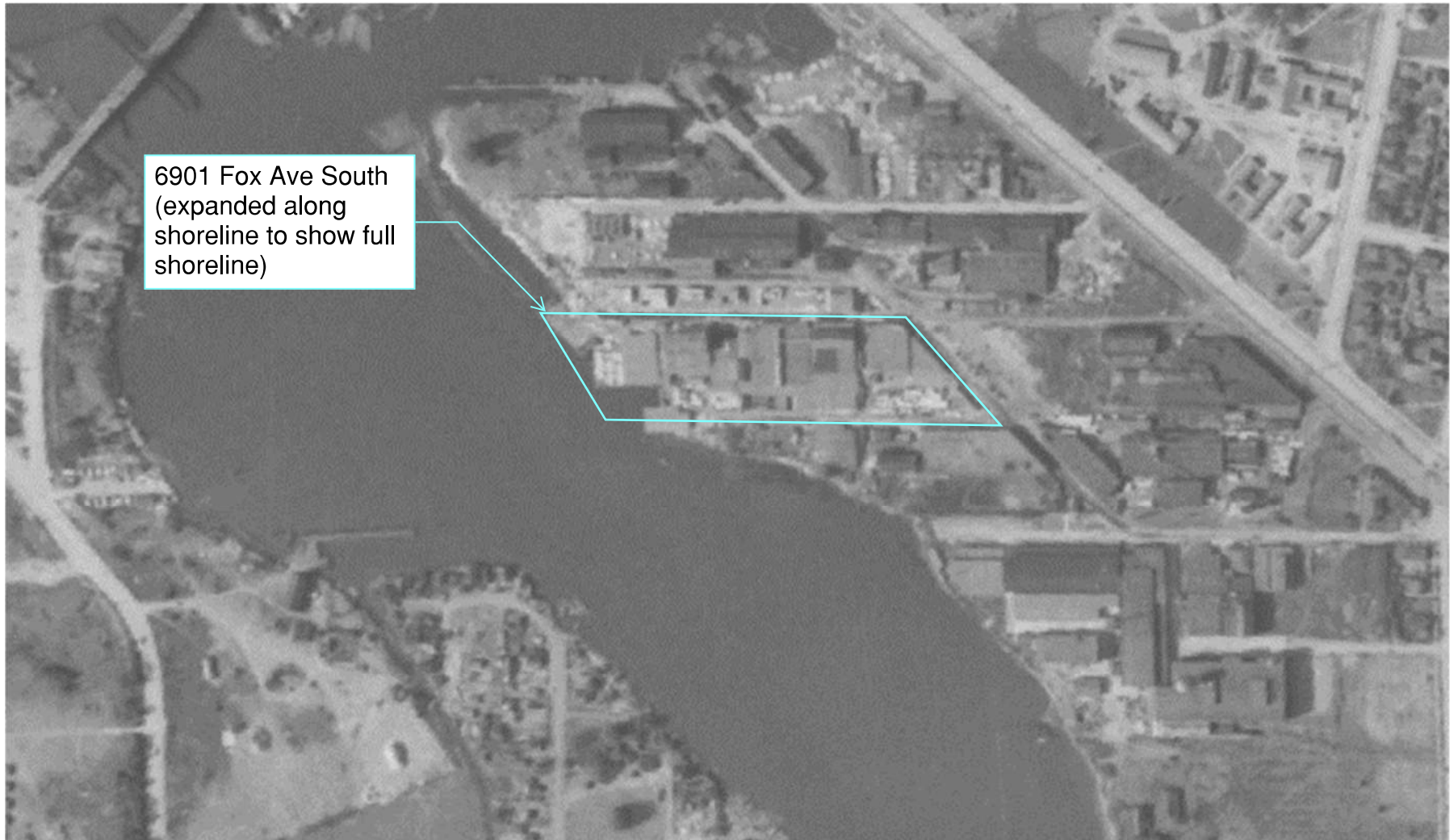
Former Dawn Foods Facility
 Bridge Point Seattle 130, LLC
 June 12, 2025

Figure 3
 Site Historical Features and Existing Site Utilities



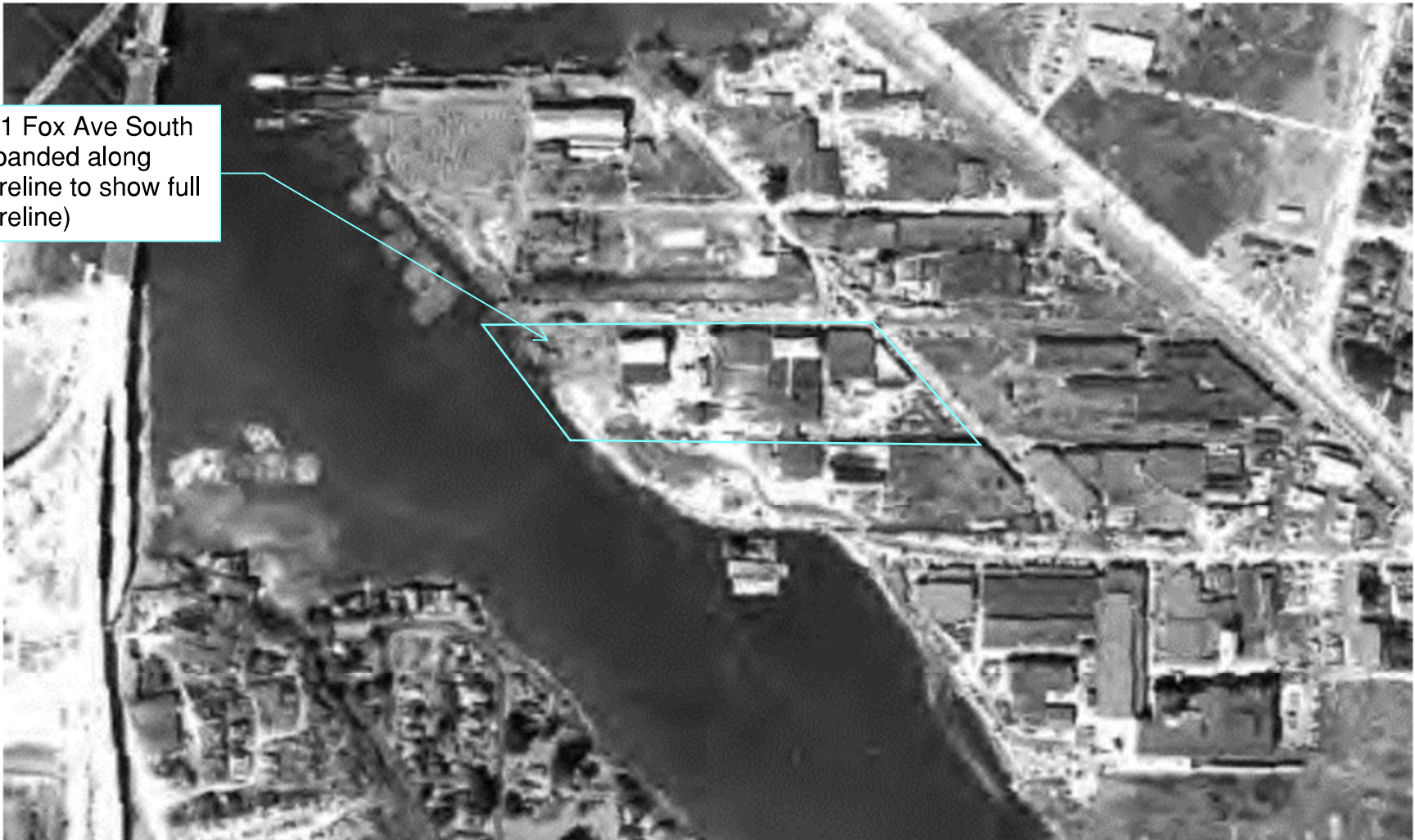
6901 Fox Ave South
(expanded along
shoreline to show full
shoreline)

1936

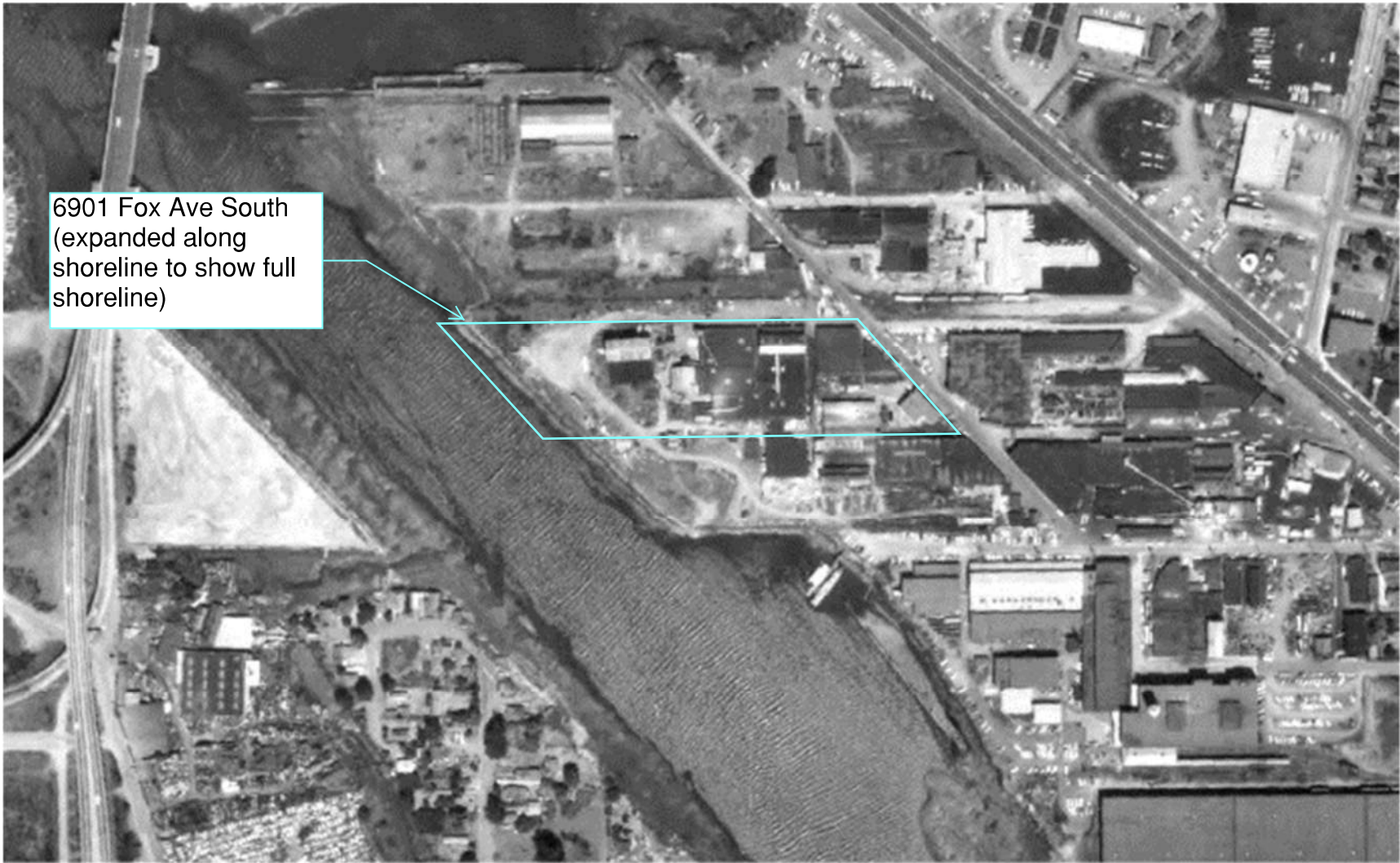


1943

6901 Fox Ave South
(expanded along
shoreline to show full
shoreline)

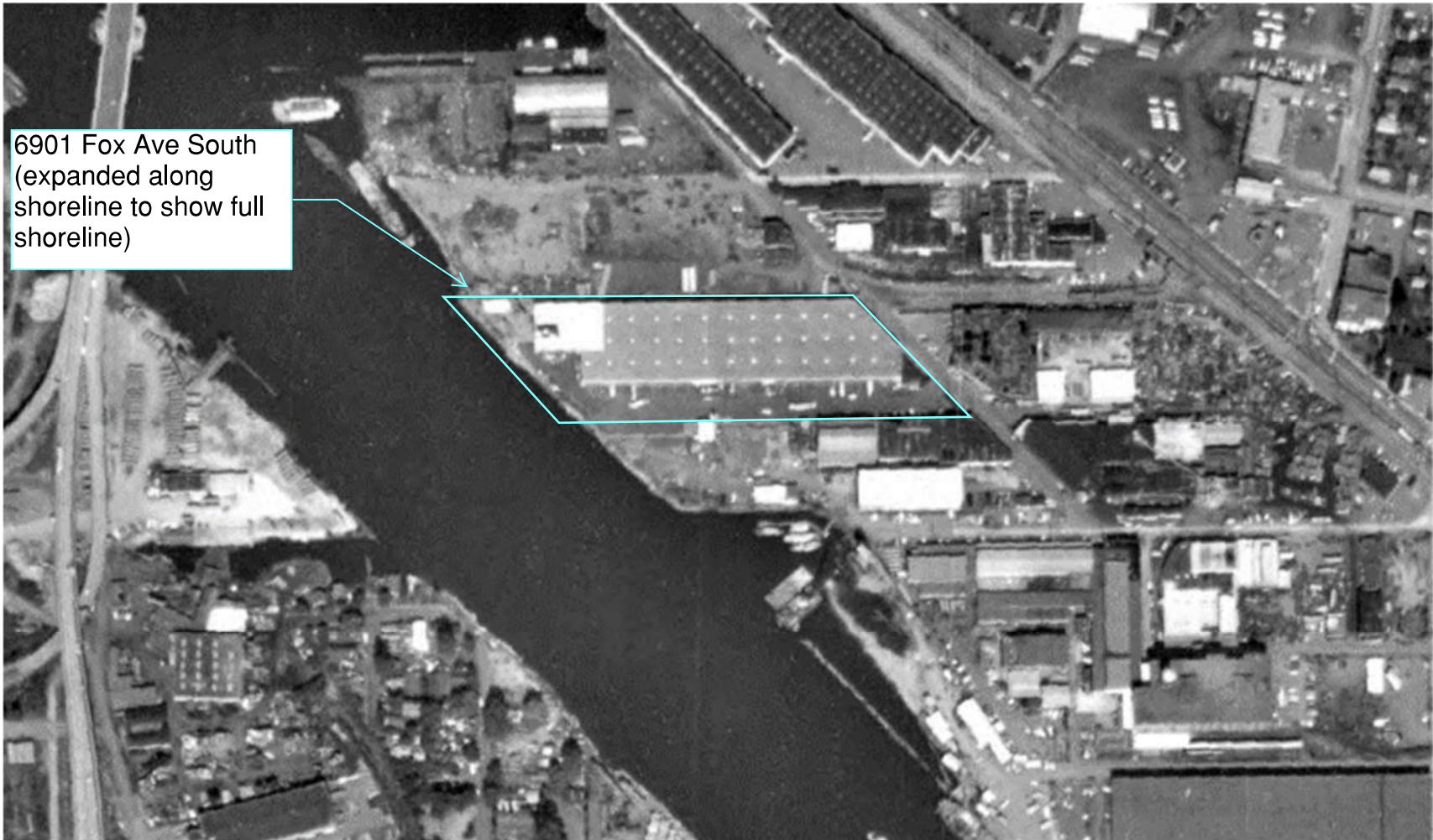


1956



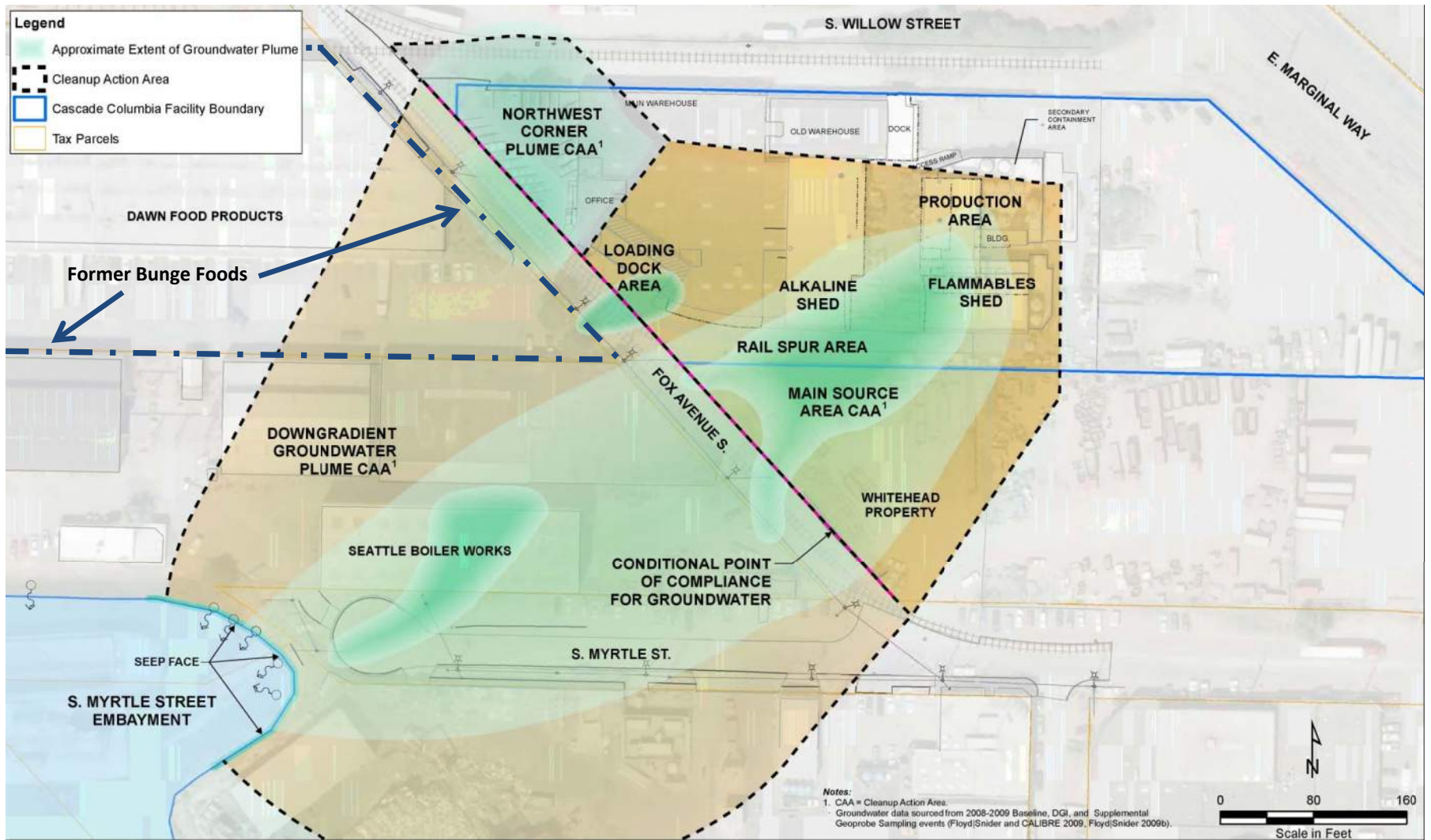
6901 Fox Ave South
(expanded along
shoreline to show full
shoreline)

1965



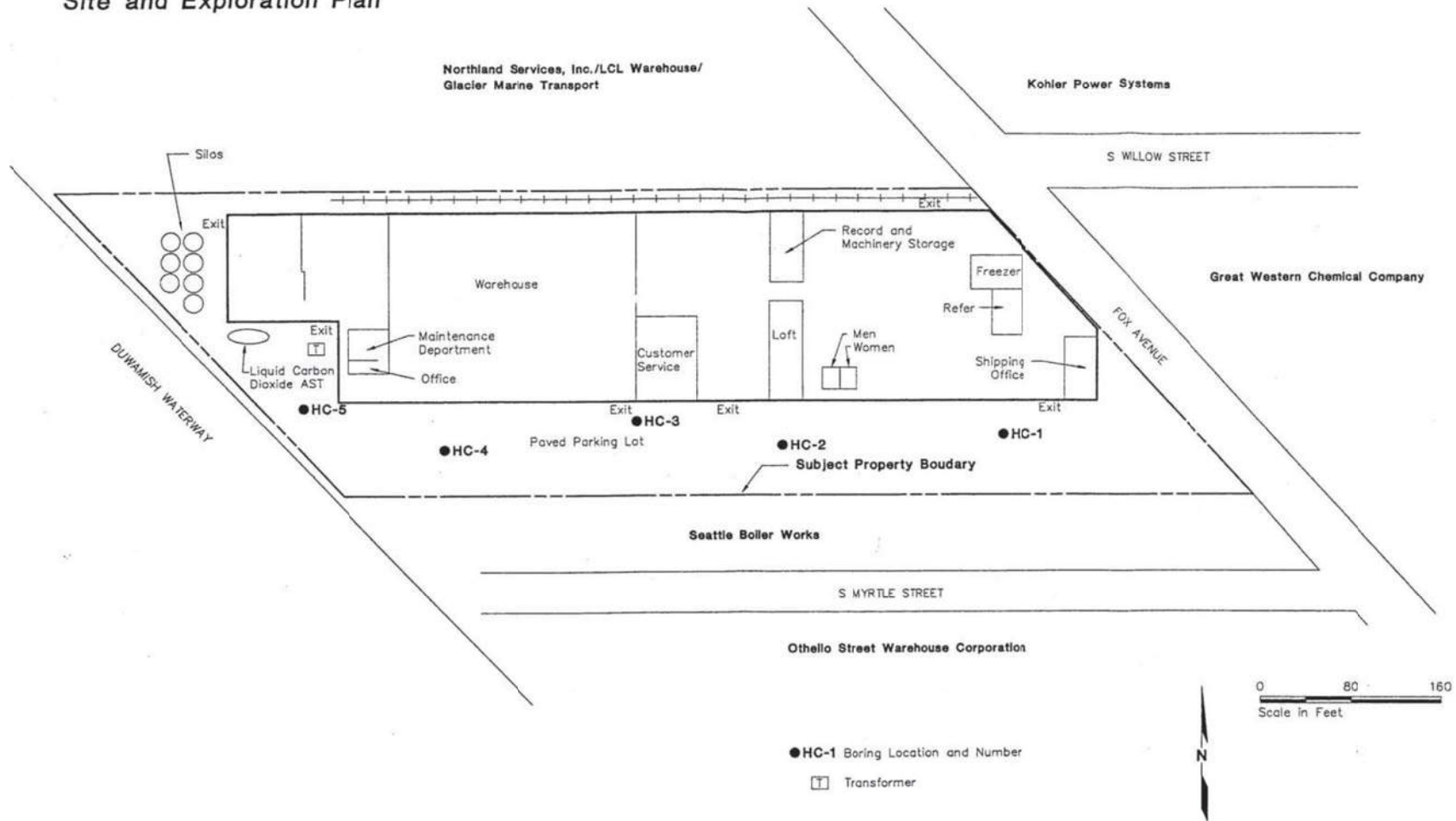
6901 Fox Ave South
(expanded along
shoreline to show full
shoreline)

1977



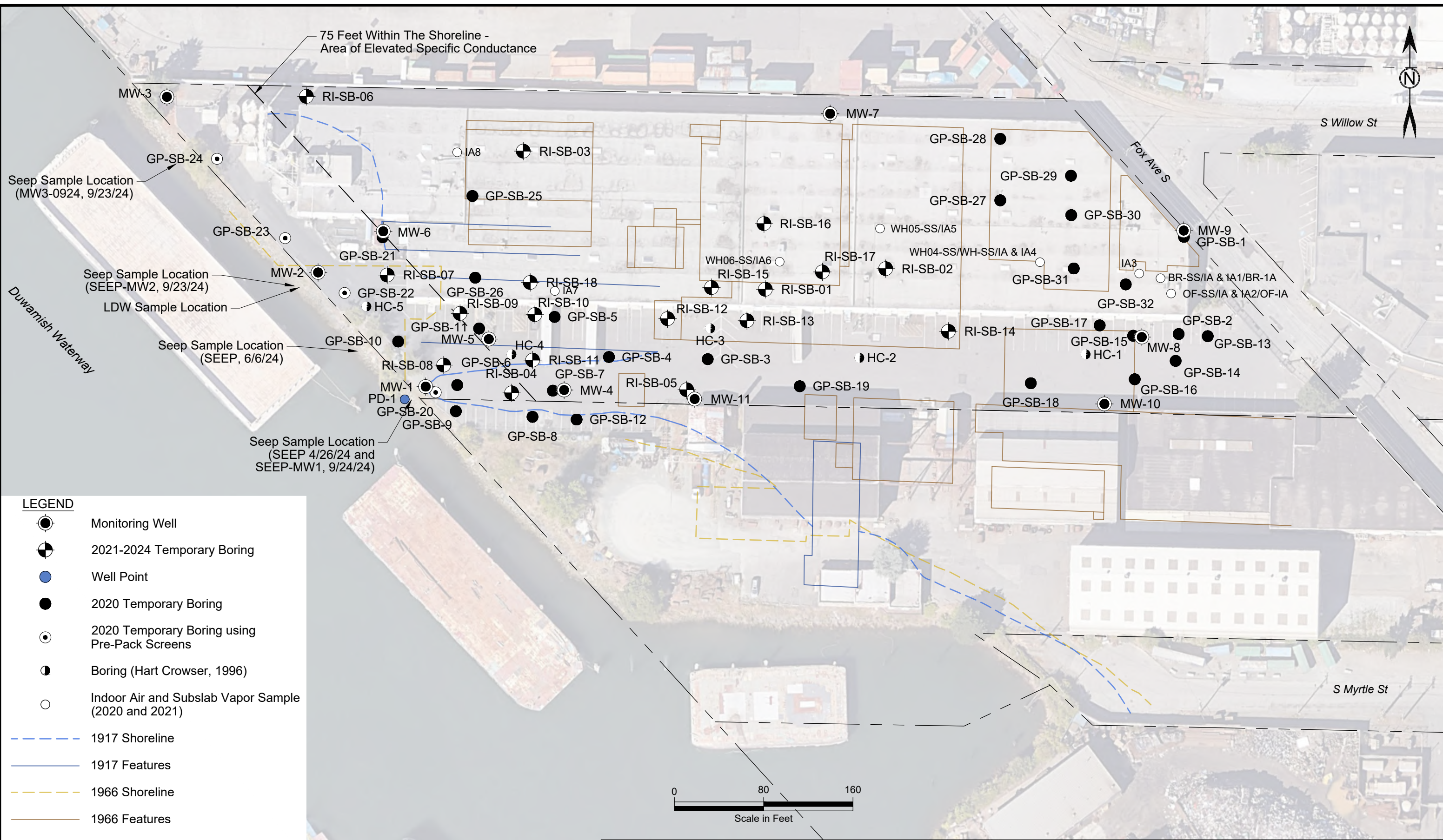
Source of Figure: Floyd Snider, 2012. Cleanup Action Plan. Figure 2.3 Cleanup Action Areas.

Site and Exploration Plan



Source: Figure 2 from Limited Subsurface Investigation Fox Avenue property, 6901 Fox Avenue, Seattle, Washington. Prepared by Hart Crowser, November 12, 1996.

File: D:_Projects\Crete\Dawn Foods Sample_2025-05 RIFS.dwg Date: 6/12/2025 | Cabry



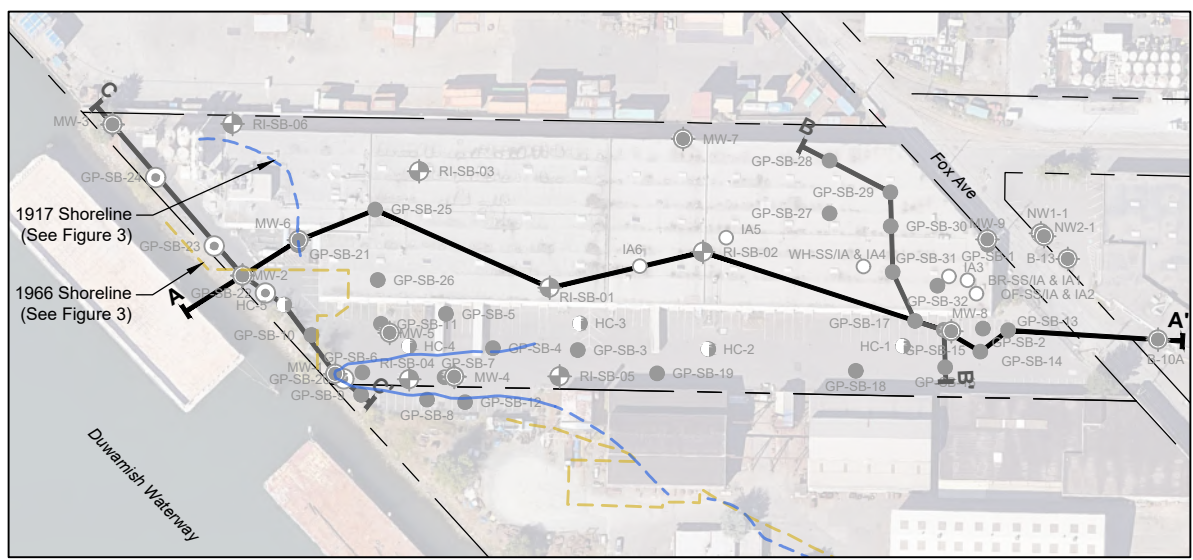
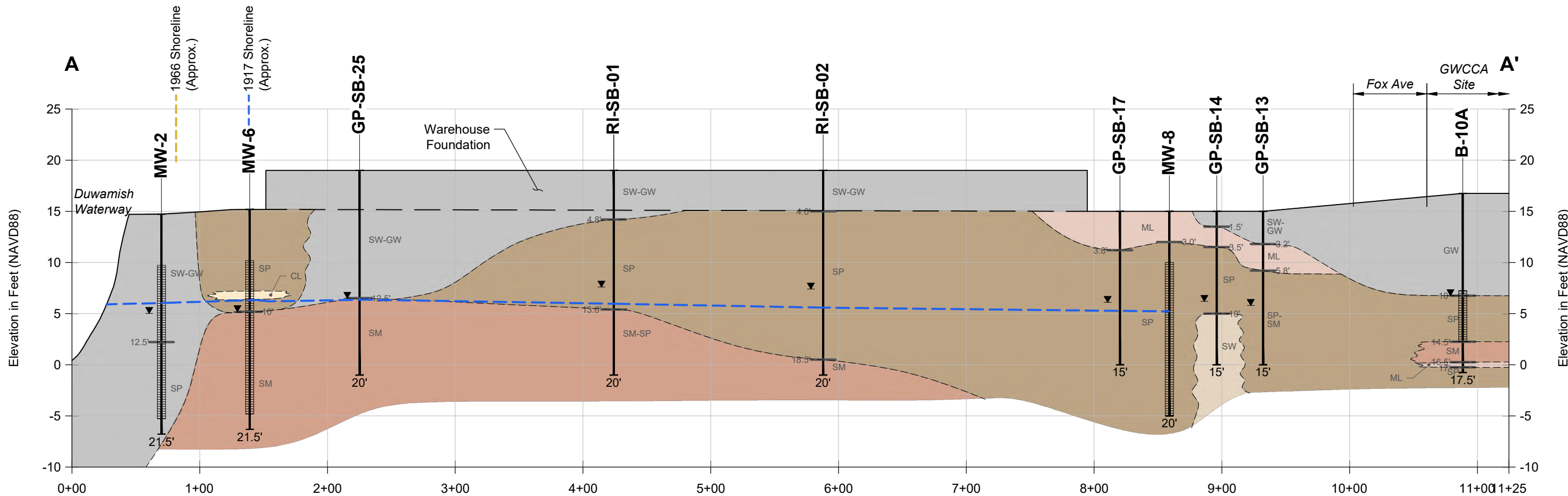
LEGEND

- Monitoring Well
- 2021-2024 Temporary Boring
- Well Point
- 2020 Temporary Boring
- 2020 Temporary Boring using Pre-Pack Screens
- Boring (Hart Crowser, 1996)
- Indoor Air and Subslab Vapor Sample (2020 and 2021)
- 1917 Shoreline
- 1917 Features
- 1966 Shoreline
- 1966 Features



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Figure 7
 Previous Investigation Locations



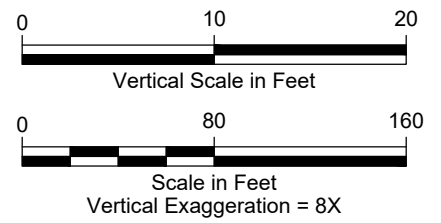
KEY MAP

LEGEND

- B-1** Exploration Designation
- 2' Noted Lithologic Contact Depth Below Ground Surface (in Feet)
- SM Unified Soil Classification System
- ▼ Water Level Observed at Time of Drilling
- - - Approximate Distinct Lithologic Contact
- - - Approximate Groundwater Surface
- ▭ Screen Interval
- 15' Depth of Exploration (in Feet)

LITHOLOGY LEGEND

- GW, SW-GW, SW (FILL) - Gravelly Sand or Sand with Gravel, Sometimes with Concrete Rubble, Occasional Wood Debris
- SW - SAND - Variable Fine to Fine to Coarse-Grained, often with Gravel or Concrete Rubble, Sometimes Wood
- SP - SAND - Variable Fine to Fine to Coarse-Grained, Sometimes Wood/Roots
- SM - SILTY SAND, Variable Fine to Fine to Coarse-Grained, Sometimes Wood/Roots, Occasional Clay Seams
- ML - SILT or SANDY SILT, often with very fine to fine grained sand
- CL - SANDY CLAY, SILTY CLAY

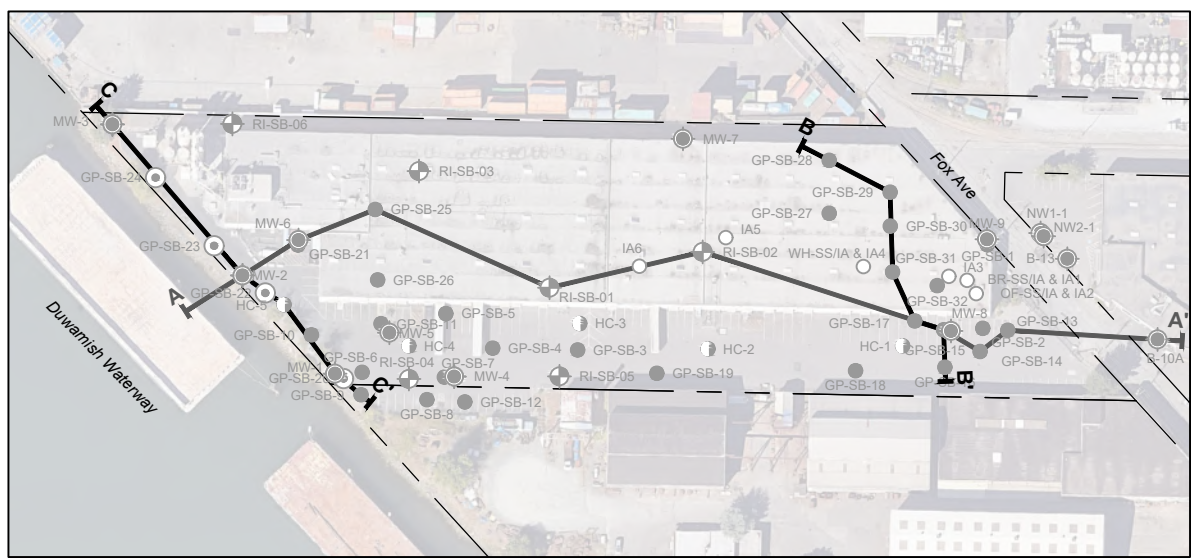
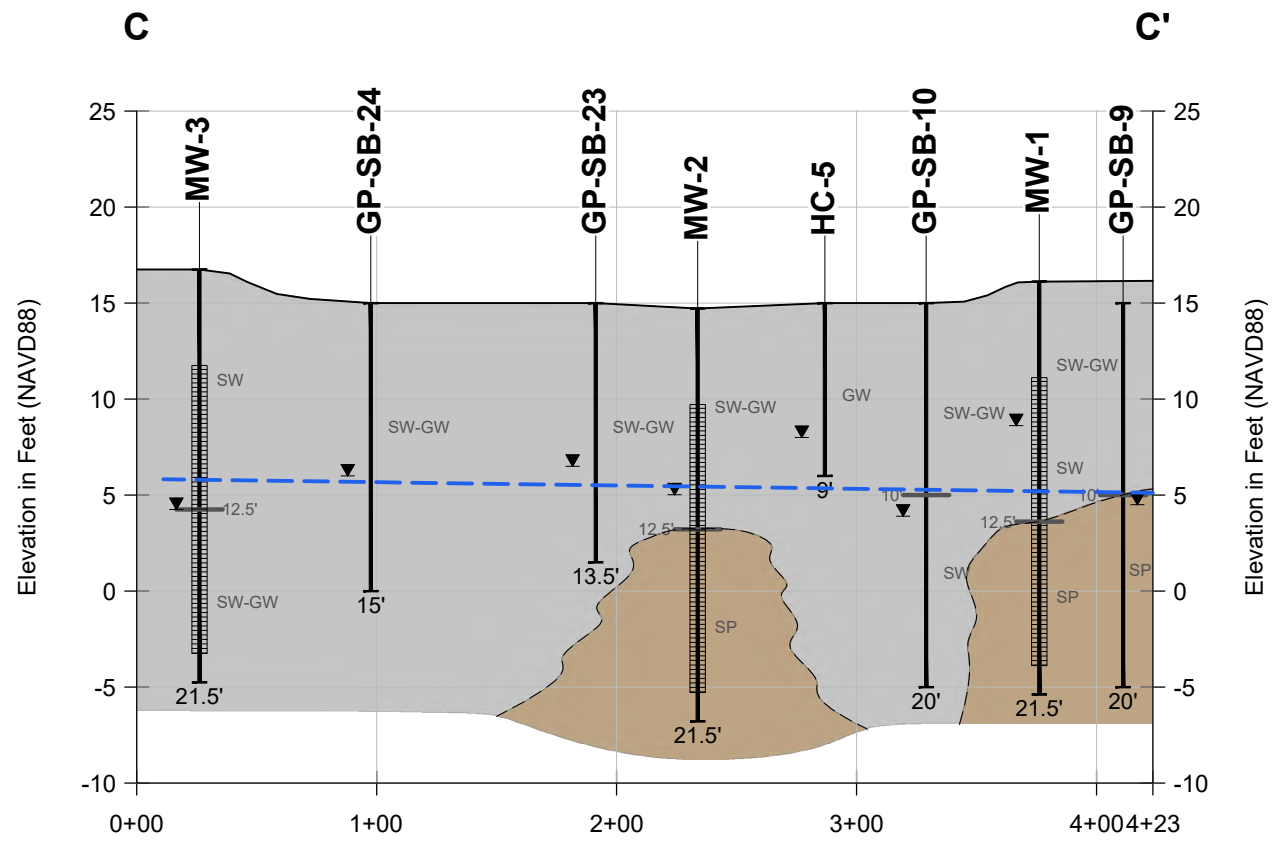
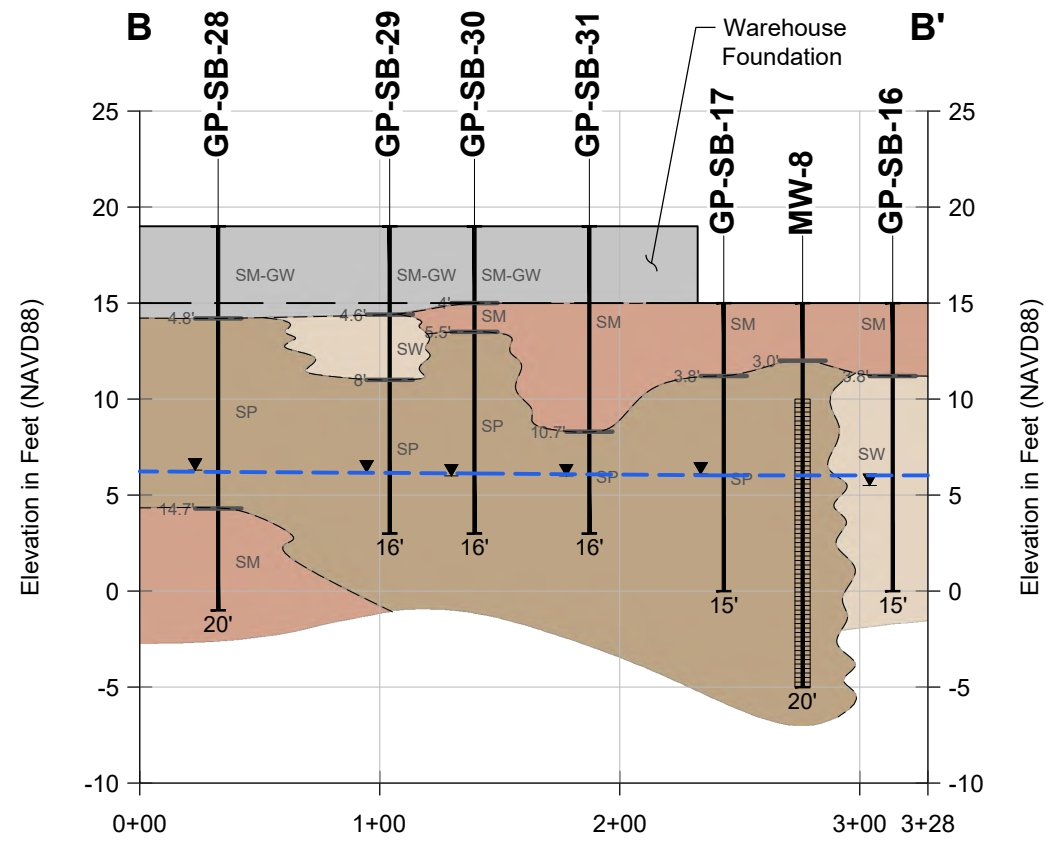


NOTE
 Ground surface elevations based on monitoring well survey data and warehouse as-built drawings. Bathymetric data from GIS data for LDW FS posted to LDWG website (<https://ldwg.org/project-library/>).

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Figure 8
 Site Cross Section A-A'

File: D:_Projects\Crete\Dawn Foods\Sections_2025.dwg Date: 5/29/2025 | Cabry



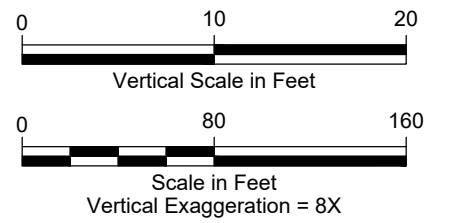
KEY MAP

LEGEND

- B-1** Exploration Designation
- 2' Noted Lithologic Contact Depth Below Ground Surface (in Feet)
- SM Unified Soil Classification System
- ▼ Water Level Observed at Time of Drilling
- - - Approximate Distinct Lithologic Contact
- - - Approximate Groundwater Surface
- ▬ Screen Interval
- 15' Depth of Exploration (in Feet)

LITHOLOGY LEGEND

- GW, SW-GW, SW (FILL) - Gravelly Sand or Sand with Gravel, Sometimes with Concrete Rubble, Occasional Wood Debris
- SW - SAND - Variable Fine to Fine to Coarse-Grained, often with Gravel or Concrete Rubble, Sometimes Wood
- SP - SAND - Variable Fine to Fine to Coarse-Grained, Sometimes Wood/Roots
- SM - SILTY SAND, Variable Fine to Fine to Coarse-Grained, Sometimes Wood/Roots, Occasional Clay Seams
- ML - SILT or SANDY SILT, often with very fine to fine grained sand
- CL - SANDY CLAY, SILTY CLAY



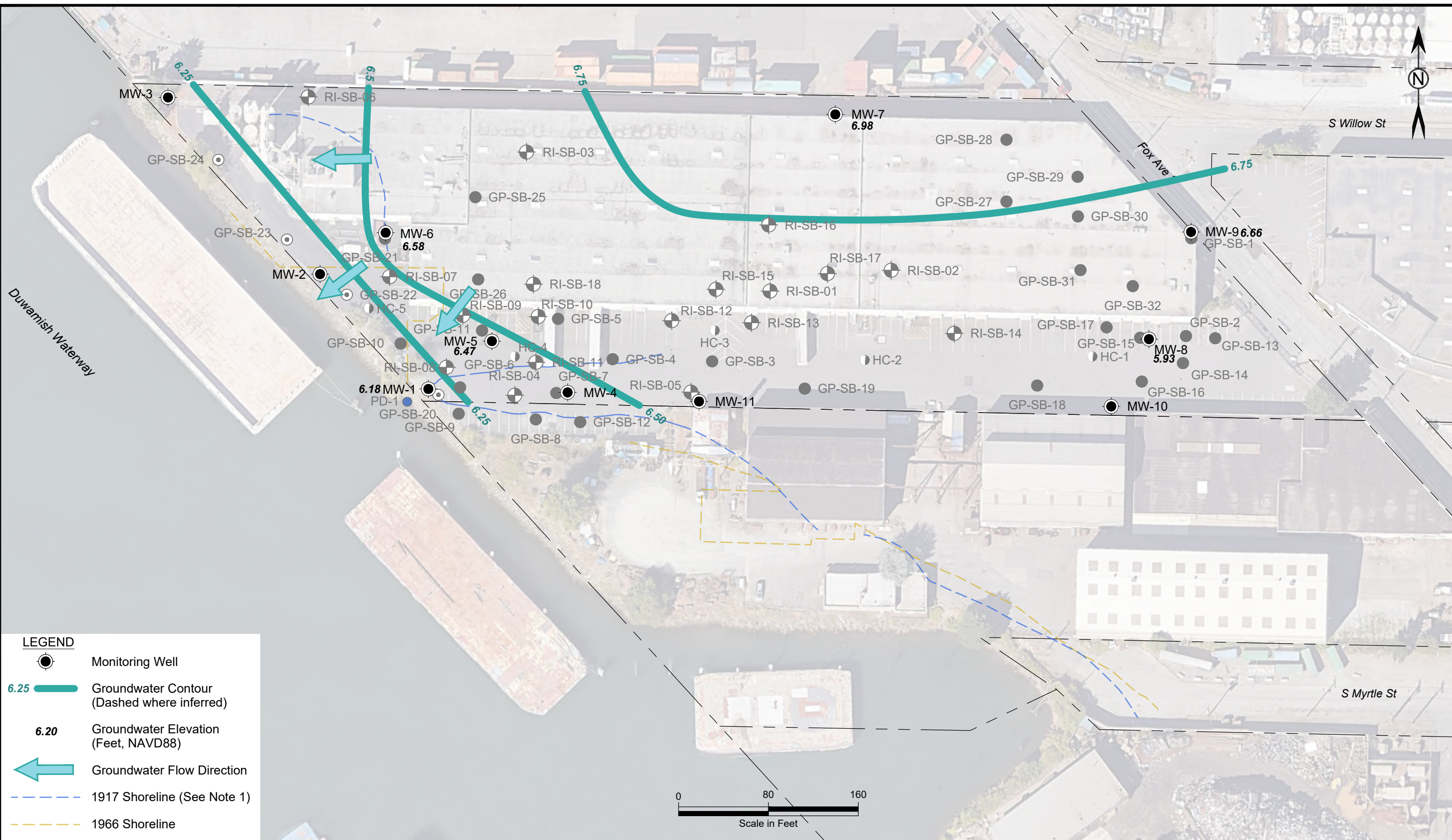
NOTE
 Ground surface elevations based on monitoring well survey data and warehouse as-built drawings.
 Bathymetric data from GIS data for LDW FS posted to LDWG website (<https://ldwg.org/project-library/>).



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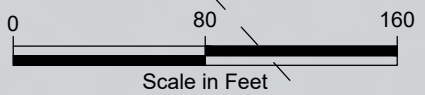
Figure 9
 Cross Sections B-B' and C-C'

File: D:\Projects\Crete\Dawn Foods\Sample_2025-05 RIFS.dwg Date: 6/12/2025 | Cabry



LEGEND

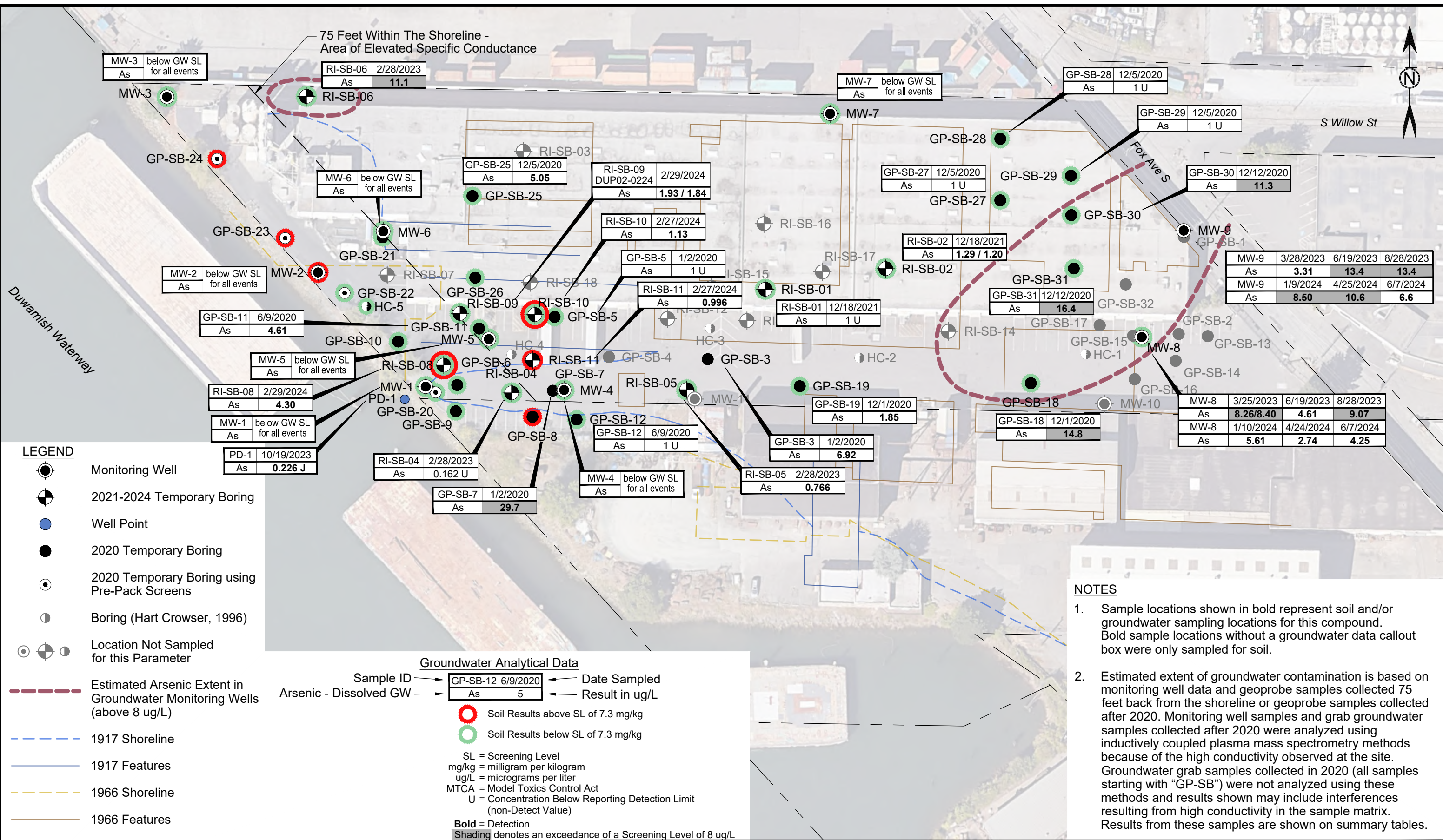
- Monitoring Well
- Groundwater Contour (Dashed where inferred)
- Groundwater Elevation (Feet, NAVD88)
- Groundwater Flow Direction
- 1917 Shoreline (See Note 1)
- 1966 Shoreline



NOTE
 1. 1917 shoreline marine railway (the gap in the shoreline) is not shown. See Figure 3.

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Figure 10
 Groundwater Flow Map
 October 2023



- LEGEND**
- Monitoring Well
 - 2021-2024 Temporary Boring
 - Well Point
 - 2020 Temporary Boring
 - 2020 Temporary Boring using Pre-Pack Screens
 - Boring (Hart Crowser, 1996)
 - Location Not Sampled for this Parameter
 - Estimated Arsenic Extent in Groundwater Monitoring Wells (above 8 ug/L)
 - 1917 Shoreline
 - 1917 Features
 - 1966 Shoreline
 - 1966 Features

Groundwater Analytical Data

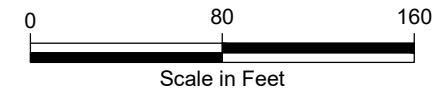
Sample ID	Date Sampled	Result in ug/L
GP-SB-12	6/9/2020	5

Asenic - Dissolved GW

- Soil Results above SL of 7.3 mg/kg
- Soil Results below SL of 7.3 mg/kg

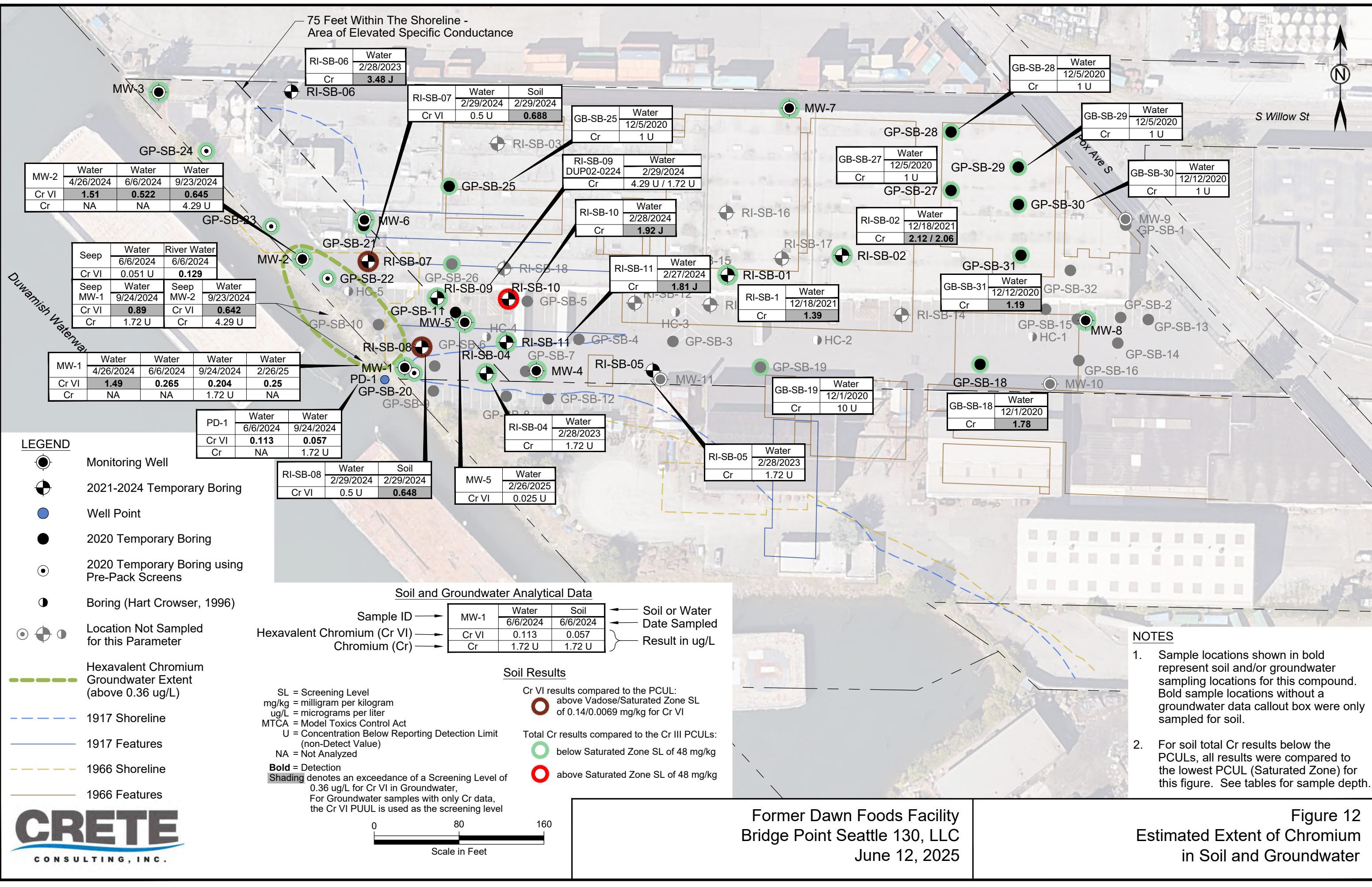
SL = Screening Level
 mg/kg = milligram per kilogram
 ug/L = micrograms per liter
 MTCA = Model Toxics Control Act
 U = Concentration Below Reporting Detection Limit (non-Detect Value)
Bold = Detection
 Shading denotes an exceedance of a Screening Level of 8 ug/L

- NOTES**
- Sample locations shown in bold represent soil and/or groundwater sampling locations for this compound. Bold sample locations without a groundwater data callout box were only sampled for soil.
 - Estimated extent of groundwater contamination is based on monitoring well data and geoprobe samples collected 75 feet back from the shoreline or geoprobe samples collected after 2020. Monitoring well samples and grab groundwater samples collected after 2020 were analyzed using inductively coupled plasma mass spectrometry methods because of the high conductivity observed at the site. Groundwater grab samples collected in 2020 (all samples starting with "GP-SB") were not analyzed using these methods and results shown may include interferences resulting from high conductivity in the sample matrix. Results from these samples are shown on summary tables.



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Figure 11
 Estimated Extent of Arsenic
 in Soil and Groundwater



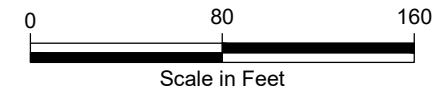
MW-2	Water	Water	Water
	4/26/2024	6/6/2024	9/23/2024
Cr VI	1.51	0.522	0.645
Cr	NA	NA	4.29 U

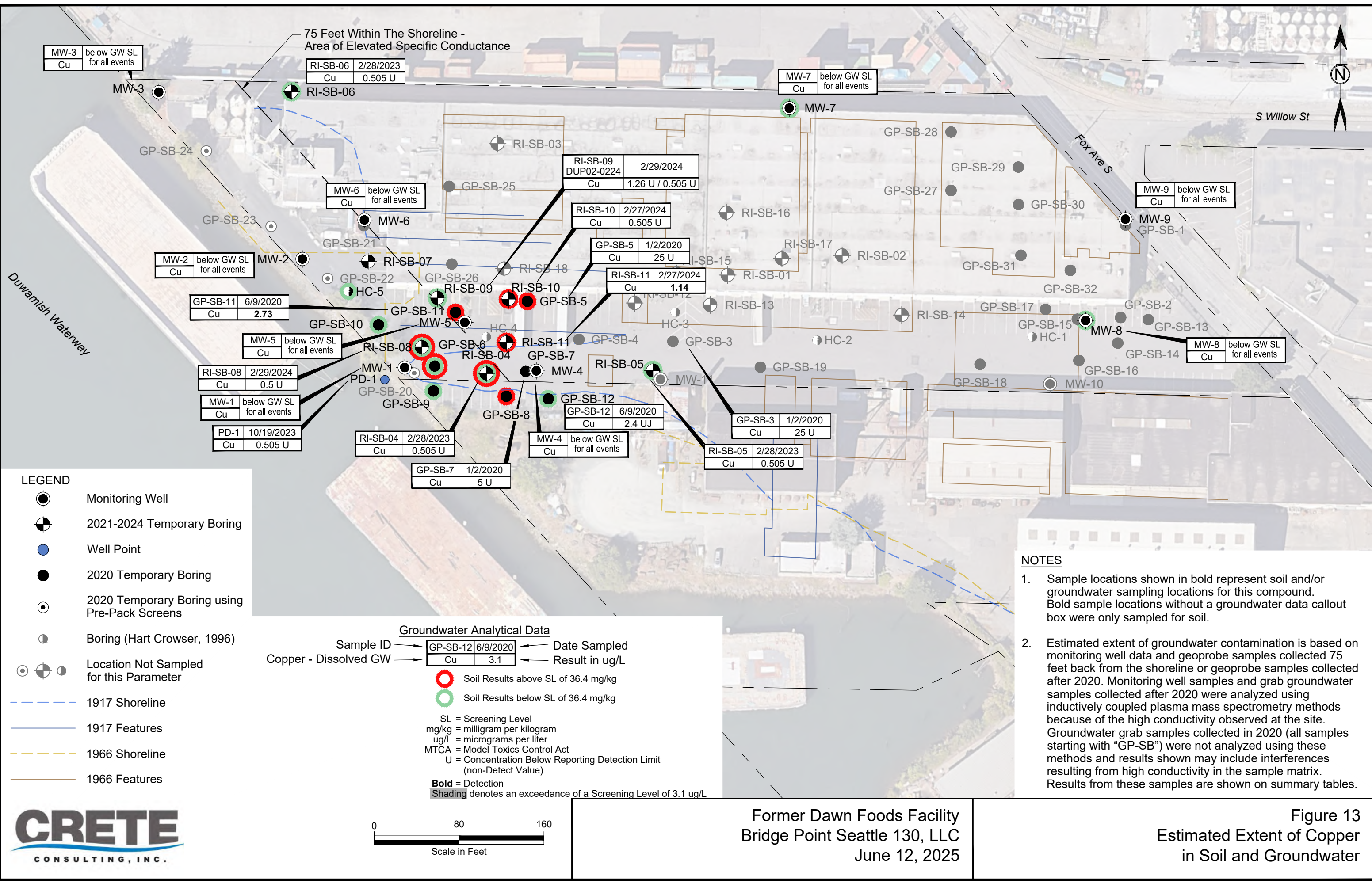
Seep	Water	River Water	
	6/6/2024	6/6/2024	
Cr VI	0.051 U	0.129	
Seep MW-1	Water	Seep	Water
	9/24/2024	MW-2	9/23/2024
Cr VI	0.89	Cr VI	0.642
Cr	1.72 U	Cr	4.29 U

MW-1	Water	Water	Water	Water
	4/26/2024	6/6/2024	9/24/2024	2/26/25
Cr VI	1.49	0.265	0.204	0.25
Cr	NA	NA	1.72 U	NA

PD-1	Water	Water
	6/6/2024	9/24/2024
Cr VI	0.113	0.057
Cr	NA	1.72 U

Sample ID	Water	Soil	Soil or Water Date Sampled
MW-1	6/6/2024	6/6/2024	
Cr VI	0.113	0.057	
Cr	1.72 U	1.72 U	





- LEGEND**
- Monitoring Well
 - 2021-2024 Temporary Boring
 - Well Point
 - 2020 Temporary Boring
 - 2020 Temporary Boring using Pre-Pack Screens
 - Boring (Hart Crowser, 1996)
 - Location Not Sampled for this Parameter
 - 1917 Shoreline
 - 1917 Features
 - 1966 Shoreline
 - 1966 Features

Groundwater Analytical Data

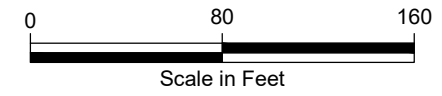
Sample ID	Date Sampled	Result in ug/L
GP-SB-12	6/9/2020	3.1

Copper - Dissolved GW

- Soil Results above SL of 36.4 mg/kg
- Soil Results below SL of 36.4 mg/kg

SL = Screening Level
 mg/kg = milligram per kilogram
 ug/L = micrograms per liter
 MTCA = Model Toxics Control Act
 U = Concentration Below Reporting Detection Limit (non-Detect Value)
Bold = Detection
 Shading denotes an exceedance of a Screening Level of 3.1 ug/L

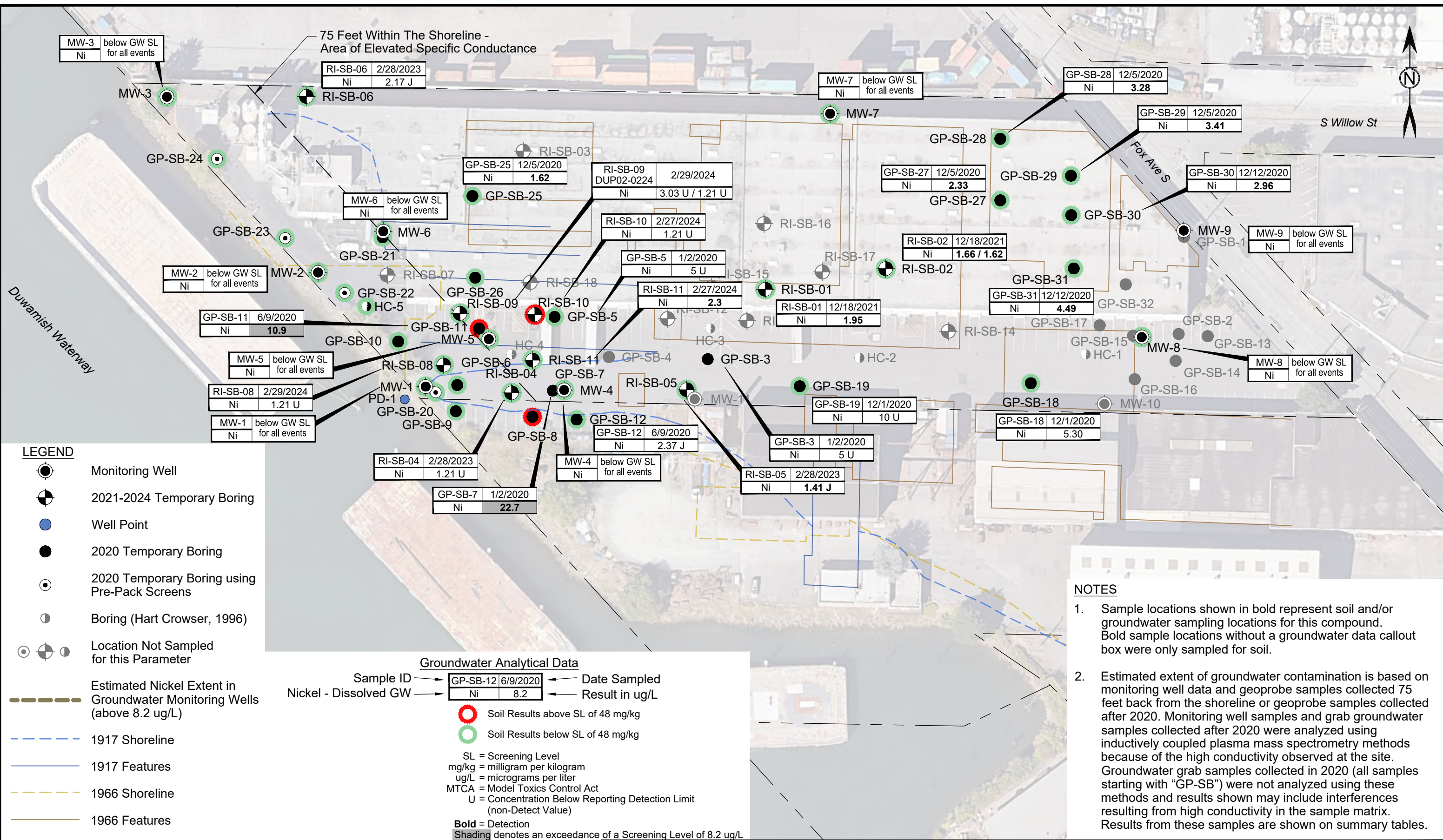
- NOTES**
- Sample locations shown in bold represent soil and/or groundwater sampling locations for this compound. Bold sample locations without a groundwater data callout box were only sampled for soil.
 - Estimated extent of groundwater contamination is based on monitoring well data and geoprobe samples collected 75 feet back from the shoreline or geoprobe samples collected after 2020. Monitoring well samples and grab groundwater samples collected after 2020 were analyzed using inductively coupled plasma mass spectrometry methods because of the high conductivity observed at the site. Groundwater grab samples collected in 2020 (all samples starting with "GP-SB") were not analyzed using these methods and results shown may include interferences resulting from high conductivity in the sample matrix. Results from these samples are shown on summary tables.



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Figure 13
 Estimated Extent of Copper
 in Soil and Groundwater

File: D:_Projects\Create\Dawn Foods Sample_2025-05 RIFS.dwg Date: 6/12/2025 | Cabry



- LEGEND**
- Monitoring Well
 - 2021-2024 Temporary Boring
 - Well Point
 - 2020 Temporary Boring
 - 2020 Temporary Boring using Pre-Pack Screens
 - Boring (Hart Crowser, 1996)
 - Location Not Sampled for this Parameter
 - Estimated Nickel Extent in Groundwater Monitoring Wells (above 8.2 ug/L)
 - 1917 Shoreline
 - 1917 Features
 - 1966 Shoreline
 - 1966 Features

Groundwater Analytical Data

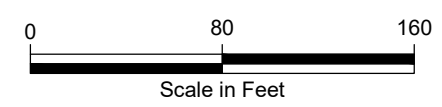
Sample ID	Date Sampled	Result in ug/L
GP-SB-12	6/9/2020	8.2

Nickel - Dissolved GW

- Soil Results above SL of 48 mg/kg
- Soil Results below SL of 48 mg/kg

SL = Screening Level
 mg/kg = milligram per kilogram
 ug/L = micrograms per liter
 MTCA = Model Toxics Control Act
 U = Concentration Below Reporting Detection Limit (non-Detect Value)
Bold = Detection
 Shading denotes an exceedance of a Screening Level of 8.2 ug/L

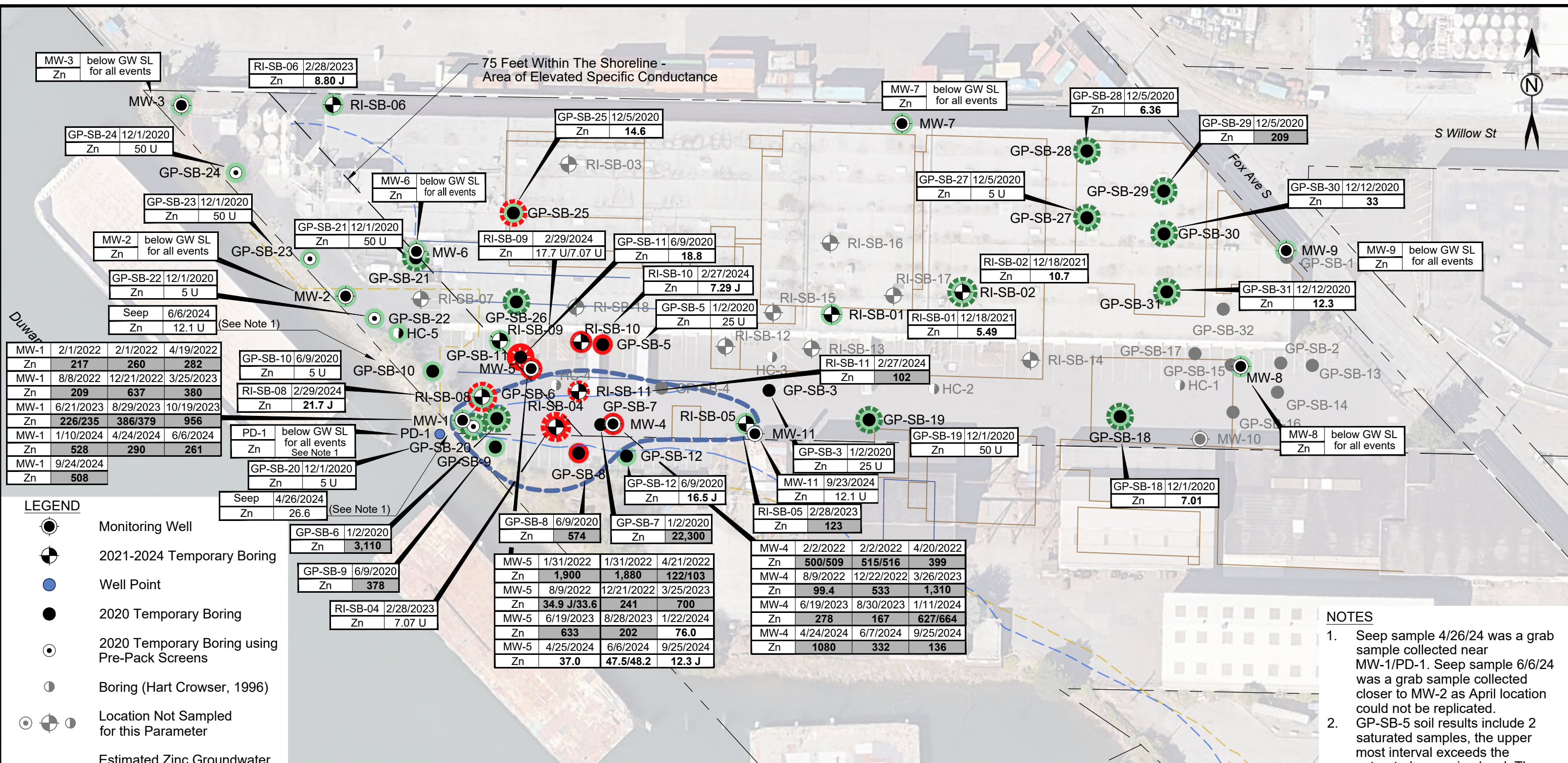
- NOTES**
- Sample locations shown in bold represent soil and/or groundwater sampling locations for this compound. Bold sample locations without a groundwater data callout box were only sampled for soil.
 - Estimated extent of groundwater contamination is based on monitoring well data and geoprobe samples collected 75 feet back from the shoreline or geoprobe samples collected after 2020. Monitoring well samples and grab groundwater samples collected after 2020 were analyzed using inductively coupled plasma mass spectrometry methods because of the high conductivity observed at the site. Groundwater grab samples collected in 2020 (all samples starting with "GP-SB") were not analyzed using these methods and results shown may include interferences resulting from high conductivity in the sample matrix. Results from these samples are shown on summary tables.



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Figure 14
 Estimated Extent of Nickel
 in Soil and Groundwater

File: D:\Projects\Create\Dawn Foods Sample_2025-05 RIFS.dwg Date: 6/12/2025 | Cabry



MW-1	2/1/2022	2/1/2022	4/19/2022
Zn	217	260	282
MW-1	8/8/2022	12/21/2022	3/25/2023
Zn	209	637	380
MW-1	6/21/2023	8/29/2023	10/19/2023
Zn	226/235	386/379	956
MW-1	1/10/2024	4/24/2024	6/6/2024
Zn	528	290	261
MW-1	9/24/2024		
Zn	508		

- LEGEND**
- Monitoring Well
 - 2021-2024 Temporary Boring
 - Well Point
 - 2020 Temporary Boring
 - 2020 Temporary Boring using Pre-Pack Screens
 - Boring (Hart Crowser, 1996)
 - Location Not Sampled for this Parameter

- Estimated Zinc Groundwater Extent (above 81 ug/L)
- 1917 Shoreline
- 1917 Features
- 1966 Shoreline
- 1966 Features

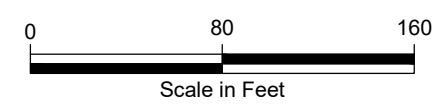
Groundwater Analytical Data

Sample ID	GP-SB-12 6/9/2020	Date Sampled
Zinc - Dissolved GW	Zn 81	Result in ug/L

- Soil Result from the Saturated Zone above SL of 85 mg/kg
- Soil Result from the Saturated Zone below SL of 85 mg/kg
- Soil Result from Vadose Zone above SL of 100 mg/kg
- Soil Result from Vadose Zone below SL of 100 mg/kg

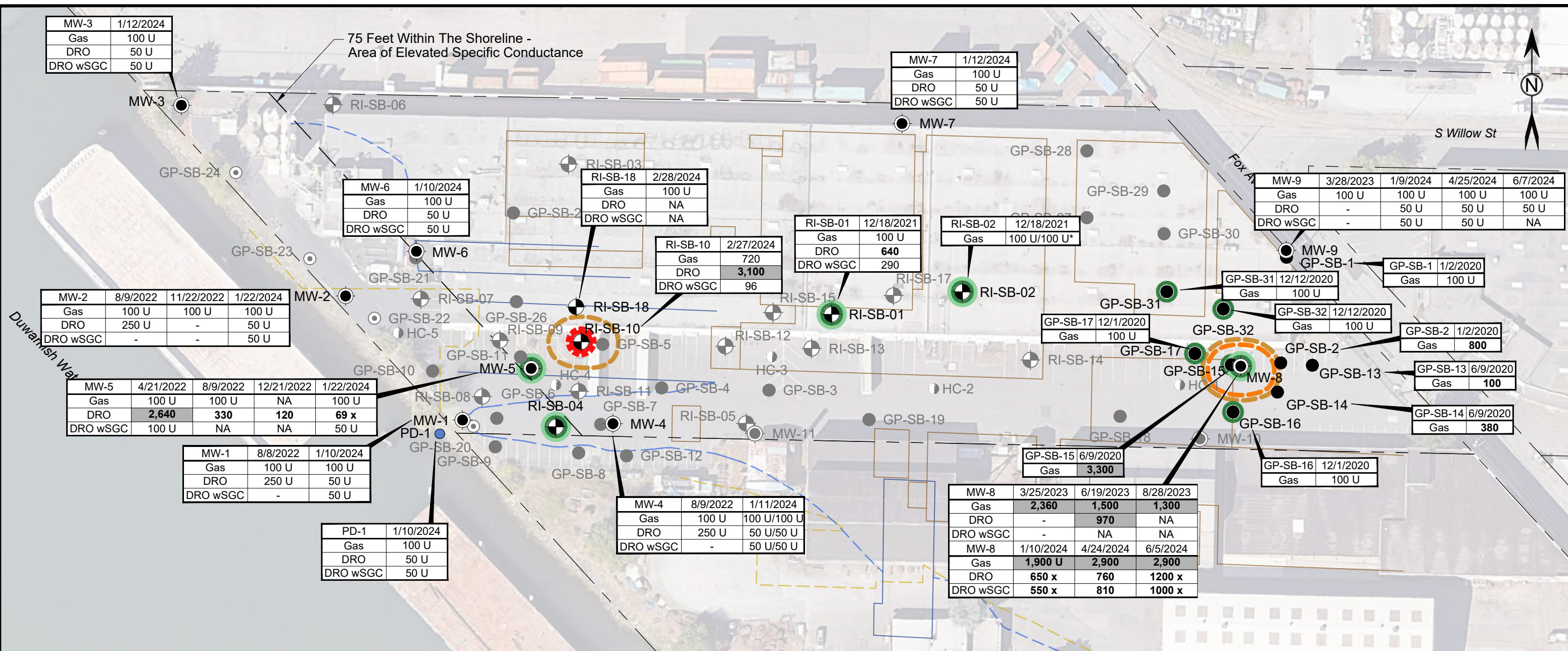
SL = Screening Level
 mg/kg = milligram per kilogram
 ug/L = micrograms per liter
 MTCA = Model Toxics Control Act
 U = Concentration Below Reporting Detection Limit (non-Detect Value)
Bold = Detection
 Shading denotes an exceedance of a Screening Level of 81 ug/L

- NOTES**
- Seep sample 4/26/24 was a grab sample collected near MW-1/PD-1. Seep sample 6/6/24 was a grab sample collected closer to MW-2 as April location could not be replicated.
 - GP-SB-5 soil results include 2 saturated samples, the upper most interval exceeds the saturated screening level. The lower interval is below the screening level.
 - Sample locations shown in bold represent soil and/or groundwater sampling locations for this compound. Bold sample locations without a groundwater data callout box were only sampled for soil.



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Figure 15
 Estimated Extent of Zinc
 in Soil and Groundwater



LEGEND

- Monitoring Well
- 2021-2024 Temporary Boring
- Well Point
- 2020 Temporary Boring
- 2020 Temporary Boring using Pre-Pack Screens
- Boring (Hart Crowser, 1996)
- Location Not Sampled for this Parameter
- Estimated TPH-Gasoline Groundwater Extent (1,000 ug/L)
- Estimated TPH-Diesel Groundwater Extent (1,000 ug/L)
- 1917 Shoreline
- 1917 Features
- 1966 Shoreline
- 1966 Features

Groundwater Analytical Data

Sample ID	Date Sampled	Gasoline Range Organics	Diesel Range Organics	Diesel with Silica Gel Cleanup
GP-SB-12	6/9/2020	Gas 1,700	DRO 500	DRO wSGC 100

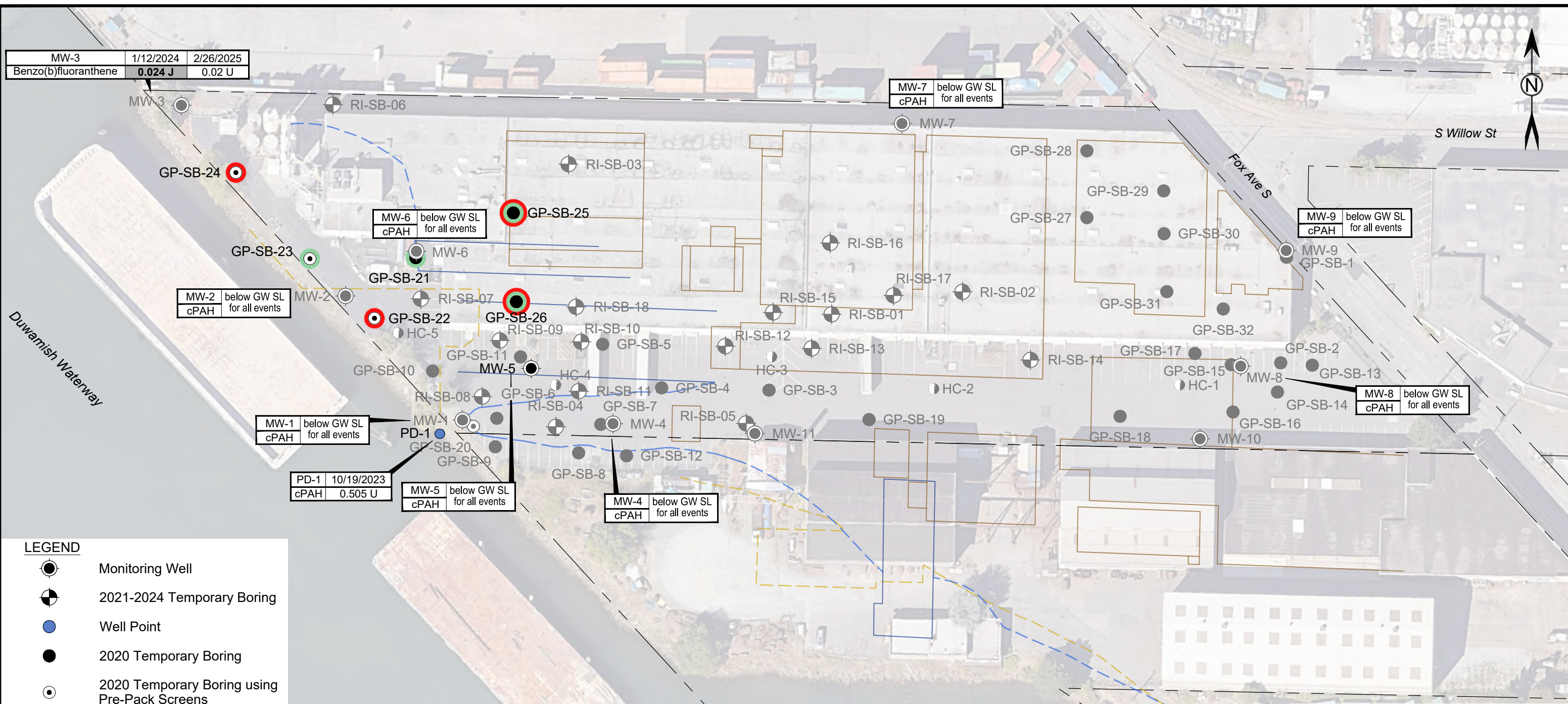
SL = Screening Level
 mg/kg = milligram per kilogram
 ug/L = micrograms per liter
 MTCA = Model Toxics Control Act
 U = Concentration Below Reporting Detection Limit (non-Detect Value)
 * = Parent Sample/Duplicate Sample Results
 NA = Not Analyzed
Bold = Detection
 Gray Shading Denotes an exceedance of the Gas Screening Level of 1,000 ug/L, DRO Screening Level of 500 ug/L. The DRO screening level is applied to the difference between DRO and DRO with Silica Gel Cleanup

Soil Result above applicable screening level

- Soil Result for Gas below Saturated/Vadose Zone SL of 100 mg/kg
- Soil Result for Gas above Saturated/Vadose Zone SL of 100 mg/kg
- Soil Result for DRO below Saturated/Vadose Zone SL of 2,000 mg/kg
- Soil Result for DRO above Saturated/Vadose Zone SL of 2,000 mg/kg

NOTE
 Sample locations shown in bold represent soil and/or groundwater sampling locations for this compound. Bold sample locations without a groundwater data callout box were only sampled for soil.

File: D:\Projects\Create\Dawn Foods Sample_2025-05 RIFS.dwg Date: 6/12/2025 | Cabry



LEGEND

- Monitoring Well
- 2021-2024 Temporary Boring
- Well Point
- 2020 Temporary Boring
- 2020 Temporary Boring using Pre-Pack Screens
- Boring (Hart Crowser, 1996)
- Location Not Sampled for this Parameter
- 1917 Shoreline
- 1917 Features
- 1966 Shoreline
- 1966 Features

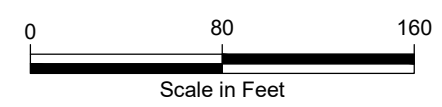
Groundwater Analytical Data

Sample ID	GP-SB-12	Date Sampled	6/9/2020
TEF Total cPAH - Carcinogenic Polycyclic Aromatic Hydrocarbon	cPAH	Result in ug/L	0.1

● Soil Results above SL of 0.007 mg/kg
● Soil Results below SL of 0.007 mg/kg

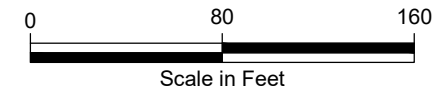
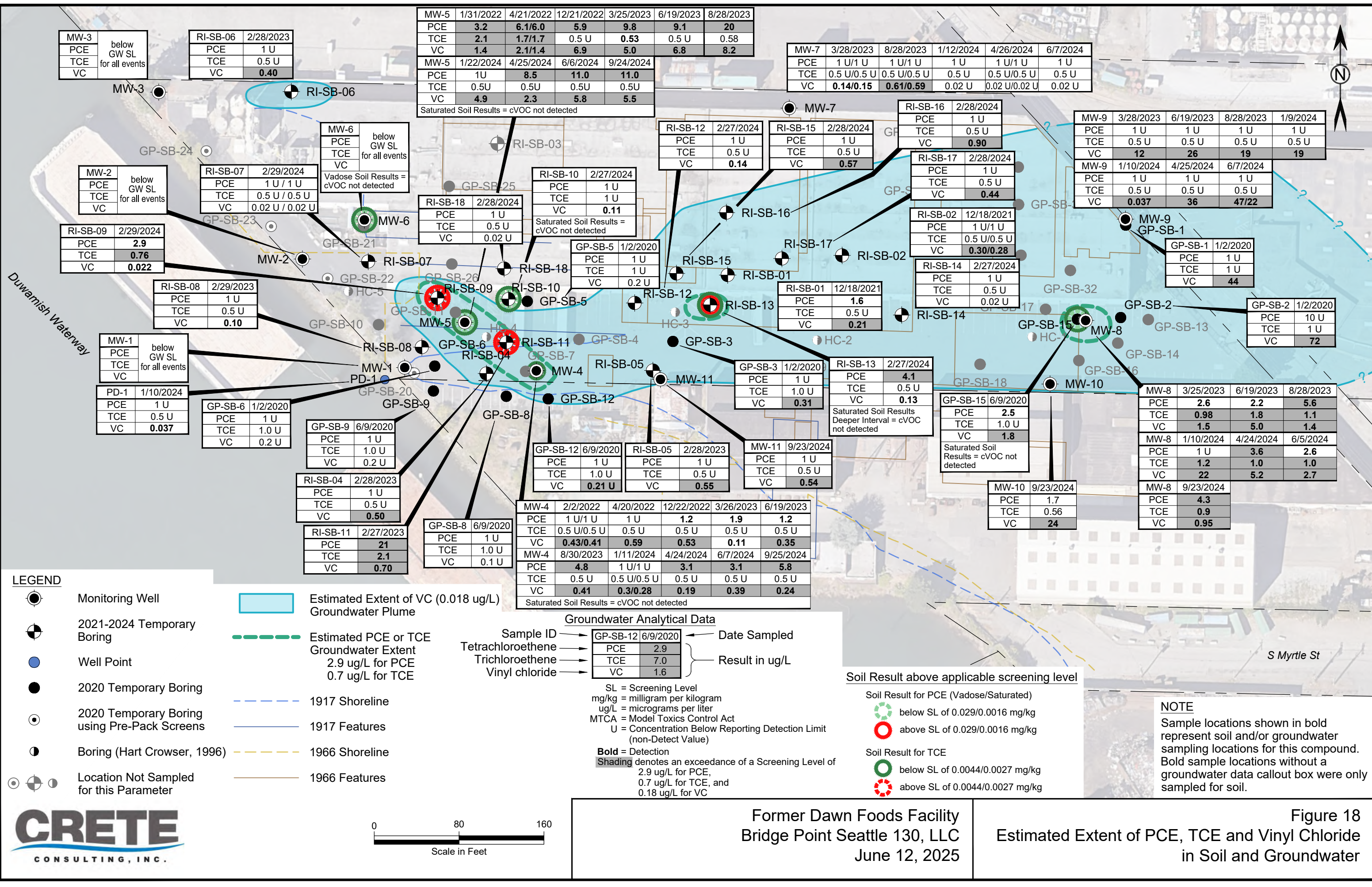
SL = Screening Level
 mg/kg = milligram per kilogram
 ug/L = micrograms per liter
 MTCA = Model Toxics Control Act
 U = Concentration Below Reporting Detection Limit (non-Detect Value)
Bold = Detection
Shading denotes an exceedance of a Screening Level of 0.00016 ug/L

- NOTES**
1. Sample locations shown in bold represent soil and/or groundwater sampling locations for this compound. Bold sample locations without a groundwater data callout box were only sampled for soil.
 2. A detailed SVOC analysis was run on the April 21, 2022 groundwater sample from MW-5, the only compound detected was acenaphthene which does not have a MTCA screening level.

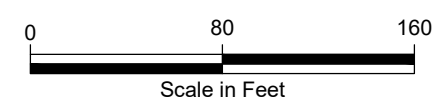
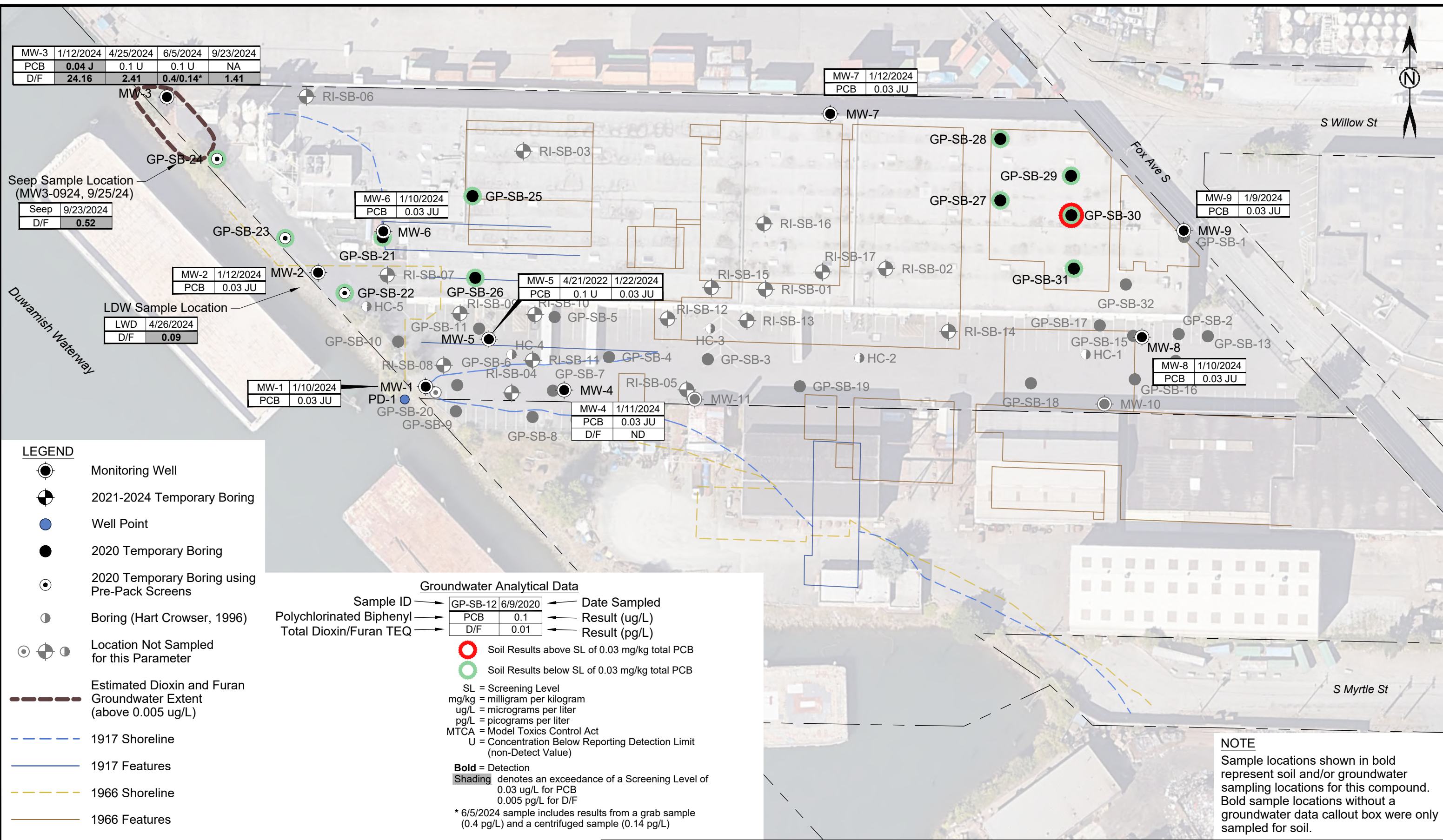


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Figure 17
 Estimated Extent of Total cPAH
 in Soil and Groundwater

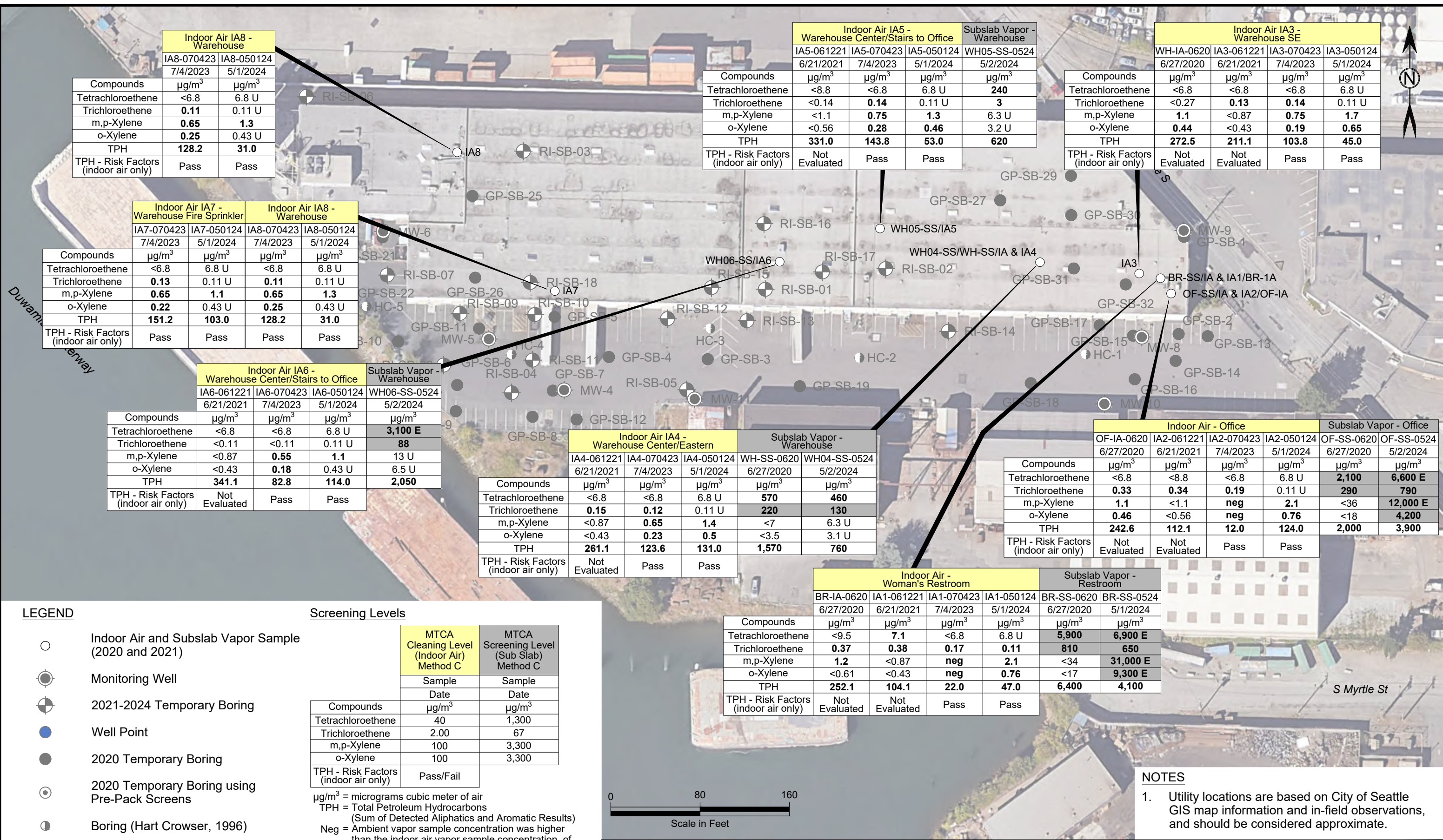


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Figure 19
 Estimated Extent of PCB and Dioxin and Furan
 in Soil and Groundwater



LEGEND

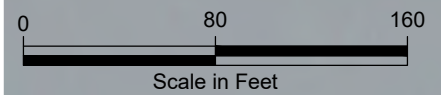
- Indoor Air and Subslab Vapor Sample (2020 and 2021)
- Monitoring Well
- ⊕ 2021-2024 Temporary Boring
- Well Point
- 2020 Temporary Boring
- ⊕ 2020 Temporary Boring using Pre-Pack Screens
- Boring (Hart Crowser, 1996)

Screening Levels

Compounds	MTCA Cleaning Level (Indoor Air) Method C	MTCA Screening Level (Sub Slab) Method C
	Sample	Sample
	Date	Date
	µg/m³	µg/m³
Tetrachloroethene	40	1,300
Trichloroethene	2.00	67
m,p-Xylene	100	3,300
o-Xylene	100	3,300
TPH - Risk Factors (indoor air only)	Pass/Fail	

µg/m³ = micrograms cubic meter of air
 TPH = Total Petroleum Hydrocarbons (Sum of Detected Aliphatics and Aromatic Results)
 Neg = Ambient vapor sample concentration was higher than the indoor air vapor sample concentration, of same compound

Bold = Detected Compound
Shading denotes an exceedance of Method C Screening Level



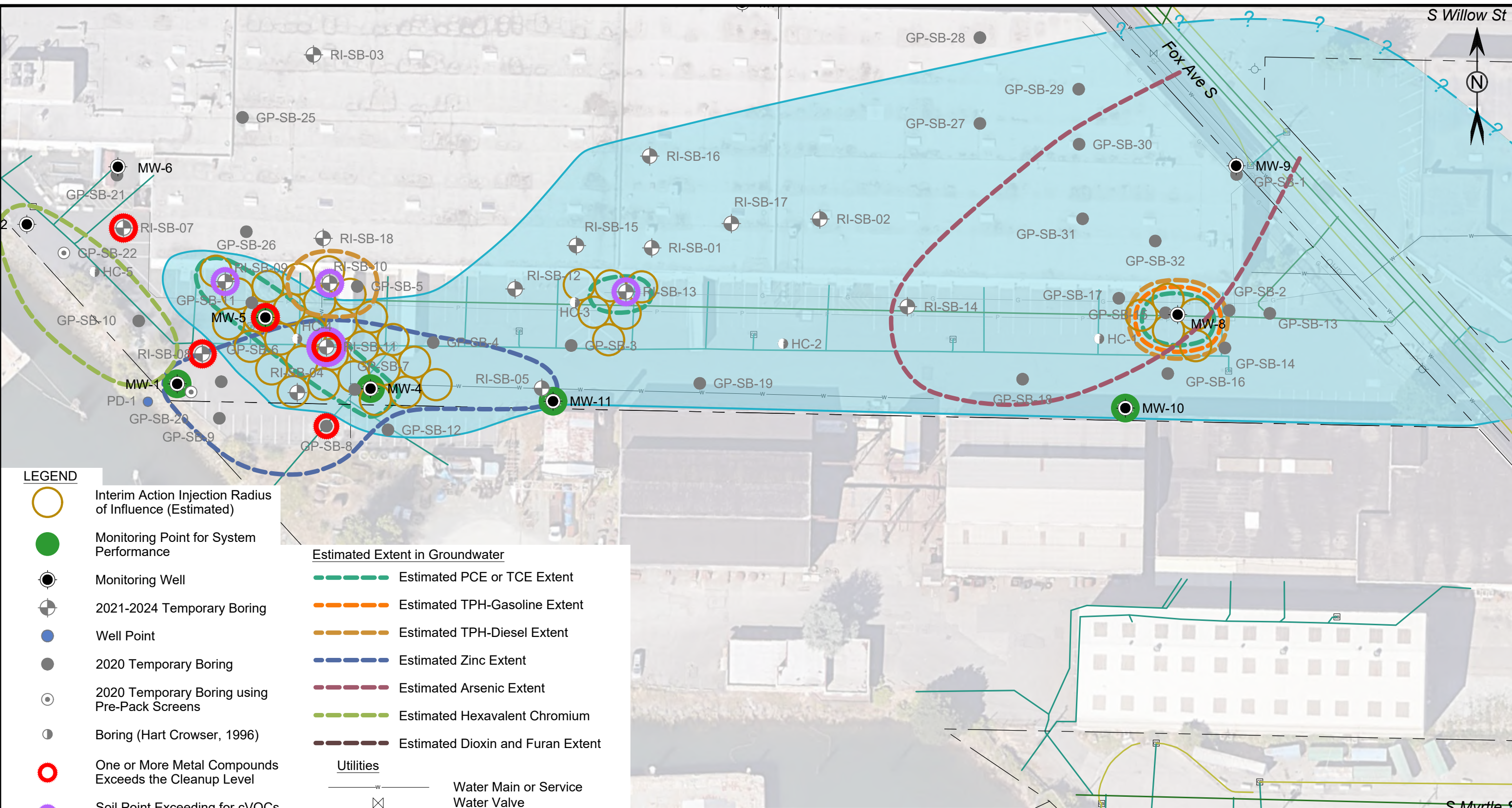
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 Bridge Point Seattle 130, LLC
 June 12, 2025

NOTES

- Utility locations are based on City of Seattle GIS map information and in-field observations, and should be considered approximate.

Figure 20
 Summary of Vapor and Subslab
 Soil Vapor Sampling Results

File: D:\Projects\Crete\Crete\Dawn Foods Sample_2025-05 RIFS.dwg Date: 6/12/2025 | Cabry



LEGEND

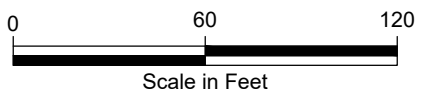
- Interim Action Injection Radius of Influence (Estimated)
- Monitoring Point for System Performance
- Monitoring Well
- 2021-2024 Temporary Boring
- Well Point
- 2020 Temporary Boring
- 2020 Temporary Boring using Pre-Pack Screens
- Boring (Hart Crowser, 1996)
- One or More Metal Compounds Exceeds the Cleanup Level
- Soil Point Exceeding for cVOCs or TPH
- Estimated Extent of Vinyl Chloride Groundwater Plume

Estimated Extent in Groundwater

- Estimated PCE or TCE Extent
- Estimated TPH-Gasoline Extent
- Estimated TPH-Diesel Extent
- Estimated Zinc Extent
- Estimated Arsenic Extent
- Estimated Hexavalent Chromium
- Estimated Dioxin and Furan Extent

Utilities

- Water Main or Service
- Water Valve
- Fire Hydrant
- Drainage Pipe
- Wastewater Pipe
- Culvert
- Catch Basin
- Manhole
- Powerline - Overhead
- Powerline - Underground
- Power Pole
- Gasline



NOTES

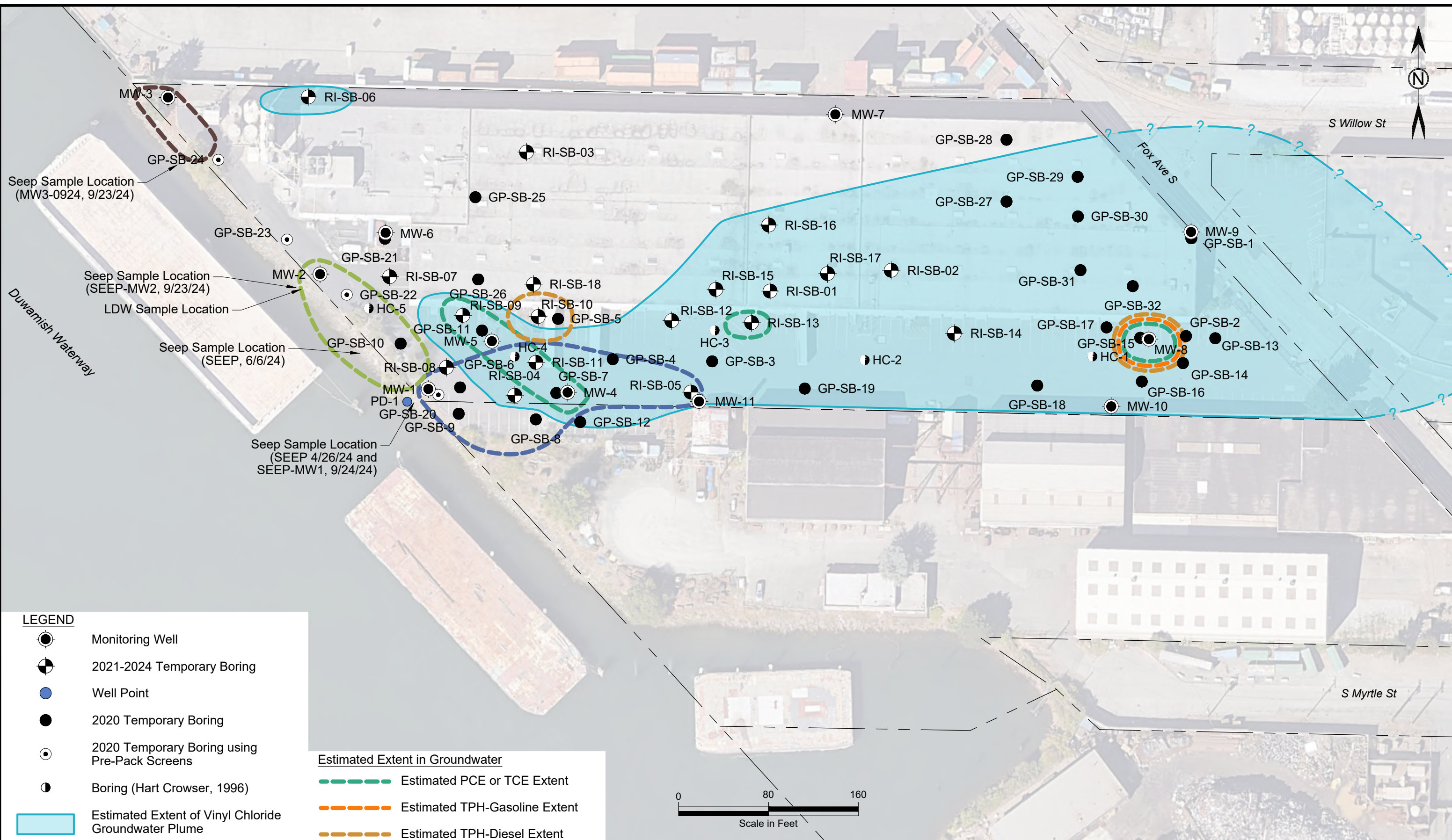
- Utility locations are based on City of Seattle GIS map information and in-field observations, and should be considered approximate.



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Figure 21
 Interim Action Areas

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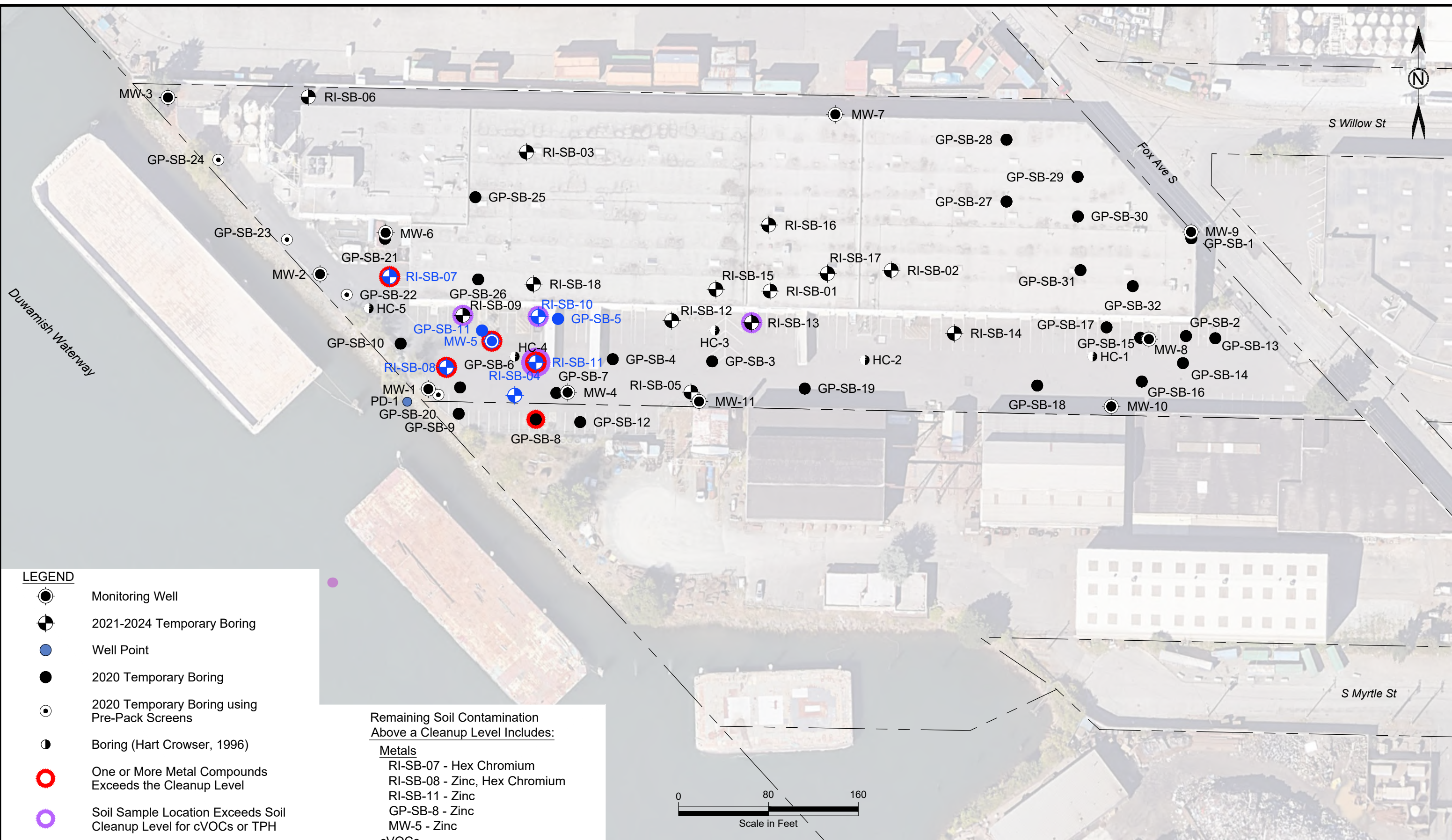
- Monitoring Well
- 2021-2024 Temporary Boring
- Well Point
- 2020 Temporary Boring
- 2020 Temporary Boring using Pre-Pack Screens
- Boring (Hart Crowser, 1996)
- Estimated Extent of Vinyl Chloride Groundwater Plume

- Estimated Extent in Groundwater
- Estimated PCE or TCE Extent
 - Estimated TPH-Gasoline Extent
 - Estimated TPH-Diesel Extent
 - Estimated Zinc Extent
 - Estimated Hexavalent Chromium
 - Estimated Dioxin and Furan Extent



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Figure 22
Estimated Extent of Groundwater
Exceeding Cleanup Levels



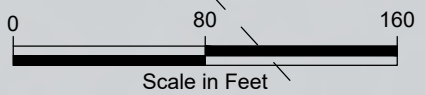
- LEGEND**
- Monitoring Well
 - 2021-2024 Temporary Boring
 - Well Point
 - 2020 Temporary Boring
 - 2020 Temporary Boring using Pre-Pack Screens
 - Boring (Hart Crowser, 1996)
 - One or More Metal Compounds Exceeds the Cleanup Level
 - Soil Sample Location Exceeds Soil Cleanup Level for cVOCs or TPH

Remaining Soil Contamination Above a Cleanup Level Includes:

Metals
 RI-SB-07 - Hex Chromium
 RI-SB-08 - Zinc, Hex Chromium
 RI-SB-11 - Zinc
 GP-SB-8 - Zinc
 MW-5 - Zinc

cVOCs
 RI-SB-09 - TCE and PCE
 RI-SB-11 - TCE and PCE
 RI-SB-13 - PCE

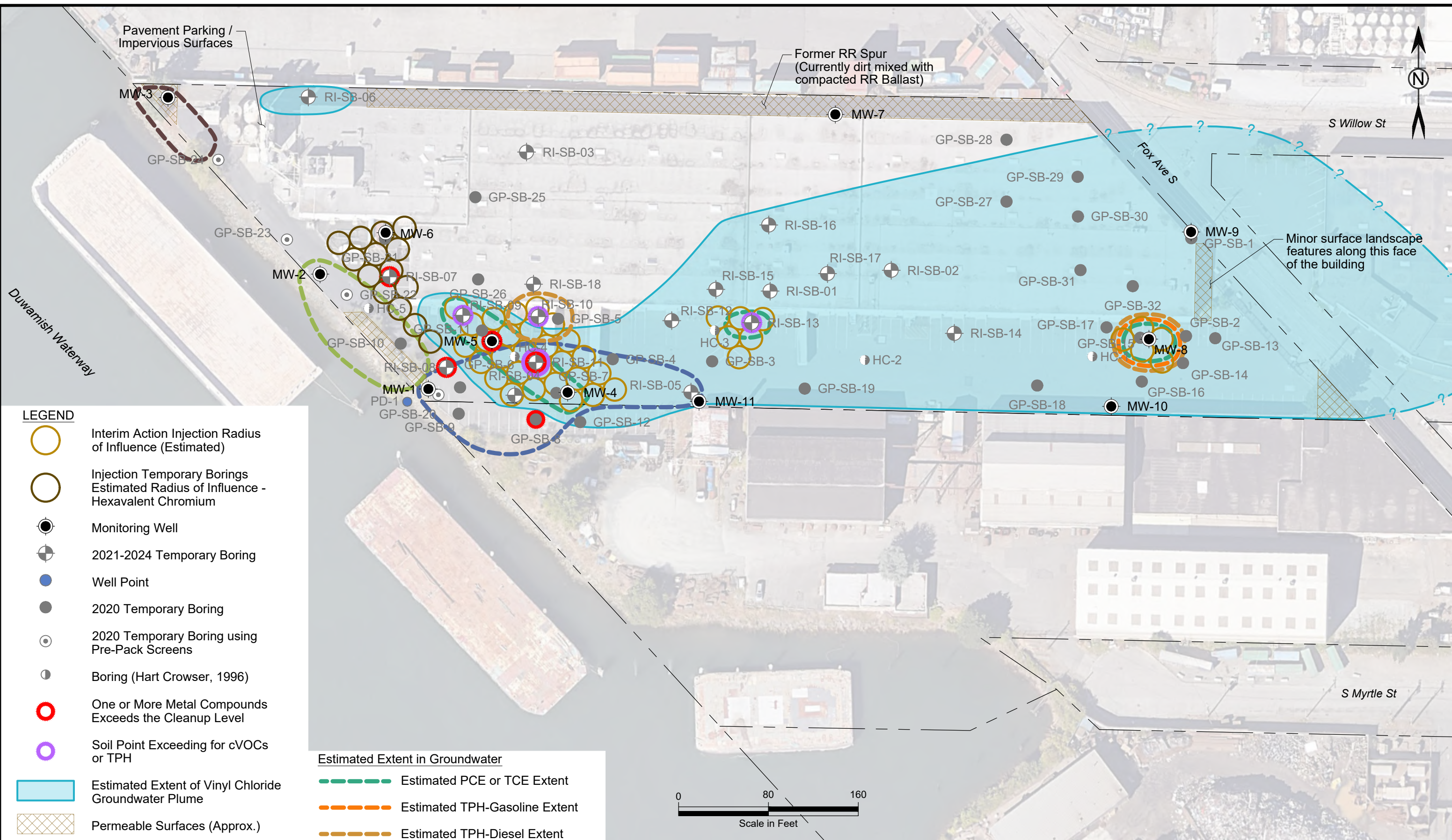
TPH
 RI-SB-10 - TPH Gx and Dx



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Figure 23
 Soil Contamination
 Exceeding Cleanup Levels

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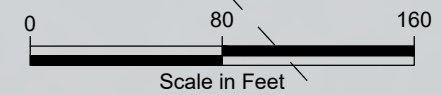


LEGEND

- Interim Action Injection Radius of Influence (Estimated)
- Injection Temporary Borings Estimated Radius of Influence - Hexavalent Chromium
- Monitoring Well
- 2021-2024 Temporary Boring
- Well Point
- 2020 Temporary Boring
- 2020 Temporary Boring using Pre-Pack Screens
- Boring (Hart Crowser, 1996)
- One or More Metal Compounds Exceeds the Cleanup Level
- Soil Point Exceeding for cVOCs or TPH
- Estimated Extent of Vinyl Chloride Groundwater Plume
- Permeable Surfaces (Approx.)

Estimated Extent in Groundwater

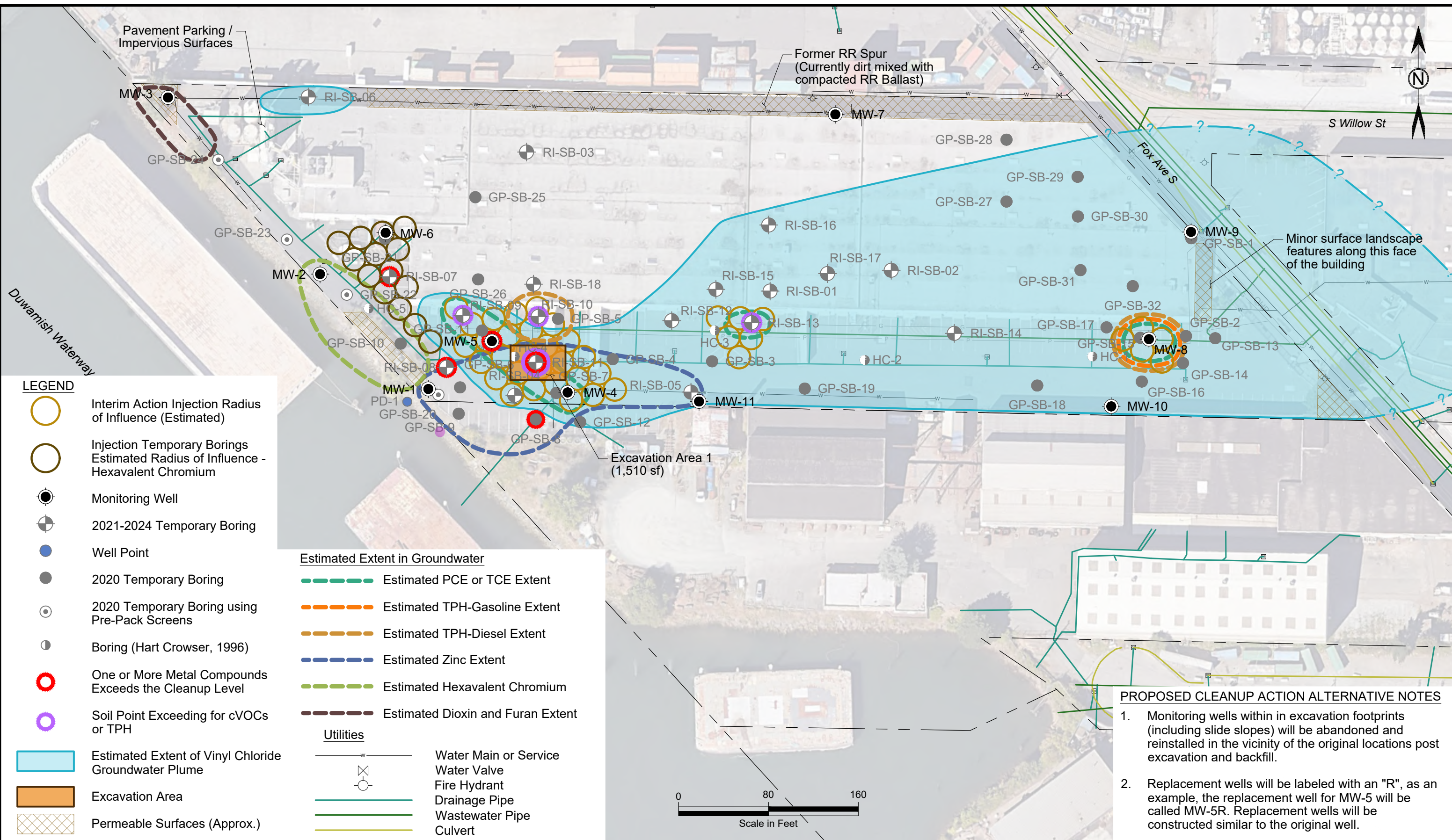
- Estimated PCE or TCE Extent
- Estimated TPH-Gasoline Extent
- Estimated TPH-Diesel Extent
- Estimated Zinc Extent
- Estimated Hexavalent Chromium
- Estimated Dioxin and Furan Extent



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Figure 24
 Proposed Cleanup Action
 Alternative 1

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LEGEND

- Interim Action Injection Radius of Influence (Estimated)
- Injection Temporary Borings Estimated Radius of Influence - Hexavalent Chromium
- Monitoring Well
- 2021-2024 Temporary Boring
- Well Point
- 2020 Temporary Boring
- 2020 Temporary Boring using Pre-Pack Screens
- Boring (Hart Crowser, 1996)
- One or More Metal Compounds Exceeds the Cleanup Level
- Soil Point Exceeding for cVOCs or TPH
- Estimated Extent of Vinyl Chloride Groundwater Plume
- Excavation Area
- Permeable Surfaces (Approx.)

Estimated Extent in Groundwater

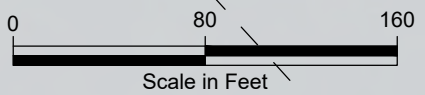
- Estimated PCE or TCE Extent
- Estimated TPH-Gasoline Extent
- Estimated TPH-Diesel Extent
- Estimated Zinc Extent
- Estimated Hexavalent Chromium
- Estimated Dioxin and Furan Extent

Utilities

- Water Main or Service
- Water Valve
- Fire Hydrant
- Drainage Pipe
- Wastewater Pipe
- Culvert
- Catch Basin
- Manhole
- Powerline - Overhead
- Powerline - Underground
- Power Pole
- Gasline

PROPOSED CLEANUP ACTION ALTERNATIVE NOTES

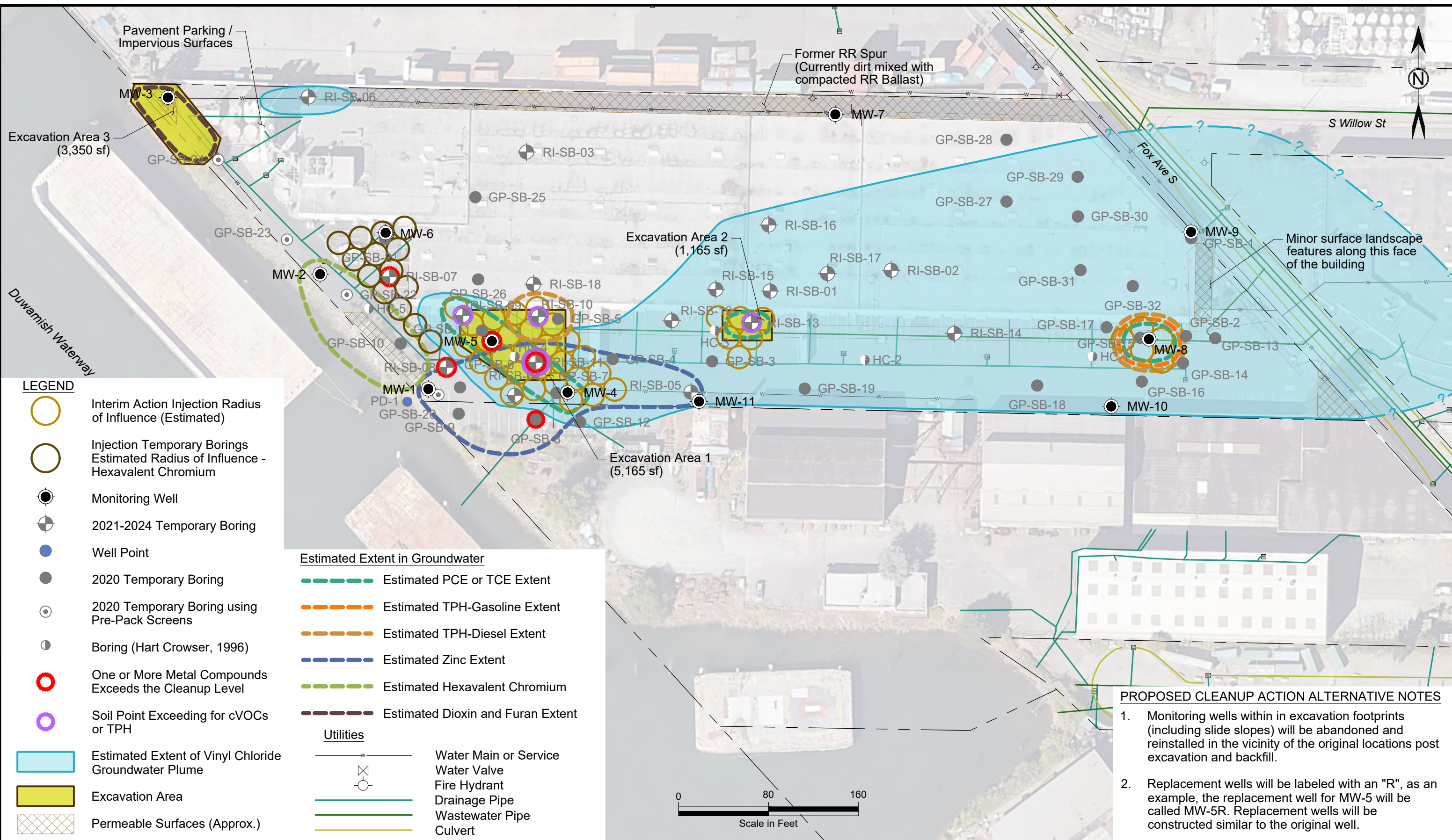
1. Monitoring wells within in excavation footprints (including slide slopes) will be abandoned and reinstalled in the vicinity of the original locations post excavation and backfill.
2. Replacement wells will be labeled with an "R", as an example, the replacement well for MW-5 will be called MW-5R. Replacement wells will be constructed similar to the original well.



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Figure 25
 Proposed Cleanup Action
 Alternative 2

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- LEGEND**
- Interim Action Injection Radius of Influence (Estimated)
 - Injection Temporary Borings Estimated Radius of Influence - Hexavalent Chromium
 - Monitoring Well
 - 2021-2024 Temporary Boring
 - Well Point
 - 2020 Temporary Boring
 - 2020 Temporary Boring using Pre-Pack Screens
 - Boring (Hart Crowser, 1996)
 - One or More Metal Compounds Exceeds the Cleanup Level
 - Soil Point Exceeding for cVOCs or TPH
 - Estimated Extent of Vinyl Chloride Groundwater Plume
 - Excavation Area
 - Permeable Surfaces (Approx.)
- Estimated Extent in Groundwater**
- Estimated PCE or TCE Extent
 - Estimated TPH-Gasoline Extent
 - Estimated TPH-Diesel Extent
 - Estimated Zinc Extent
 - Estimated Hexavalent Chromium
 - Estimated Dioxin and Furan Extent
- Utilities**
- Water Main or Service
 - Water Valve
 - Fire Hydrant
 - Drainage Pipe
 - Wastewater Pipe
 - Culvert
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 - Manhole
 - Powerline - Overhead
 - Powerline - Underground
 - Power Pole
 - Gasline

- PROPOSED CLEANUP ACTION ALTERNATIVE NOTES**
1. Monitoring wells within in excavation footprints (including slide slopes) will be abandoned and reinstalled in the vicinity of the original locations post excavation and backfill.
 2. Replacement wells will be labeled with an "R", as an example, the replacement well for MW-5 will be called MW-5R. Replacement wells will be constructed similar to the original well.



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Figure 26
 Proposed Cleanup Action
 Alternative 3

Appendix A
Analytical Laboratory Reports

Appendix B

Boring Logs

Appendix C

Tidal Study

Appendix D
TEE & Soil Cleanup Level Compliance Backup

Appendix E
Indoor Ai Vapor CUL Backup

Appendix F

Remedial Alternative Cost Backup