Exhibit F
Draft Cleanup Action Plan

Jeld Wen Site
300 West Marine View Drive
Everett, Washington 98201

Issued By

Toxics Cleanup Program
HQ Cleanup Section

Washington State Department of Ecology
Olympia, Washington

June 2023

Publication Information

This document is available on the Department of Ecology's website at: Jeld Wen - (4402) (wa.gov)

Related Information

- Clean-up site ID: 4402
- Facility site ID: 2757
- WRIA: 07
- Data for this project is available in Ecology's EIM Database,[1] Study ID: AODE5095; JeldWen12; JeldWen13

Contact Information

Toxics Cleanup Program

Mahbub Alam
Site Manager
(360) 280 6274, mahbub.alam@ecy.wa.gov

P.O. Box 47600
Olympia, WA 98504-7600

Website[2]: Washington State Department of Ecology

ADA Accessibility

The Department of Ecology is committed to providing people with disabilities access to information and services by meeting or exceeding the requirements of the Americans with Disabilities Act (ADA), Section 504 and 508 of the Rehabilitation Act, and Washington State Policy #188.

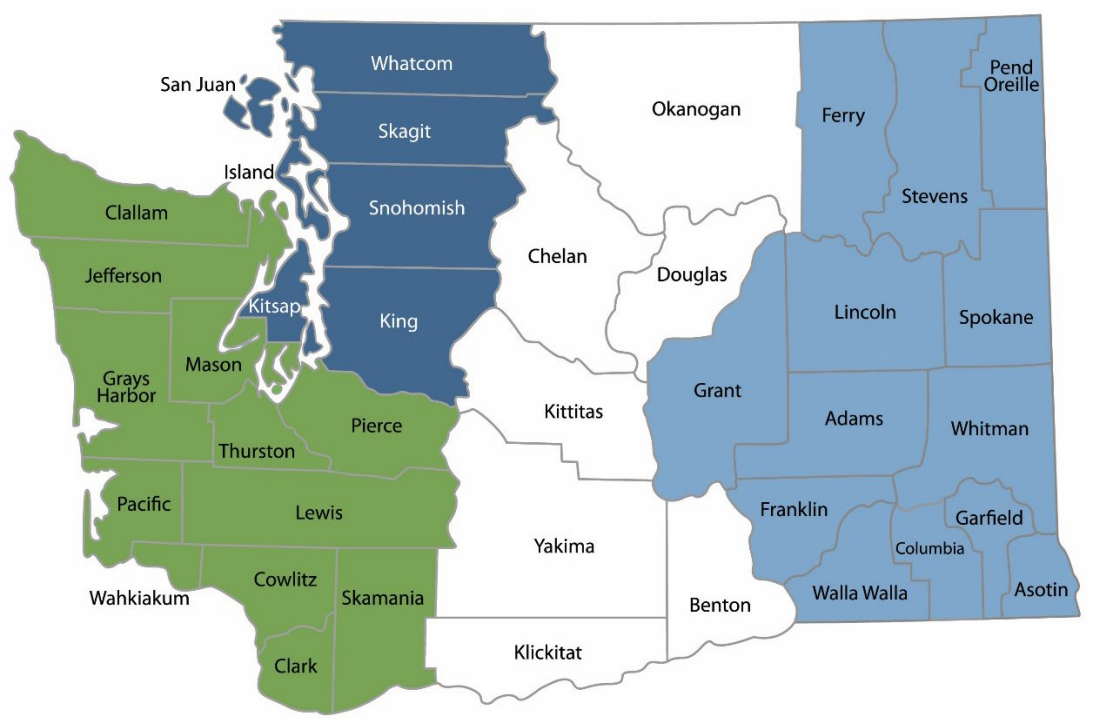
To request an ADA accommodation, contact Ecology by phone at 360-407-6831 or email at ecyadacoordinator@ecy.wa.gov. For Washington Relay Service or TTY call 711 or 877-833-6341. Visit Ecology's website for more information.

---

[1] www.ecology.wa.gov/eim
[2] www.ecology.wa.gov/contact

Department of Ecology's Regional Offices

Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 206-594-0000	Central Region 509-575-2490	Eastern Region 509-329-3400

Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	P.O. Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	P.O. Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 West Alder Street Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 North Monroe Spokane, WA 99205	509-329-3400
Headquarters	Statewide	P.O. Box 46700 Olympia, WA 98504	360-407-6000

Exhibit B
Draft Cleanup Action Plan

Jeld Wen Site
300 West Marine View Drive
Everett, Washington 98201

Toxics Cleanup Program

Washington State Department of Ecology

HQ Cleanup Section

Olympia, WA

June 2023

DEPARTMENT OF
ECOLOGY
State of Washington

Table of Contents

Acronyms

aMSL	above Mean Sea Level
AO	Agreed Order
ARARs	applicable or relevant and appropriate requirements
AS	air sparging
bgs	below ground surface
BIO	Enhanced *in-situ* Bioremediation
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
BSAF	Biota-sediment accumulation factor
CAP	Cleanup Action Plan
CD	Consent Decree
Corps	United States Army Corps of Engineers
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
cPAH	carcinogenic polycyclic aromatic hydrocarbons
CPOC	Conditional Point of Compliance
CRA	Contingent Remedial Action
Cs-137	Cesium-137
CUL	Cleanup Level
CSM	conceptual site model
DCA	Disproportionate Cost Analysis
DCAP	Draft Cleanup Action Plan
dw	dry weight
EA	exposure area
Ecology	Washington State Department of Ecology
EMNR	enhanced monitored natural recovery
ESCP	Erosion Sediment Control Plan
IDW	inverse distance weighting
IHS	Indicator Hazardous Substances

ISCO	*In-Situ* Chemical Oxidation
ISS	*In-Situ* Stabilization
mg/kg	milligrams per kilogram
ng/kg	nanograms per kilogram
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MNR	monitored natural recovery
MTCA	Model Toxics Control Act
NAPL	Non-aqueous phase liquid
NNS	Nitrate-nutrient-surfactant
NPDES	National Pollutant Discharge Elimination System
NWP	Nationwide Permit
OMM	operations, monitoring & maintenance
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
pg/g	picograms per gram
pg/L	picograms per liter
PDI	Pre-Design Investigation
PLP	Potentially Liable Person
POC	Point of Compliance
PPE	Personal Protective Equipment
PQL	practical quantitation limit
QAPP	quality assurance project plan
REL	Remediation Level
RI/FS	Remedial Investigation/Feasibility Study
SCE	Source Control Evaluation
SCO	sediment cleanup objective
SCUM	Sediment Cleanup User's Manual
SEPA	State Environmental Policy Act
SMA	sediment management area

SMP	Shoreline Master Program
SMS	Sediment Management Standards
SPME	Solid Phase Micro Extraction
SSD	Sub-slab depressurization
SVE	soil vapor extraction
SVOC	semi-volatile organic compounds
SWAC	surface weighted average concentration
TEE	Terrestrial Ecological Evaluation
TEF	toxic equivalency factor
TEQ	toxic equivalency
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TPH-Gx	total petroleum hydrocarbons as gasoline
TPH-Dx	total petroleum hydrocarbons as diesel
TVS	total volatile solids
VOC	volatile organic compound
WAC	Washington Administrative Code

Executive Summary

This document presents the Draft Cleanup Action Plan (DCAP) for the Jeld Wen Site (Site) located at 300 West Marine View Drive, Everett, Washington, 98201. This DCAP was prepared by the Washington Department of Ecology (Ecology) in collaboration with JELD-WEN Inc. (JELD-WEN). This DCAP has been prepared to meet the requirements of the Model Toxics Control Cleanup Act (MTCA) and Sediment Management Standards (SMS) regulations administered by Ecology under Chapters 173-340 and 173-204, respectively, of the Washington Administrative Code (WAC). This DCAP describes Ecology's proposed cleanup action for the Site, setting forth the requirements that the cleanup must meet and was developed using information provided in the 2021 Final Remedial Investigation/Feasibility Study (RI/FS) for the Site (SLR/Anchor, 2021).

Background

Historical activities at the Site have included casket manufacturing, pole treating, fish net storage, and wood door and sash manufacturing. In May 1986, JELD-WEN acquired the real property at the Site, which included the E.A. Nord, Inc., door plant. JELD-WEN operations at the property included the purchase of rough green wood; drying, planing and cutting the lumber; and assembly of finished wooden doors, rails, posts, columns, and spindles. Wood products manufacturing operations at the Site ceased in 2005. In December 2013, JELD-WEN sold the property to W&W Everett Investments LLC. Several asphalt operations have leased and operated the northwest portion of the upland property as asphalt batch plant since the mid-1990s.

The Site is one of several cleanup sites located on or near Port Gardner Bay, including the immediately adjacent former Bay Wood Products site.

Summary of RI Findings

The upland RI utilized indicator hazardous substances (IHS) to identify areas of concern that warranted remedial action due to soil, groundwater, and soil vapor contamination. The IHS and corresponding upland areas include dioxins/furans for soil and groundwater in the Woodlife Area; carcinogenic polynuclear aromatic hydrocarbons (cPAHs) for soil and naphthalene for groundwater and soil vapors in the Creosote/Fuel Oil Area; and total polychlorinated biphenyls (PCB) congeners for groundwater in the Knoll Fill Area. The extent of dioxins/furans and cPAHs in soil, naphthalene in soil vapor, and dioxins/furans, naphthalene, and total PCB congeners in groundwater define the upland area Site boundary. *See* select Figures from the RI/FS in Appendix B showing the nature and extent of contamination in the upland areas.

The marine RI also utilized IHS to identify in-water areas of concern that warranted remedial action due to sediment contamination. The IHS for sediment in marine areas include PCBs and dioxins/furans. The extent of PCBs and dioxins/furans defines the marine area Site boundary. cPAHs exceeded cleanup levels in marine sediment within the lateral footprint of PCBs and dioxins/furans exceedances. Performing PLPs will conduct additional sampling during remedial design to verify that cleanup actions will result in compliance with sediment cleanup standards for cPAHs. Figures from the RI/FS, showing the Sediment Management Areas (SMAs), sampling locations, the nature and extent of contamination are included as Appendix B.

Summary of FS

An FS was performed using data from the RI investigations to investigate the technical practicability of several cleanup technologies. Upland technologies that were evaluated in the FS include soil excavation and off-site disposal, bioremediation, in situ chemical oxidation, thermal treatment, and in situ soil stabilization/solidification. Seven remedial alternatives for the Creosote/Fuel Oil Area and two alternatives for the Woodlife Area met the MTCA threshold criteria and thus were considered as part of the disproportionate cost analysis (DCA) for selection of remedy for the upland area at the Site. Cleanup alternatives related to impacts identified for the Knoll Fill Area are included in the marine area alternative comparison. Upland Alternative 2 for the Woodlife Area and upland Alternative 7 for the Creosote/Fuel Oil Area were determined to be the most permanent and protective to the maximum extent practicable in the DCA.

For the marine area, seven remedial alternatives were evaluated in the FS. Six of the seven alternatives met the threshold criteria and thus were considered as part of the marine DCA. In-water sediment remedial technologies included source control, monitored natural recovery, enhanced monitored natural recovery, engineered cap on-grade, removal and engineered cap, and full removal. Marine Alternative 5 (M5) was determined to be the most permanent and protective to the maximum extent practicable in the DCA.

Cleanup Action Overview

The cleanup action selected by Ecology for the Site is composed of multiple remedial technologies identified in the RI/FS to best address IHS contamination located in upland soil, groundwater, and marine sediment. The selected remedial technologies were analyzed to determine the cleanup action that would provide the most permanent solution to the maximum extent practicable.

The RI/FS considered multiple different cleanup options for upland soil, groundwater, and marine sediment. The proposed cleanup option from the RI/FS selected by Ecology as the preferred cleanup action for the Site includes the following:

- Excavation and off-site disposal of impacted upland soil in the Woodlife Area
- Excavation and off-site disposal of impacted upland soil; and, enhanced *in situ* bioremediation (BIO) for impacted groundwater in the Creosote/Fuel Oil Area
- Sediment remediation including a remedial technology combination of monitored natural recovery (MNR), enhanced monitored natural recovery (EMNR), full contaminant removal with backfill, and removal with engineered capping in three defined Sediment Management Areas (SMA) within the marine Site boundary
- Source control including the removal of creosote-treated piles and structures, and stormwater system sediment/debris cleanup
- Placement of institutional and engineering controls on the Site to control potential future exposure to contaminants in excess of cleanup levels, where contaminants remain on the Site at concentrations greater than cleanup levels

The DCAP establishes cleanup standards for soil, groundwater, and sediments at the Site. The two primary components of cleanup standards are cleanup levels (CULs) and points of

compliance (POC). Monitoring will be conducted during and after remedy construction to evaluate the effectiveness of the remedial technology and to monitor progress towards meeting CULs at each applicable POC. CULs and Remediation Levels (RELs) described in this DCAP include quantitative Preliminary Cleanup Levels used during the RI/FS process, as well as qualitative RELs in accordance with MTCA. This DCAP further describes the screening process to be used during implementation of the remedial technologies, including a description of any applicable contingent remedial action (CRA).

1. Introduction

This document presents the Draft Cleanup Action Plan (DCAP) for the Jeld Wen Site (Site) located at 300 West Marine View Drive, Everett, Washington, 98201. This DCAP was prepared by the Washington Department of Ecology (Ecology) in collaboration with JELD-WEN Inc. (JELD-WEN) in accordance with the requirements of Agreed Order (AO) Number DE 5095 between JELD-WEN and Ecology. This DCAP has been prepared to meet the requirements of the Model Toxics Control Cleanup Act (MTCA) and Sediment Management Standards (SMS) regulations administered by Ecology under Chapters 173-340 and 173-204, respectively, of the Washington Administrative Code (WAC).

This DCAP describes Ecology's proposed cleanup action for the upland and marine portions of the Site. The Site location is depicted on Figure 1. The DCAP was developed using information provided in the 2021 Final Remedial Investigation/Feasibility Study (RI/FS) for the Site (SLR/Anchor, 2021).

1.1. Purpose

This DCAP is required as part of the site cleanup process under MTCA regulations Chapter 173-340 WAC. The purpose of the DCAP is to identify the proposed cleanup action and specify cleanup standards and other requirements for the Site and to provide an explanatory document for public review. More specifically, this plan:

- Describes the Site and current Site conditions.
- Presents the cleanup action alternatives considered in the remedy selection process and describes the selected cleanup action for the Site and the rationale for selecting this alternative.
- Identifies site-specific Cleanup Standards, including cleanup levels (CULs), points of compliance (POC), and remediation levels (RELs) for each hazardous substance and medium of concern for the proposed cleanup action.
- Identifies applicable state and federal laws for the proposed cleanup action.
- Identifies restrictions on future uses and activities at the Site to ensure continued protection of human health and the environment while contaminants remain on the Site at concentrations that exceed CULs.
- Sets forth compliance monitoring requirements; and,
- Presents the schedule for implementing the Cleanup Action Plan (CAP).

Ecology has made a determination that a cleanup conducted in conformance with this DCAP will comply with the requirements for selection of a remedy under WAC 173-340-360.

1.2. Site Ownership and Setting

1.2.1. Site location and description

The Site is located at the confluence of the Snohomish River to the north and Port Gardner Bay (Possession Sound) to the west (Figure 1). The Site is contained within ten adjoining parcels

with a combined land area of approximately 55 acres which consists of both in-water tidal mudflats and upland. The upland area is approximately 36 acres above ordinary high water level. The Site generally includes former operating areas where industrial activities had occurred and hazardous material had been stored, deposited, disposed of or migrated to. The on-property refers to the JELD-WEN historically owned property (former operating areas and Knoll Area), and off-property refers to areas beyond JELD-WEN historically owned property including West Marine View Drive and Burlington Northern Santa Fe (BNSF) right-of-way as well as other surrounding in-water properties (e.g., Wick Family Properties and Port of Everett) where contaminants potentially associated with historical activities have been identified. Current property owners of the upland areas of the Site include W&W Everett Investments LLC and Port of Everett. Owners of surrounding tidal mudflat areas include Wick Family Properties LLC, the Port of Everett, and Foss Maritime Company LLC.

The structures currently located on the former Nord Door portion of the upland area include the following: the main manufacturing building, an office building, a training center building, a maintenance warehouse, a planer building, and two dry kiln buildings (Figure 2). These buildings have been subject to significant weathering and are not currently occupied except for a couple of small buildings that are leased to industrial tenants. In addition, machinery including a hog fuel bin and other pieces of equipment (most seem to have reached design life) remain outside the northwest portion of the main manufacturing building.

Some of the buildings and surrounding paved areas on the former Nord Door portion of the upland area are currently leased to industrial tenants. The former main manufacturing building located on the eastern portion of the upland area has remained primarily vacant, with intermittent use as a storage facility. The northwestern portion of the upland area (approximately 6.1 acres) is currently leased to Cadman. The Cadman (leased) portion of the property operates as an asphalt batch plant. The main structures on the Cadman leased area include an approximately four-story building, feeder shed, and a conveyor system. Numerous aggregate piles are located around the perimeter of the Cadman leased area. A conveyor system connects from the barge dock located at the north end of the Cadman leased area to the aggregate piles. Aggregate is transferred via wheel-loader from the storage piles to feeders located on the north side of the plant. The feeders convey aggregate to the dryers and mixing towers. These features are shown on Figure 2 and Figure 3.

An approximately 2-acre vegetated knoll is located at the southern end of the Site. This “Knoll Area” was created through several apparent filling operations, initially being filled to match the surrounding grade in the early to mid-1960s. Additional fill material was placed in this area during the 1970’s which created the existing “knoll” feature.

The subject property appears to support a network of stormwater lines which discharge towards the northern inlet, southern tidal flat, and the stormwater network below the west-adjacent West Marine View Drive.

A federally listed threatened and State candidate bird species (the purple martin) has been identified at the Everett waterfront, in the vicinity of the Site. Bald eagles, which are listed as a federal species of concern and a State sensitive species, may also be found near the Site. No nesting bald eagles have been observed on the Site; however, the Site is located within the 800-

foot shoreline nest buffer. A Critical Areas Report (CAR) was prepared as part of the RI/FS activities (Appendix D; SLR/Anchor, 2021). The CAR characterized ecological conditions in the study area to allow for the avoidance, minimization, and mitigation of impacts to critical habitats and protected species related to future cleanup activities. The CAR identified and delineated 14 estuarine wetlands were within the study area (Wetlands E1 through E14). Most of these estuarine wetlands are small patches or groups of small patches of salt-tolerant vegetation near the marine ordinary high-water mark (OHWM), and 8 of the 14 wetlands are less than 100 square feet in total area. The City of Everett manages a Shoreline Master Program (SMP). The SMP designates the tidal mudflats south of the Site as "Urban Maritime Interim." The logway (inlet area north of the Site) and Maulsby Marsh (referred to as Maulsby Swamp in the SMP) are designated in the SMP as Aquatic Conservancy[3]. There are no federally listed endangered fish species identified in the project area. Federally listed threatened species (also noted as State candidate species) that may be found in the Snohomish River near the Site include the Coho salmon, Dolly Varden/bull trout, fall Chinook salmon, fall chum, pink salmon, resident cutthroat, sockeye salmon, summer Chinook salmon, and summer steelhead, which may migrate through the area during certain periods of the year. The RI/FS (SLR/Anchor, 2021) provides a detailed description of the priority/protected species and habitat known to occur within and adjacent to the Site.

Surface water in the Site vicinity is utilized both commercially and recreationally. The Tulalip Tribes Reservation is located approximately one mile north of the Site, on the north side of the Snohomish River. Tulalip tribal members living on the Tulalip Reservation are engaged in both commercial and subsistence fishing near the confluence of Port Gardner Bay and the Snohomish River. There is no current or proposed future use of groundwater in the Site vicinity.

The Site is bound to the east/northeast by tidal mudflats and commercial/industrial property owned by the Port of Everett; to the west by tidal mudflats owned by Wick Family Properties LLC (formerly Wick Towing), Port of Everett, and Foss Maritime Company LLC; to the southeast by West Marine View Drive (City of Everett), beyond which to the east is the BNSF railway and vacant marshland (Maulsby Marsh) owned by BNSF; and to the north/northwest by Port Gardner Bay. The surrounding tidal mudflat parcels contain pilings and creosote-treated structures. Pilings within the SMAs and outside the SMAs but immediately adjacent to upland property area will be removed as a source control measure. SMAs, piles identified for removal, surrounding parcels, and property ownership are shown on Figure 3.

The Site lies on an area of fill that extends into Port Gardner Bay. The majority of the Site is relatively flat, with a maximum elevation of approximately 15 feet above mean sea level (aMSL) while the Knoll Area extends to approximately 26 feet aMSL. The tidal mudflats and a portion of the upland areas of the Site lie within the 100-year floodplain.

The current zoning of the Site property is industrial and future use of the Site property is expected to remain industrial. Additional discussions of topography, geology and hydrogeology,

[3] Under the City of Everett's SMP, "The 'Aquatic Conservancy' shoreline environment designation is applied to areas that scored highly for salmonid habitat in the 2001 Snohomish Estuary Wetland Integration Plan Salmon Overlay." Everett SMP at page 52 (October 2019).

climate, predicted sea level rise, and ecological setting are included in Section 3 of the RI/FS report.

1.2.2. Site boundary

Under MTCA, a site (or facility) is an area where a hazardous substance has come to be located. As such, the nature and extent of contamination in the soil, soil vapors, and/or groundwater defines an upland site's boundary. More specifically for the Jeld Wen Site, the upland Site boundary includes areas of contamination above cleanup levels of dioxins/furans and cPAHs in soil, naphthalene in soil vapors, and dioxins/furans, naphthalene, and total PCB congeners in groundwater. Figure 6 shows the geographical areas where contamination was found above cleanup levels and defines the extent of upland Site boundary.

Similarly, the nature and extent of contamination in the sediment defines the marine area Site boundary. More specifically, the marine Site boundary includes sediment contaminated with PCBs and dioxins/furans above sediment management standards. Figure 3 shows the geographical areas where contamination was found above sediment management standards and defines the extent of marine Site boundary.

1.3. Previous Studies

This section summarizes environmental investigations that have been completed at the Site. For additional detail on these investigations, refer to Section 4.1 of the RI/FS report (Anchor QEA, SLR 2021).

1.3.1. Upland investigations

- Prior to the 2008 AO between JELD-WEN and Ecology: Pre-RI Investigations were performed to assess impacts from: historical pole treating operations at the east side of the facility and beneath West Marine View Drive; historical fueling oil storage at the east side of the facility; wood treatment solution (Woodlife) storage and usage at the northeast corner of the facility; a former fueling station in the central portion of the Site; the former casket manufacturing area; and fill material placed at the Site. These investigations consisted of surface soil sampling, subsurface soil sampling, grab groundwater sampling from temporary wells, and installation of permanent groundwater monitoring wells.
- 2009: Initial RI Investigation under the AO consisted of surface soil sampling, subsurface soil sampling, grab groundwater sampling from temporary wells, and installation of permanent groundwater monitoring wells. In addition, shallow soil samples and grab groundwater samples were collected adjacent to Maulsby Marsh and the BNSF right-of-way. Samples were submitted for laboratory analysis for a variety of contaminants of potential concern (COPC), including Total Petroleum Hydrocarbons (TPH), Polynuclear Aromatic Hydrocarbons (PAHs), Semivolatile Organic Compounds (SVOCs), Volatile Organic Compounds (VOCs), Polychlorinated Biphenyl (PCB) Aroclors, metals, and Dioxins/Furans.

- 2012: Phase 2 Upland RI to address upland areas of concern consisted of groundwater assessment of tidal influence, and further assessment of Woodlife Area including installation of new downgradient groundwater monitoring well.
- 2013: Additional Upland Assessment for additional characterization of Dioxins/Furans impacts in the Woodlife storage and use area consisted of several Geoprobe soil borings to determine the lateral and vertical extent of impacts in the Woodlife Area.
- 2013: Knoll Area Investigation for upland soil exploration and soil and groundwater sampling to evaluate the fill material present in the Knoll Area consisted of test pits, grab groundwater samples from temporary wells, and soil bank samples. Soil and groundwater samples were submitted for laboratory analysis of TPH, PAHs, SVOCs, VOCs, and PCB Aroclors, and the soil bank samples were submitted for PCB congeners.
- 2013 to 2015: An additional upland assessment was focused on Creosote/Fuel Oil Area to further assess the vertical extent of contamination in the historical fuel oil/pole treating area, the horizontal extent of the fuel oil/pole treating area impacts to the north and south, and the vapor intrusion pathway using soil gas sampling.
- 2016 to present: Groundwater monitoring to establish contaminant trends throughout the Site and assess the migration potential of groundwater impacts to surface water.
- 2019: Source Control Evaluation (SCE) for additional assessment of the existing groundwater monitoring wells, the stormwater conveyance system (including the North Truck Dock), and groundwater seeps. Samples were analyzed for TPH, carcinogenic polynuclear aromatic hydrocarbons (cPAHs), naphthalene, benzene, dioxins/furans, and PCB Congeners.
- 2019: Dissolved phase PCB testing via Solid Phase Micro Extraction (SPME) method at shoreline adjacent to Knoll Area.
- 2020: SCE Data Gap Assessment to address data gaps identified by Ecology in the SCE activities, including additional assessment of groundwater monitoring wells (including deep zone groundwater monitoring wells) and further assessment of the Knoll Fill Area.

1.3.2. Sediment investigations

Maulsby marsh freshwater sediment characterization

Upland investigations in the Creosote/Fuel Oil Area revealed contamination in soil and groundwater that extended below West Marine View Drive. The presence of this contamination led to the collection of hand-auger samples in the upland areas within the BNSF rail alignment area that also resulted in detections of Site-related contaminants. Further characterization of Maulsby Marsh was included in the Marine and Maulsby Marsh Sediment Characterization Quality Assurance Project Plan (QAPP). Tiered sampling and analysis of sediments were conducted in accordance with the QAPP in 2012. In May 2012, a total of 18 freshwater surface sediment samples were collected. Of those, 9 surface sediment samples located closest to the BNSF railroad tracks (MS001 through MS009) were submitted to the laboratory for analysis of PCBs, pesticides, metals, SVOCs, TPH, and sediment conventional analyses including grain size, total solids, total organic carbon, ammonia, and total sulfides. Material collected from the remaining sample locations was submitted to the laboratory as archive samples. A portion of each sample was archived for possible EPH testing. All TPH testing was initially conducted on

the first tier of 9 samples collected using Northwest TPH (NWTPH) methods. The four sediment samples with the highest NWTPH concentrations (MS001, MS002, MS003, and MS006) were tested further for EPH to further characterize the nature of the hydrocarbons in these samples.

Upon receipt of the initial 9 sediment sample results, JELD-WEN consulted with Ecology to determine if or where additional tier testing was required. The data results were screened against then draft freshwater sediment chemical criteria protective of the benthic community (now adopted in the 2013 revision to the Sediment Management Standards) to determine if Site-related contaminants of concern, particularly TPH and PAHs, were detected above criteria. Some constituents were detected but did not exceed the freshwater benthic criteria. Some contaminants analyzed did exceed criteria (see Appendix E of Final RI/FS Report) but do not appear to be related to the Site operations. Therefore, no additional analysis was required to delineate the extent of contamination from the former Nord Door property. Historical railroad and fill placement activities may have contributed to sediment impacts in Maulsby Marsh.

Marine surface sediment characterization

Four separate investigations included collection and analysis of surface sediment samples from the Site:

- SAIC 2009 – One Site location analyzed for total PCBs (Aroclor method) and dioxins/furans
- Bay Wood Products 2009 – Two Site locations analyzed for dioxins/furans
- SLR 2009 – Initial Remedial Investigation Data Summary
- Anchor QEA 2012/2014 – JELD-WEN Phase 2 RI/FS Work Plan

Each of these sampling and analysis efforts are briefly summarized in the sections below. Additional details on specific sample locations, sample collection methods, references, and results of these investigations can be found in the RI/FS report.

SAIC 2009

A single surface sediment sample (0 to 10 centimeters [cm]) was collected in August 2008 within the Site area as part of the larger Port Gardner sediment quality investigation conducted by Ecology. The surface sediment sample was collected using a modified van Veen grab sampler. The sample was analyzed for dioxins/furans and total PCBs (Aroclor method).

Bay Wood Products 2009

Two surface sediment samples were collected by the Port of Everett in June 2009 from the adjacent northern tidal mudflat area as part of the RI/FS for the adjacent Bay Wood Products Site (Bay Wood; Cleanup Site ID: 2581). The Bay Wood surface sediment samples were collected from a depth of 0 to 10 cm at low tide by hand. The two locations were collected by measuring a 1-square-meter grid at the station location and then collecting equal volumes of 0 to 10 cm sediment from each corner of the square using a stainless-steel trowel. Surface sediment samples were analyzed for dioxins/furans.

SLR 2009

A total of 34 surface sediment (0 to 10 cm) samples were collected by JELD-WEN in June 2009. Samples were collected from fine-grain materials using hand tools at low tide. Sediment samples were located adjacent to each of the nine identified historical and/or current stormwater outfalls. Surface sediment samples were also collected from the eastern-most segment of the channel along the north boundary of the Site and in the vicinity of the former fish net storage building and Knoll Area at the southeastern corner of the Site. At each sampling location, three separate grab samples were collected either along the stormwater flow alignment (for outfall area samples) or in a radial pattern (for all other samples), with each sample approximately 10 feet equidistant from the other(s).

Anchor QEA 2012/2014

The 2008 and 2009 sampling data, summarized above, identified dioxins/furans and total PCBs as COPCs in the marine sediments at the Site. However, additional data was needed to characterize the horizontal and vertical extent of these COPCs at the Site. In addition, since elevated concentrations of PAHs were detected in upland soils and groundwater at the Site, further sampling and analysis were needed to determine if PAHs may also be a COPC in Site sediments. In May 2012, surface sediment (0 to 10 cm) samples were collected from 10 exposure areas (EAs) located immediately adjacent to the Site shoreline. Two Site EAs were targeted for more detailed composite sampling and analysis of surface sediment and tissue. The first composite area targeted tidal mudflats at the head of the relatively narrow channel immediately adjacent to stormwater outfalls draining uplands at the northeastern corner of the Site. The second composite area targeted tidal mudflats immediately adjacent to the former fish net storage building and Knoll Area at the southeastern corner of the Site. For comparison purposes, sediment and tissue samples were also collected from upstream, downstream, and regional reference areas with similar grain size and other habitat characteristics.

All surface sediment samples were obtained at low tide by collecting and homogenizing five equal volume aliquots to create each sample. One aliquot was collected at the target location, and the other four aliquots were collected approximately 3 feet from the target location at four points in a compass pattern.

In October 2012, archived sediment samples were submitted for additional discrete sample analyses. The submittal was composed of 29 sediment locations that were all analyzed for dioxins/furans. Six of the 29 locations were also submitted for PCB congener analyses.

In April 2013, additional archived surface sediment samples were analyzed for dioxins/furans and/or PCBs, and surface sediments from another 10 stations were collected and analyzed. Following review of these data, an additional seven discrete samples were submitted for dioxins/furans and/or PCB analysis.

In September 2013, the final two surface sediment samples to complete the RI/FS were collected and analyzed.

In March 2014, clam tissue samples were collected and analyzed from an additional three locations to further refine the PCB biota-sediment accumulation factor (BSAF).

Marine subsurface sediment characterization

Sediment coring sample locations were determined based on a review of the marine surface sediment sample results. Twelve sediment cores were collected to characterize the vertical extent of sediment COPCs at the Site.

Nine cores were collected in April 2013 and two additional cores were collected in September 2013 for physical testing and dioxins/furans and PCB congener analysis. Cores were collected utilizing an electrically powered vibracoring device.

During the April 2013 core sample acquisition, the field team (with Ecology oversight) observed potential visual indication of contamination (staining) and hydrocarbon-like odors at the 7- to 7.3-foot depth interval at core location JW-SC05 (no similar observation in the overlying sediments). In consultation with Ecology, the interval was submitted for SVOC testing (including PAHs) to characterize the subsurface sediment interval. Following the initial testing, an additional overlying subsurface interval from 6 to 7 feet at location JW-EA-SC-05 and single interval at EA04-SC13 were submitted for SVOC testing (including PAHs).

Station JW-EA07-SC27 was inaccessible by boat due to its high tidal elevation, and the sediment core at this location was collected using a hand-operated push core. The hand coring device utilized a decontaminated 3-inch-diameter polycarbonate core tube. Sediment sampling was conducted by pushing the coring device vertically into the sediment using a sliding hammer device, and manually pulling the core back out. Two additional cores were collected in September 2013 at locations JW-GC1b and JW-GC2 using the hand coring device described above to collect sediment samples for geochronology analyses.

Each core interval was submitted for conventional, dioxins/furans, and/or PCB congener analysis.

Geochronology

Geochronology sampling and analysis in the Site area focused on two radioisotopes: Cesium-137 (Cs-137), released to the atmosphere from nuclear tests in the 1950s to 1960s with a half-life of approximately 30 years; and Lead-210 (Pb-210), a naturally occurring radioisotope present in sediments both from atmospheric deposition and background activity, with a half-life of approximately 22 years. Cs-137 was analyzed in 30 samples, and Pb-210 was analyzed in 29 samples. All samples were obtained from high-resolution core sections collected from stations located offshore of the Knoll Area.

Clam tissue sampling

Two Site EAs were targeted for detailed composite sampling and analysis to characterize Site-specific bioaccumulation (i.e., BSAF) of COPCs. The first composite area targeted tidal mudflats at the head of the relatively narrow channel immediately adjacent to historical and/or current stormwater outfalls draining uplands at the northeastern corner of the Site. The second composite area targeted tidal mudflats immediately adjacent to the former fish net storage building and Knoll Area at the southeastern corner of the Site. For comparison purposes, sediment and tissue samples were also collected from upstream, downstream, and regional reference areas with similar grain size and other habitat characteristics. Consistent with the Ecology-approved Phase 2 RI/FS Work Plan, composite clam tissue samples of a single relatively abundant species, Mya arenaria (soft shell clam), were collected in May 2013 and analyzed for

dioxins/furans, PCB congeners, PAHs, and lipids. The clam tissue results were of suitable quality to determine Site-specific BSAF for application in risk-based cleanup levels as reported in the RI/FS.

1.4. Regulatory Framework

The Site is undergoing investigation and cleanup by JELD-WEN with Ecology oversight in accordance with AO No. DE 5095 (as amended), between Ecology and JELD-WEN. The AO requires preparation of an RI/FS and CAP, pursuant to the requirements of MTCA. JELD-WEN completed the RI/FS, and Ecology approved the Final RI/FS Report in December 2021. This DCAP is being prepared to fulfill the final requirement of the current AO (as amended). Ecology is proposing a second amendment to the current AO expanding the work to be performed to add the pre-design investigation (PDI) and engineering design. Ecology expects a new AO or Consent Decree (CD) with the Potentially Liable Person(s) (PLPs) or other administrative mechanism will be required for implementation of the cleanup construction at the Site. The second amendment to the AO, this DCAP, and a State Environmental Policy Act (SEPA) determination will be subject to a combined public review and comment period.

1.4.1. MTCA/SMS requirements

MTCA's cleanup regulation sets forth the minimum requirements and procedures for selecting a cleanup action. The minimum requirements for a cleanup are specified in WAC 173-340-360(2) and 173-204-570(3). Under these requirements, a cleanup action shall meet each of the following threshold and other minimum requirements as applicable:

- Protect human health and the environment
- Not rely exclusively on monitored natural recovery or institutional controls and monitoring where it is technically possible to implement a more permanent cleanup action
- Comply with cleanup standards including sediment cleanup standards specified in WAC 173-204-560 through 173-204-564 (see Sections 2.3 and 3.3)
- Comply with applicable state and federal laws (see Section 3.4)
- Provide for compliance monitoring and periodic review to determine the effectiveness and protectiveness of cleanup actions that utilize containment, enhanced natural recovery, monitored natural recovery, institutional controls, or sediment cleanup levels based on practical quantitation limits (see Section 3.6)
- Use permanent solutions to the maximum extent practicable
- Provide for a reasonable restoration timeframe
- Consider public concerns

WAC 173-340-360(3) and 173-204-570(4) describe the specific requirements and procedures for determining whether a cleanup action uses permanent solutions to the maximum extent practicable. A permanent solution is defined as a cleanup action in which cleanup standards from WAC 173-340 can be met without further action being required at the Site other than the disposal of residue from the treatment of hazardous substances. To determine whether a cleanup action uses permanent solutions to the maximum extent practicable, a

disproportionate cost analysis (DCA) was conducted as part of the FS. This analysis involved comparing the costs and benefits of the cleanup action alternatives and selecting the alternative whose incremental costs are not disproportionate to the incremental benefits for the most permanent solution to the maximum extent practicable. The evaluation criteria for the DCA are specified in WAC 173-340-360(3)(f), and include:

- Protectiveness
- Permanence
- Cost
- Effectiveness over the long-term
- Management of short-term risks
- Technical and administrative Implementability
- Consideration of public concerns

The comparison of benefits and costs may be quantitative but will often be qualitative and require the use of best professional judgment (see Section 3.2.3).

WAC 173-340-360(4) and 173-204-570(5) describe the specific requirements and procedures for determining whether a cleanup action provides for a reasonable restoration timeframe.

1.4.2. Other regulatory requirements

In addition to complying with the requirements set forth in the AO/CD, the performing PLPs are required to comply with applicable federal, state, and local laws and regulations. Because work at the Site will be conducted under an order or a decree with Ecology, PLPs are exempt from procedural requirements of certain Washington state laws and regulations and all local permits (WAC 173-340-710(9)(b)). However, implementation of the cleanup action must comply with the substantive requirements of any otherwise applicable permits. Ecology shall provide an opportunity for comment by the public and by the state agencies and local governments that would otherwise implement these laws (WAC 173-340-710(9)(d)).

In-water remedial action work will require authorization from the U.S. Army Corps of Engineers (the Corps). The cleanup action will be reviewed and approved by all appropriate federal jurisdictions and tribes.

The State Environmental Policy Act (SEPA) process for review and analysis of potential environmental impacts resulting from the cleanup action will be conducted by PLPs and Ecology prior to project construction. Ecology will make a SEPA determination concurrent with the DCAP and the SEPA determination will go through the same public comment period as the DCAP. Refer to Table 3.1 to Table 3.3 for a list of all Applicable or Relevant and Appropriate Requirements (ARARs), including substantive requirements for procedurally exempt local and state laws and regulations.

2. Site Description

2.1. Site History

The upland area of the Site is built upon fill material placed in various stages beginning in the late 1800s. Areas on the eastern, northern, and southern sides of the Site were filled in various stages beginning in the late 1800s or early 1900s when the adjacent BNSF's predecessor, formerly Great Northern Railroad, was laying tracks along Port Gardner Bay. Historical activities at the Site have included casket manufacturing, pole treating, wood door and sash manufacturing, and fish net storage. As discussed above, the Knoll Area was initially filled in the early to mid-1960s.

Prior to JELD-WEN's ownership, the Site had been in use as a stile and rail door plant since the mid-1940s by Nord Door. Prior to the 1940s, National Pole Company operated a pole treating plant on the eastern portion of the Site. Sound Casket Manufacturing operated a wood casket factory on the southern portion of the Site from at least 1936 until sometime prior to 1947, at which time the casket facility was operated by Northwestern Lumber & Manufacturing Co., Inc. By 1976 some of the structures associated with the former wood casket plant had been incorporated into the Nord Door facility. A rectangular fish net storage building and several smaller structures were present on the far southern portion of the Site (current Knoll Area), south of the casket facility, from at least 1947 through 1955. The structures were no longer present in 1967, by which time the area had been further filled creating the "knoll" feature. Attached as Appendix A are historical aerial photographs that were included in the RI/FS report.

Based on a review of historical aerial photographs and Sanborn maps, it appears that the original boiler for the Nord Door facility was an oil-fired boiler located near Norton Avenue (now West Marine View Drive). The 1955 aerial photograph and the 1957 Sanborn Map (Appendix A) show that the former pole treating plant had been removed from the property and the boiler for the Nord Door facility was a wood-fired boiler. Sometime prior to 1968, the wood-fired boiler was moved to its current location in the center of the upland property adjacent to the main manufacturing building.

JELD-WEN acquired certain assets, including the real property of the Nord Door plant, in May 1986 through the E.A. Nord bankruptcy proceeding. Continued operations associated with the Nord Door plant by JELD-WEN included buying rough green wood, sorting, stacking, drying, planing, and cutting the lumber. The finished wooden doors, rails, posts, columns, and spindles were assembled on-site.

JELD-WEN ceased operations at the Nord Door plant in 2005. Various asphalt companies (Cadman [current], CEMEX, Rinkers Materials and Sterling Asphalt) have leased and operated the northwest portion of the upland property as an asphalt batch plant since the mid-1990s.

2.2. Human Health and Environmental Concerns

The exposure media are the environmental media through which human or ecological receptors could be exposed to hazardous substances. The primary exposure routes and

receptors potentially affected by released hazardous substances at the Site include the following:

- **Upland Soil**: Dermal contact with soil, inhalation, and incidental ingestion are the major routes of exposure through which human receptors may potentially be exposed to impacted soil at the Site. Human receptors may include current and future industrial workers and current and future construction workers. The primary means in which terrestrial ecological receptors may potentially come into contact with contaminants are through direct contact with soil and through dietary ingestion (see Section 2.2.1). While data collected from the RI shows evidence of contaminant migration from soil to groundwater, there is limited evidence of contaminant migration from groundwater to surface water.
- **Groundwater**: Dermal contact with shallow groundwater is the major route of exposure through which human and ecological receptors may potentially be exposed to impacted groundwater at the Site. Human receptors may include current and future industrial workers and current and future construction workers. Groundwater at the Site does not meet the definition of potable water as outlined in WAC 173-340-720(2) based on the following factors: a) the groundwater does not serve as a current source of drinking water; and b) the groundwater is not a potential future source of drinking water given the Site's proximity to surface water that is not suitable as a domestic water supply. Therefore, ingestion of groundwater is not considered a potential route of exposure. Data collected from the RI shows that some contaminants in groundwater are sporadically detected at shoreline monitoring wells at concentrations at or below the practical quantitation limit (too low to be reliably measured using laboratory methods approved by Ecology). However, groundwater at the knoll area has low level of PCB contamination likely from historical fills or transport from contaminated sediment. See RI/FS for details about knoll area groundwater PCB contamination.
- **Air**: Inhalation of soil contaminants as windblown/fugitive dust or volatilization of soil and/or groundwater contaminants to indoor air (via vapor intrusion) are the primary routes of exposure through which human receptors may potentially be exposed to impacted air at the Site. Human receptors may include current and future industrial workers and current and future construction workers.
- **Marine Sediment**: As discussed in the RI/FS, comparisons of Site tissue data with ecological risk benchmarks reveal that there is unlikely to be any potential risk to wildlife exposed to Site COCs, including foraging for clams adjacent to the Site. However, dietary ingestion of shellfish is the primary exposure route through which human receptors may potentially be exposed to sediment contaminants at the Site.

  Potential human receptors to marine sediment include recreational and/or tribal subsistence fishers. The following scenarios for consumption of fish and shellfish were evaluated:

  - tribal adult consumer of fish (excluding anadromous) and shellfish
  - tribal child consumer of fish and shellfish including incorporation of early life exposure to cPAHs using Age-Dependent Adjustment Factors since they are identified as having a mutagenic mode of action

- a scenario which combines risks from both childhood and adulthood exposure (i.e., lifetime exposure risks calculated from 6 years as a child and 64 years as an adult)

Direct contact with marine sediment impacts by human receptors poses a relatively lower risk, especially given the limited access to sediment at this industrial Site. Direct contact and incidental ingestion of sediment scenarios evaluated using Ecology default values were:

- tribal adult clam diggers
- tribal adult net fishers
- child beach play scenario

2.2.1. Terrestrial ecological evaluation

As presented in the RI/FS, the Site meets Terrestrial Ecological Evaluation (TEE) Process – Exclusion #2 outlined in WAC 173-340-7491(1)(b) because all soil contaminated with hazardous substances is, and will be, covered by buildings, paved roads, pavement, or other physical barriers (i.e. clean fill) that will prevent plants or wildlife from being exposed and the cleanup planned to address human health or possible aquatic impacts will also adequately protect soil biota, plants, and animals. Appropriate institutional and engineering controls are required as part of the remedy to prevent plants or wildlife being exposed to any contamination left behind. At locations where clean fill is used as a physical barrier, the barrier extends at least up to the biologically active zone (i.e., six feet).

2.2.2. Sediment stability

A key element of the conceptual site model (CSM) at sediment sites is sediment stability, since it can determine the point of exposure to sediment contaminants, and it is also a key factor in evaluating the long-term effectiveness of sediment cleanup actions. In sediment environments, sedimentation rates and stability characteristics can be determined by analyzing the vertical distribution of relatively short-lived radioactive isotopes in surface and near-surface core intervals. Consistent with geochronology investigations successfully performed at other areas in Puget Sound, geochronology sampling and analysis in the Site area focused on Cs-137, which was released to the atmosphere from nuclear tests in the 1950s/1960s.

The site-specific Cs-137 core data suggest an average contemporary net sedimentation rate (corrected for wood debris) in tidal flat areas of the Site of approximately 0.17 ± 0.08 cm/year (i.e., an average 0.6-inch accumulation over a 10-year period). This is a relatively low average sedimentation rate compared to other sediment cleanup sites in Puget Sound and suggests that natural recovery processes have been and may continue to be relatively slow. The vertical profile of Cs-137 activity is also indicative of stable sediments (i.e., little vertical sediment mixing) over the past 60 to 70 years, and suggests that bioturbation of surface sediments is less than 10 cm, and likely less than 4 cm. A clam survey completed in 2013 provided additional information about bioturbation depths at the Site (see section 2.3.3).

2.3. Cleanup Standards

This section discusses the contaminants of concern (COC) and Cleanup Standards in affected media that have been established for the Site. Cleanup Standards consist of: (1) Cleanup Levels (CULs) are defined by concentration of hazardous substances in soil, water, air, or sediment that are protective of human health and the environment; (2) pathway-specific point of compliance (POC) that designates the location at the Site where the CULs must be met; and, 3) Additional regulatory requirements that apply to the cleanup action, e.g., ARAR (Applicable or Relevant and Appropriate Requirements). ARARs are discussed in section 3.3.

This section also includes a description of selected CULs for the Site; the proposed POCs for soil, groundwater and sediment that were developed during the FS to evaluate cleanup action alternatives; and Remediation Levels (RELs). RELs are used to identify the concentrations (or other methods of identification) of hazardous substances at which different cleanup action components will be implemented. RELs are used at this Site as a combination of cleanup action components are used to achieve cleanup levels at the point of compliance.

2.3.1. Contaminants of concern

The following chemicals were identified as COPCs for upland areas in the RI/FS and have been retained in DCAP as COCs based on exceedances of the applicable cleanup levels.

Soil COCs

- cPAH
- TPH-Gx and TPH-Dx: co-located with cPAH
- Dibenzofuran and/or carbazole (SVOCs): co-located with cPAH
- VOCs: co-located with cPAH
- Dioxins/Furans

Groundwater COCs

- cPAH: co-located with naphthalene
- TPH-Gx and TPH-Dx: co-located with naphthalene
- SVOCs: co-located with naphthalene
- Total PCB congeners
- Dioxins/Furans

Soil vapor COCs

- Naphthalene
- Benzene: co-located with naphthalene

Based on the screening process per WAC 173-340-703 along with an assessment of known historical operations areas and suspected contaminants associated with those operations, Indicator Hazardous Substances (IHS) were selected as surrogate COCs for the development of the remedial action areas and alternatives. Upland IHS include the following:

- Toxic Equivalency (TEQ) cPAH values for soil in the Creosote/Fuel Oil Area
- Naphthalene for groundwater in the Creosote/Fuel Oil Area
- Naphthalene for soil vapor in the Creosote/Fuel Oil Area

- Total PCB congeners for groundwater in the Knoll Fill Area (significant soil impacts have not been identified in the Knoll Fill or other upland Areas)
- TEQ Dioxin/Furan values for soil and groundwater in the Woodlife Area

Remedial actions for each upland area were also selected based on their effectiveness for identified co-located impacts (i.e. co-located cPAH soil impacts in the Woodlife Area would also be remediated via soil removal, and co-located cPAH, SVOCs, and TPH groundwater impacts in the Creosote/Fuel Oil Area would also be remediated via BIO).

Sediment COCs

The following chemicals were identified as COPCs for sediment in the RI/FS and have been retained in DCAP as COCs based on exceedances of the applicable SMS SCO criteria.

- Total PCBs (aroclors or congeners): concentrations exceed the SCO criterion of 130 µg/kg dry weight (dw) based on benthic protection and the SCO criterion of 30 µg/kg dw (based on protection of human health)
- Total Dioxin/Furan TEQ: concentrations exceed the SCO criterion of 5 ng/kg dw (based on the PQL)
- Total coplanar PCB congener TEQ: concentrations do not exceed the site-specific SCO of 1.5 ng/kg dw (based on the PQL); however, the risk from dioxins/furans and coplanar PCB congener TEQ levels are additive. Areas with elevated PCB congener TEQ are all within the total PCB and dioxin/furan TEQ exceedance area; therefore, coplanar PCB congener TEQ are COCs but not are not considered an IHS.
- cPAH TEQ: concentrations exceed the SCO criterion of 21 µg/kg dw (based on natural background). Areas where sediment exceeds the SCO are all within the total PCB and dioxin/furan TEQ exceedance area; therefore, cPAH TEQ is a COC but are not considered an IHS. However, PAH source control (creosote-treated pile/structure removal) are integrated into the selected remedial action.

2.3.2. Cleanup levels

Upland soil

Selected CULs for IHS in soil include the following:

- 0.19 mg/kg for cPAHs Toxic Equivalency (TEQ) (based on Method B direct contact) in the Creosote/Fuel Oil Area
- 5.2 pg/g for Dioxins/Furans TEQ (based on natural background concentration) in the Woodlife Area

Groundwater

Selected CULs for IHS in groundwater include the following:

- 8.9 µg/L for naphthalene (based on groundwater protective of vapor intrusion) in shallow on-property groundwater in the Creosote/Fuel Oil Area
- 0.015 µg/L for cPAHs Toxic Equivalency (TEQ) (based on laboratory PQL) in shallow on-property groundwater for protection of surface water in the Creosote/Fuel Oil Area

- 72 pg/L for Dioxin/Furan Toxic Equivalency (TEQ) (based on laboratory PQL) in shallow groundwater in the Woodlife Area
- 1,230 pg/L for Total PCB congeners (based on laboratory PQL calculation) in the Knoll Fill Area

Marine sediment

The sediment cleanup level is defined as the concentration or level of biological effects of a contaminant in sediment determined by Ecology to be protective of human health and the environment (WAC 173-204-560(2)). The sediment CUL is set at the SCO and can be adjusted up to the Cleanup Screening Level (CSL) based on technical possibility to achieve sediment cleanup levels and whether the sediment cleanup level will have a net adverse environmental impact on the aquatic environment (WAC 173-204-560(2)). Both the SCO and the CSL must be set as the highest of the following: Natural Background (SCO) or Regional Background (CSL), Risk-based Concentration and the Practical Quantitation Limit (WAC 173-204-560(3), (4)). If the sediment CUL is set from the Risk-Based Concentration, the concentration must be the lowest level to satisfy each of these considerations: protective of human health, protective of the benthic community, causing no adverse effects on higher trophic level species and meet requirements in other applicable laws (WAC 173-204-560(3), (4)). Since Risk-Based Concentrations were used at the Site, Ecology considered the following exposure pathways and receptors for the establishment of sediment CULs at the Site:

- Protection of benthic species in Site sediments.
- Upper Trophic Level Species:
    - Site tissue data with ecological risk benchmarks reveal that there is unlikely to be any potential risk to wildlife exposed to Site COCs, including foraging for clams adjacent to the Site.
- Human health:
    - Protection of human health via direct contact by site workers and incidental ingestion of intertidal sediment,
    - Protection of human health via direct contact and incidental ingestion of marine sediment during clam digging, net fishing, and child beach play,
    - Protection of humans (recreational and/or tribal subsistence fishers) via dietary ingestion of fish and shellfish.

Applicable sediment CULs[4] for the Site are summarized in Exhibit 1.

Exhibit 1
Marine Sediment CULs

[4] The applicable sediment CUL refers to the sediment cleanup level specified in WAC 173-204-560(2)(a).

Parameter	Units	CUL	Basis	Compliance Evaluation
Total PCBs [a]	µg/kg dw	130	Benthic Protection	Point-by-point
Total Dioxin/Furan TEQ [a]	ng/kg dw	5	Human Health	SWAC
Total PCB Congeners [a]	µg/kg dw	30	Human Health	SWAC
Coplanar PCB congener TEQ [b]	ng/kg dw	1.5	Human Health	SWAC
cPAH TEQ [b]	µg/kg dw	21	Human Health	SWAC

Notes:
µg/kg = micrograms per kilogram
cPAH = carcinogenic polycyclic aromatic hydrocarbon
CUL = cleanup level
ng/kg = nanograms per kilogram
PCB = polychlorinated biphenyl
SWAC = Surface-weighted average concentration
TEQ = toxic equivalents quotient
dw = dry weight
a. Site indicator hazardous substance chemicals
b. Sediment areas exceeding the sediment cleanup objective for coplanar PCB congener TEQ and cPAH TEQ are within areas already defined by dioxin/furan TEQ and total PCBs; thus, these chemicals are not indicator hazardous substances for the Site.

2.3.3. Points of compliance

Upland soil

The standard POC for the soil cleanup levels will be throughout the soil column from the ground surface to 15 feet below ground surface (bgs) as presented in the FS. The selected remedy includes removing hot spot areas of contamination and leaving remaining contamination in place. Therefore, the soil cleanup level will likely not be met at the standard POC specified in WAC 173-340-740(6)(d) and WAC 173-340-7490(4)(b) . Ecology believes conditions specified in WAC 173-340-740(6)(f)(i)-(vi) will be met for the alternate POC because engineering and institutional controls are included as part of the remedy.

Groundwater

For groundwater, the POC is the point or points where the groundwater cleanup levels must be attained for a site to be in compliance with the cleanup standards. Groundwater cleanup levels shall be attained in all groundwater from the POC to the outer boundary of the hazardous substance plume per WAC 173-340-720(8)(a). Under MTCA, the standard POC for groundwater is throughout the Site from the uppermost level of the saturated zone extending vertically to

the lowest depth that could potentially be affected by an activity. The standard POC is applicable for the COCs in the Woodlife Area and for the volatile COCs (naphthalene and benzene) in the Creosote/Fuel Oil Area where vapor intrusion pathway exists.

For groundwater potentially discharging to surface water, MTCA provides for a conditional point of compliance (CPOC) at the point of discharge of groundwater to surface water when it can be demonstrated that it is not practicable to meet the cleanup level at a point within the upland groundwater. The CPOC is applicable for the COCs in the Knoll Fill Area, and it is at the point of entry of groundwater to Port Gardner Bay. A CPOC for the surface water protection COCs (cPAH is used here as IHS) in the Creosote/Fuel Oil Area of the Site may be allowed at the downgradient edge of the applicable COC plume within the upland area as determined from the RI after active remedy has been completed and the performing PLPs have demonstrated through a study that it would not be practicable to meet CUL throughout the plume area.

For deep groundwater impacts, including the presence of non-aqueous phase liquid (NAPL), there are no applicable receptors or pathways for which risk to the contamination can be assessed. However, deep groundwater NAPL may still be a pathway of vapors to shallow groundwater. The remedial action of BIO will be performed in the deep groundwater zone to reduce the presence of and potential for migration of NAPL. If BIO remedy fails to achieve REL or it becomes evident that CUL will not be achieved at the POC within a reasonable restoration timeframe (currently estimated as 10 years) with Monitored Natural Attenuation (MNA), the performing PLPs shall conduct a contingent remedial action (CRA) to address the remaining contamination in the Creosote/Fuel Oil Area of the Site. The CRA will be based on the alternatives evaluated in the FS. Alternately, a focused feasibility study (FFS) may be prepared under Ecology's direction.

Marine sediments

For marine sediments, the vertical POC is surface sediments within the biologically active zone. The biologically active zone is the depth in surface sediments where the species critical to the function, diversity, and integrity of the benthic community are located. For most members of the marine benthic community, a 10 cm biologically active zone is considered appropriate under SMS, and site-specific bioturbation depths are less than 10 cm. However, the soft-shell clam (Mya arenaria) identified in tidal mudflats at the Site may burrow as deep as 30 cm below mudline. Therefore, to ensure protection of benthic invertebrates and higher trophic level species and humans that may forage for shellfish at the Site, the POC in marine sediments is 30 cm (approximately 1 foot). Benthic protection is required on a point-by-point CUL basis (benthic protection criteria in accordance with the Sediment Management Standards).

The biologically active zone in Site tidal mudflats can potentially include deeper sediments that could become exposed by storms or other events that contribute to erosional forces. However, the vertical profiles of Cs-137 activity measured at the Site are indicative of stable sediments (i.e., little vertical sediment mixing) over the past 60 to 70 years and thus the POC does not need to be extended below 1 foot.

For bioaccumulative COPCs such as total PCBs and dioxin/furan TEQ, the horizontal POC defined under SMS is based on the surface weighted average concentration (SWAC). SWACs are applied

to the entire Site area that exceeds the site-specific sediment CUL. Thus, as presented in the RI/FS, the SWAC compliance area encompassed all surface and near-surface sediment areas (i.e., to a depth of 1 foot below mudline) with concentrations of total PCBs and/or dioxin/furan TEQ exceeding preliminary sediment cleanup objective (SCO) chemical criteria. The SWAC area defined in this manner is approximately 16.6 acres. Using inverse distance weighting (IDW) methods, the existing SWACs within the Site area are as follows:

- Total PCBs: 36 µg/kg dw (slightly greater than the 30 µg/kg preliminary SCO)
- Dioxin/Furan TEQ: 11 ng/kg dw (more than two times the 5 ng/kg preliminary SCO)

2.3.4. Remediation levels

As described in WAC 173-340-355, a cleanup action selected for a site will often involve a combination of cleanup action components and RELs may be used to identify the concentrations (or other methods of identification) of hazardous substances at which different cleanup action components will be implemented. RELs are not cleanup levels and, by definition, these exceed cleanup levels. RELs must meet each of the minimum requirements of cleanup as specified in WAC 173-340-360.

Creosote/fuel oil area

The CULs presented in Section 2.3.2 are proposed to be used for the hot spot soil removal in the Creosote/Fuel Oil Area; however, as presented in the RI/FS if the soil impacts cannot be fully delineated due to site conditions or health & safety concerns (i.e., significant groundwater infiltration causing excavation/trenching concerns), some contamination will remain in place and a qualitative REL will be implemented. Limits of excavation by the performing PLPs will be guided by the physical appearance of the excavated material. There should not be any visible NAPL in the excavation footprint. Field screening, for example, photoionization detector (PID) measurements will be used to differentiate the relative concentration of VOCs. If PID readings exceeds 100 parts per million by volume (ppmv) from an area of excavation where additional excavation is practical and possible, the PLPs must conduct excavation in that area to find and remove the source of VOCs.

The CUL for naphthalene in groundwater as presented in Section 2.3.2 is based on protection of vapor intrusion. Proposed cleanup action in this area included BIO and MNA after hot spot soil removal. RELs will be used to transition from BIO to MNA. REL for naphthalene in the shallow groundwater is set at 500 ug/L based on at least approximately one order of magnitude reduction (90% reduction) after hot spot soil removal. Ecology may revise this REL based on pre-design investigation, pilot testing results, and performance of the BIO system. The REL will apply throughout the plume area. The BIO cleanup action will continue until there is a diminishing return in the BIO's implementation and approval from Ecology. When REL has been achieved and the BIO system is showing diminishing return, the performing PLPs will initiate a study to determine if MNA is applicable to achieve the CUL (Section 2.3.2) in a reasonable restoration timeframe, which is estimated as 10 years. The MNA study will follow the requirements described in WAC 173-340-370(7).

However, if BIO cleanup action fails to achieve REL or Ecology determines that the CULs will not be achieved at the POC within a reasonable restoration timeframe (currently set at 10 years) with MNA, the performing PLPs shall conduct a CRA as described in section 3.9 or prepare an FFS under Ecology's direction to address the remaining contamination in the Creosote/Fuel Oil Area of the Site.

Upland Cleanup Standards and Remediation Levels for the Creosote/Fuel Oil Area are tabulated in Exhibit 2 and 3.

Exhibit 2
Soil Cleanup Standards and Remediation Levels for Creosote/Fuel Oil Area

Soil	On Property	Off Property
Cleanup Action:	Hot Spot Soil Removal, BIO, EC, IC	BIO (via SVE), EC, IC
CUL	0.19 mg/kg for cPAHs Toxic Equivalency (TEQ) (based on Method B direct contact)	
POC	Standard POC does not apply with IC and EC as part of the remedy	
REL	1. Remove visible NAPL from excavation footprint 2. PID readings of 100 ppmv from excavated soil (limited to where additional excavation is possible)	

Exhibit 3
Groundwater Cleanup Standards and Remediation Levels for Creosote/Fuel Oil Area

Groundwater	On Property	Off Property
Cleanup Action:	Hot Spot Soil Removal, BIO, MNA, EC, IC	BIO, MNA, EC, IC
CUL	1. 8.9 µg/L for naphthalene (based on groundwater protective of vapor intrusion) 2. 0.015 µg/L for cPAHs Toxic Equivalency (TEQ) (based on laboratory PQL)	
POC	1. Standard POC for volatile COCs (naphthalene and benzene) throughout the area where vapor intrusion pathway exists 2. Downgradient edge of the cPAH plume as described in the RI for surface water protection after practicality demonstration (CPOC)	
REL	1. 500 µg/L for naphthalene in shallow groundwater 2. Removal of mobile NAPL in deep groundwater (for protection of shallow groundwater)	

Notes:
BIO – Bioremediation
EC – Engineering Controls (e.g., surface capping, vapor controls)

IC – Institutional Controls (e.g., deed restrictions)
SVE – Soil Vapor Extraction
Hot Spot Soil Removal – Hot spot soil excavation with off-site disposal
MNA – Monitored Natural Attenuation
CPOC – Conditional Point of Compliance

Woodlife area

RELs are not proposed for the soil and groundwater cleanup components in the Woodlife Area. The CULs presented in Section 2.3.2 are proposed to be used for the Woodlife Area. However, as presented in the RI/FS, if the soil impacts cannot be fully delineated due to site conditions or health & safety concerns (i.e., significant groundwater infiltration causing excavation/trenching concerns), some contamination will remain in-place. If soil impact extends below 5 feet bgs (found through performance and/or confirmation monitoring during remedy construction), an REL of 13 ng/kg based on MTCA method B direct contact will be used to limit the depth and spatial extent of excavation.

Marine sediment

To assist in the development of marine sediment remediation alternatives, preliminary sediment RELs were derived during the FS, using benthic SCOs and site-specific human health-based sediment SCOs. A "hill-topping" analysis was used in the FS to evaluate the relationship between the REL and the resulting total PCB and dioxin/furan TEQ SWAC at the Site following remediation, assuming natural background replacement values for remediated areas (1.6 µg/kg dw and 1.8 ng/kg dw for total PCBs and dioxin/furan TEQ, respectively).

Higher concentration break points were determined by applying SMS benthic protection levels for total PCBs. Best professional judgement was used for higher concentration break point for dioxins/furans TEQ at 15 ng/kg, based on direct contact levels presented in SCUM.

The following concentration break points were used to establish REL values in the FS:

- Total PCBs:
    - 30 µg/kg dry weight (dw) (human health protection-based SCO)
    - 117 µg/kg (hill-topping-based REL to achieve a 30 µg/kg dw SWAC)
    - 130 µg/kg dw (benthic protection SCO)
- Dioxin/Furan TEQ:
    - 5 ng/kg dw (PQL based SCO)
    - 8 ng/kg dw (hill-topping-based REL to achieve a 5 ng/kg dw SWAC)
    - 15 ng/kg dw (best professional judgment direct contact [Ecology, 2021])

While areas identified as high concentration in the "hill-topping" analysis will be removed during remedial action, other areas have widespread contamination above CUL values. WAC 173-204-500(4) states that for sites with widespread sediment contamination, EMNR and/or MNR may be appropriate following the active remediation of areas with higher contamination. These technologies may be used at the Site for these scenarios.

Available data indicate limited presence of wood waste in marine sediments (characterized as total volatile solids [TVS] and by visual observation of sediment cores). However, because of extensive historical log rafting and lumber processing operations in the in-water areas at the Site, accumulations of wood waste may be present but not yet identified. Additional data will be collected within the Site footprint during the pre-design investigation (TVS by high volume loss on ignition methodology) to confirm that wood waste is present at levels unlikely to cause adverse effects to the benthic community. In sufficient quantities, wood waste can represent an environmental pollutant and deleterious substance per SMS (WAC 173-204-200(17)). Wood waste can adversely affect benthic habitat by generating sulfide, ammonia, phenols, and related degradation products in the biologically active zone. If significant accumulations of wood waste (as determined by Ecology) are encountered during the pre-design, the performing PLPs shall address it as part of remedial design, to prevent current and/or future biological effects from wood waste degradation. If significant accumulations of wood waste (not identified during the PDI) are encountered during cleanup construction, the Performing PLPs shall address it by following adaptive management procedures to be specified in the remedial design. Wood waste exceedances are generally defined as a nominal one foot or greater thickness containing >25% wood waste by volume. During pre-design investigations, Ecology may also measure and compare TVS concentrations against screening levels developed at other Puget Sound sediment cleanup sites (e.g., former Scott Paper Mill Site in Anacortes, Port Gamble Bay and Mill Site) and/or measure biological effects using bioassay tests specified in the SMS to determine if areas within the Site footprint require wood waste cleanup.

3. Description of Selected Remedy

3.1. Cleanup Areas

The following sections describe the media and areas requiring cleanup actions based on the results of the FS.

3.1.1. Upland cleanup areas

Based on the upland RI findings and consultation with Ecology, the upland FS alternatives were considered for three assessment areas of the Site: 1) Creosote/Fuel Oil Area; 2) Woodlife Area; and 3) Knoll Fill Area. As described in the RI/FS, the Knoll Fill Area is an assessment area discussed in the RI and the groundwater contaminants in that area are addressed with the marine sediment FS alternatives.

3.1.2. Sediment management areas

The marine area of the Site was subdivided into SMAs so that alternatives could be assembled and evaluated in the FS. Exhibit 4 below describes the various cleanup levels that were used to define the boundaries of the SMAs, which were based on both the preliminary SCO chemical criteria and RELs as described in Section 2.3.3. Figure 3 depicts the layout of SMAs in accordance with the scheme described above.

Exhibit 4
SMA Designations

Designation	Dioxin/Furan TEQ (ng/Kg dw)	Total PCBs (µg/Kg dw)	Basis For Selection
SMA 1	5	>30 (CUL based on human health risk)	1. Dioxin/Furan TEQ level set by the PQL. 2. Total PCB Level set by the human-health seafood consumption risk level.
SMA 2	8	117 (level at which the SWAC of 30 µg/kg CUL is achieved)	Levels set to achieve a post-construction surface weighted average concentration of 5 ng/kg for Dioxin/Furan TEQ and 30 µg/kg for total PCBs.

Designation	Dioxin/Furan TEQ (ng/Kg dw)	Total PCBs (µg/Kg dw)	Basis For Selection
SMA 3	15	130 (predicted bulk sediment toxicity SMA)	1. Best professional judgement: Dioxin/Furan TEQ level set at SCUM-defined (Ecology, 2021) direct contact. 2. Total PCB level based on the benthic protection sediment management standard dry weight sediment quality objective equivalent.

Notes:
µg/kg = microgram per kilogram
dw = dry weight
ng/kg = nanogram per kilogram
PCB = polychlorinated biphenyl
PQL = practical quantitation limit
CUL = cleanup level
SMA = sediment management area
SWAC = surface weighted average concentration
TEQ = toxic equivalency

3.2. Description of Cleanup Action

Based upon the specifics of the above listed areas (access, depth of contamination, potential receptors, feasibility, etc.) cleanup alternatives were prepared for each area of concern with detailed MTCA evaluations of each alternative. The MTCA evaluation included a DCA that compared the relative costs and benefits of each alternative presented for the cleanup areas.

The preferred remedy selected was determined by Ecology. The cleanup actions described in this DCAP, for implementation at the Site, are consistent with the preferred remedial alternatives proposed in the RI/FS. This section describes the planned upland and sediment cleanup actions and provides the rationale for why they were selected.

3.2.1. Upland cleanup actions

Creosote/fuel oil area

Affected media in the Creosote/Fuel Oil Area include soil, groundwater, and soil vapors. FS alternatives for the Creosote/Fuel Oil Area were developed by considering distinct areas that require cleanup action: on-property vadose zone; on-property shallow groundwater (to 15 feet bgs); on-property deep groundwater; off-property vadose zone; off-property shallow groundwater (to 15 feet bgs); and off-property deep groundwater. Several remedial technologies were considered for the remediation of the Creosote/Fuel Oil Area. Based upon the specifics of the assessment area remedial actions, the FS alternatives included combinations of remediation technologies. Those technologies included: sub-slab

depressurization (SSD), soil vapor extraction (SVE), in-situ chemical oxidation (ISCO), enhanced in-situ bioremediation (BIO), soil removal, thermal treatment (via steam injection), and in-situ stabilization / solidification (ISS). The following seven alternatives were evaluated for this area:

- Alternative 1: SSD, Engineering Controls, and Institutional Controls
- Alternative 2: BIO and SSD
- Alternative 3: ISCO and SSD
- Alternative 4: Soil Removal and BIO
- Alternative 5: Thermal Treatment
- Alternative 6: ISS and Thermal Treatment
- Alternative 7: Hot spot Soil Removal and BIO

Ecology has selected Alternative 7 as the preferred cleanup alternative. A tabulated summary of Alternative 7 is shown in Exhibit 5. The description as presented in the FS is further clarified and described in detail below.

Exhibit 5
Component cleanup actions of FS Alternative 7 for Creosote/Fuel Oil Area

Medium	On property	Off Property
Soil	Hot Spot Soil Removal, BIO, EC, IC	BIO (via SVE), EC, IC
Groundwater	Hot Spot Soil Removal, BIO, MNA, EC, IC	BIO, MNA, EC, IC

Notes:
BIO – Bioremediation
EC – Engineering Controls (e.g., surface capping, vapor controls)
IC – Institutional Controls (e.g., deed restrictions)
SVE – Soil Vapor Extraction
Hot Spot Soil Removal – Hot spot soil excavation with off-site disposal
MNA – Monitored Natural Attenuation

The performing PLPs shall implement Alternative 7, which includes excavation and off-site disposal of hot spot contaminated soil on-property to 9 feet bgs, operation of an enhanced BIO treatment system for shallow and deeper groundwater (both on and off property), monitored natural attenuation (MNA), institutional controls (IC), and engineering controls (EC). See Figure 4 for the location of the proposed cleanup action, preliminary layout of hot spot soil removal, and components of the BIO system. The excavation will address a majority of the high concentration soil impacts at depths where direct exposure is most likely, will reduce potential exposures through vapor intrusion and worker contact, and will control future groundwater contamination via source removal. Operation of the BIO treatment system (air sparge/soil vapor extraction [AS/SVE] component) in shallow groundwater will reduce potential exposures through vapor intrusion. Operation of the BIO treatment system in deeper groundwater (nitrate-nutrient-surfactant solution and air injections) will also remove or reduce the presence of NAPL source(s) and address potential migration of these contaminants. After BIO treatment

has achieved its treatment goal, MNA will be implemented until CUL is achieved. The IC and EC will be implemented as part of the Remedial Action.

Excavation of contaminated soil will proceed after completion of the Pre-Design Investigation (PDI) which is further described in Section 3.5. Site conditions could easily lead to flowing sands that could quickly destabilize a shored excavation. To address this potential destabilization, the PLPs will collect additional data during the PDI to support a detailed design of the shoring system necessary for soil removal to 9 feet bgs. Based on available site information, the shoring system is likely to include a robust dewatering system to depress the water table outside of the excavation to below the target depth and sheet piling or a reinforced bentonite concrete wall to a depth of at least 20 feet bgs with lateral bracing or tiebacks. This level of effort will be required to protect structures, roadways, and utilities and to allow for the excavation of the impacted soils.

The excavation will likely proceed by sections, with shorter sections along the sheet pile wall being excavated first. The wall would be braced during this phase until clean soil is backfilled and compacted behind the wall. Once the wall has been braced with clean backfill, interior cells can then be excavated.

This work will require that a portion of the existing main manufacturing building be demolished. The footprint of the demolition will extend beyond the limits of the excavation to allow for the installation of the 20-foot-long sheet piles. The limits of the demolition must also consider the existing load bearing points of the structure. The demolition would extend to these load-bearing structural elements otherwise temporary walls and bracing would be required. Demolition of the building will require the potential abatement of asbestos-containing materials and/or lead based paint.

Based on the findings of the RI, it is assumed that the top three feet of soil is clean and can be stockpiled and subsequently used as backfill. The extent of the excavation will be based on existing analytical data supplemented with additional investigation completed during the PDI. Limits of excavation will be guided by the physical appearance of the excavated material. There should not be any visible NAPL. In addition, field screening (i.e., a handheld PID) will be used to differentiate the relative concentration of VOCs. If PID readings exceeds 100 ppmv from an area of excavation where additional excavation is practical and possible, excavation will proceed to find and remove the source of VOCs. Impacted soil will be hauled off-site to an approved waste disposal destination pending waste profiling and approval. The use of engineered shoring (detailed in the RI/FS) and dewatering equipment (Baker tanks, pumps, etc.) will likely be needed as the excavation would extend into the shallow groundwater table. The water would be treated on-site with bag filters and activated carbon before being discharged to the city sanitary sewer (pending a permit). The excavation will be backfilled with clean stockpiled overburden and imported granular fill. The soil will be placed and compacted to allow for the reconstruction of the building. Due to the prolonged disruption and required closures that would be necessary, excavation would not include soil beneath West Marine View Drive or BNSF property; however, the BIO treatment will be used to address the COCs underneath West Marine View Drive.

Excavation of contaminated soil is estimated to take up to a year, including building demolition, shoring installation, phased excavation, backfilling and testing, and partial building reconstruction following the removal activities.

The BIO treatment system will consist of several components as follows: 1) a series of recirculation wells (horizontal and vertical) for injection of a nitrate/nutrient/surfactant (NNS) solution; 2) a conveyance system for the recirculation system; 3) a water treatment and chemical addition system; 4) a series of wells to inject air in the shallow and deep zones; 5) an air collection system to capture the injected air; and 6) compressors and blowers to operate the air injection system. Pilot testing of the BIO system will be performed on-property after the PDI for the hot spot soil removal to determine the design parameters as provided in Section 3.5. Hot spot soil removal will proceed after the BIO pilot testing which will require approximately one year to complete. Findings from the PDI, BIO pilot testing, and Engineering Design Report may alter some of the concept features elements and details described in the paragraphs below.

The full-scale BIO system will initially be operated similarly to an AS/SVE system that will focus on removal of residual volatile hydrocarbons following hot spot soil removal. The captured VOCs will be treated/oxidized prior to discharge in the atmosphere. When the concentration of hydrocarbons in the extracted vapor begins to significantly decrease (which is expected in the first six months of operation), the NNS injection system will begin operation.

The NNS injection system will consist of a series of wells throughout the shallow impacted area to a depth of approximately 15 feet spaced approximately 100 feet on center. Spacing will be determined after the BIO pilot testing as part of the PDI. Approximately half of the wells would be operated as extraction wells and the other half would function as injection points. Deeper groundwater impacts would be addressed through vertical recirculation wells. These wells would extract groundwater from the deeper zone from 45 to 50 feet, pump it to the NNS addition system and the treated water would be reinjected at a depth of 15 to 20 feet.

It is anticipated that the treatment wells would be connected to two sets of PVC or HDPE piping – injection and extraction – so that each well could be configured to run as an injection or extraction well. Perforated piping to capture injected air would also be installed in the same trench.

Groundwater will be pumped from the extraction points by submersible pumps and conveyed to the NNS addition system at a total rate of approximately 60 gpm (actual pumping rate to be determined during the pilot testing). The system would consist of an influent settling tank to allow for settling of solids and separation of product, followed by a nitrate/nutrient addition tank. Nitrate, other nutrients, and surfactants would be added to the addition mix tank. After the nitrate addition the water would be pumped through sand filters to remove any undissolved materials prior to injection. The filtered water would then be directed to the various wells in the injection field. It is expected that the NNS solution will only be added periodically, but the recirculation will continue without NNS additions to enhance the contact of the NNS solution and injected air within the formation.

Air injection will be performed through a series of 1-inch diameter wells installed throughout the area to address both shallow and deep impacts. Injected air will be recovered by a series of perforated pipes installed in the trenches containing the NNS and air injection piping. The air recovery system on property will also function to mitigate vapors that could migrate into the building. The compressors, blowers, and emission controls for the air injection system will be installed in the same compound as the NNS system.

It is estimated that the BIO system would be in operation for approximately 5 years based on results of groundwater monitoring to measure progress towards achieving CUL. Performance monitoring will be completed semi-annually during operation of the system as detailed in section 3.6.2.

Institutional controls to be implemented as part of this CAP include the recording of a restrictive covenant on the property with the County Assessor's Office. This covenant will include restrictions on soil digging and placement of drinking water wells on the property. The performing PLPs shall develop a soil management plan to control potential exposure risks posed by direct exposure to residual subsurface contamination and to protect the integrity of the remedy.

Engineering controls will be necessary at the Site where contaminants are left in place. This is necessary so that the Site still qualifies for Terrestrial Ecological Evaluation exclusion. West Marine view drive and associated sidewalk will prevent direct exposure to contaminated soil. In addition, the property owner will maintain the Site's paved surface as engineering control to prevent ecological exposure. If a building is constructed and/or occupied, engineering control will also be necessary to prevent vapor intrusion.

Woodlife area

Affected media in the Woodlife Area include soil and groundwater. FS alternatives for the Woodlife Area were developed by considering the horizontal and vertical delineation of impacts identified during RI sampling activities. Based upon the specifics of the assessment area, remedial actions retained as FS alternatives for the Woodlife Area included:

- Alternative 1: Engineering Controls, Institutional Controls and Long-Term Monitoring
- Alternative 2: Soil Removal, Engineering Controls, Institutional Controls

Ecology has selected Alternative 2 as the preferred cleanup alternative.

The performing PLPs shall implement Alternative 2 at the Woodlife Area (see Figure 5), which includes soil excavation, engineering controls (re-establishing the existing surface caps) and institutional controls.

The purpose of the on-site soil excavation for the Woodlife Area would be to remove the impacted soil for off-site disposal. Removal of the impacted soil will effectively address the impacts to groundwater via source removal and the hydrophobic nature of dioxins/furans.

After installing appropriate erosion control measures, approximately 22,000 square feet of the existing asphalt pavement and concrete surfaces (interior and exterior of existing building) would be removed. A portion of the existing main manufacturing building will need to be

supported in anticipation of excavation activities that extend within the footprint of the building.

Impacted soil to an estimated maximum depth of 5 feet bgs would be excavated and hauled to an appropriate off-site disposal facility as special waste. The extent of the excavation will be based on existing analytical data supplemented with additional investigation completed during the PDI. The performing PLPs will collect performance soil samples from the excavation extents and bottom to determine the ultimate extents of the excavation area and to document sufficient removal of contaminated soil to the cleanup level of 5.2 pg/g (based on background concentration, Section 2.3.2). The use of dewatering equipment (Baker tanks, pumps, etc.) would likely be needed as the excavation would extend into the shallow groundwater table. The water would be treated on-site with bag filters and activated carbon before being discharged to the city sanitary sewer (pending a permit). Clean backfill would be imported and placed into the excavation. Imported material would be analytically tested prior to placement.

The backfill would be compacted and the excavation area would be finished with an estimated three inches of asphalt surface capping to match the existing surface capping to ensure contiguous surface capping. If soil impact extends below 5 feet bgs and an REL has been used to limit excavation per section 2.3.4, maintenance of the surface capping will be required throughout the contaminated area (i.e., engineering control). In addition, institutional controls will be part of the remedy to restrict digging and use of groundwater.

Institutional controls will include the recording of a restrictive covenant on the property with the County Assessor's Office. This covenant will include restrictions on placement of drinking water wells throughout the property and soil digging, if an REL is used to specify the extent of excavation.

Knoll Fill Area

No active upland cleanup action is proposed for the Knoll Fill Area groundwater PCB contamination since no sources of PCBs were found in the soils. The saturated soil below 12 feet may have been contaminated with PCBs from a previous filling event. RI findings indicated PCBs in sediment could be a source to PCBs in the upland groundwater due to tidal action. The marine area recommended alternative (Alternative M5), which is discussed in detail in the following section, would remove a greater volume of the PCB-contaminated sediment near the knoll area compared to other alternatives. Implementation of the M5 remedy in the marine area could result in decreased PCB concentration in the groundwater. Knoll area PCBs will be reevaluated during long term monitoring and periodic review.

Institutional controls will include the recording of a restrictive covenant on the property with the County Assessor's Office. This covenant will include restrictions on the placement of drinking water wells in the property.

3.2.2. Source control actions

In order to reduce the potential for sediment recontamination, certain cleanup actions are necessary in both upland and marine areas. These actions will be considered as part of the marine sediment cleanup.

Stormwater system cleanup

JELD-WEN performed an assessment of the stormwater system as part of the source control evaluation (SLR, 2019). SLR's "Summary of Source Control Evaluation to Assess Data Gaps for Completion of the Remedial Investigation (RI)/Feasibility Study" stated that "[i]t appears that the storm lines have not been serviced or cleaned for several years and many of the catch basins and stormwater lines were partially or completely filled with sediment, debris, and/or stagnant water. Several of the lines were completely blocked with sediment or debris, which made tracing of those lines unsuccessful. Several of the catch basins were filled with sediment and/or vegetation and did not allow sufficient drainage at the time of [the assessment].".

The RI included the finding that marine sediments were contaminated near the stormwater outfalls. Therefore, as part of source control, the performing PLPs must remove and dispose accumulated sediment and/or debris from stormwater systems including but not limited to stormwater pipes, catch basins, vaults and manholes prior to marine sediment cleanup action. In addition, Ecology recommends repairing damaged and/or deteriorated stormwater structures to prevent or reduce infiltration of upland fill material and/or groundwater into the stormwater system. If recontamination of marine sediment is observed after sediment cleanup during post construction monitoring, Ecology will require an investigation for possible causes of sediment recontamination. This investigation will focus on stormwater system pathway in addition to other potential causes.

Creosote-treated structures

The SMS states that "[s]ource control measures may be required as part of a cleanup action to prevent recontamination of the site or sediment cleanup unit above the sediment cleanup level." WAC 173-204-500(5)(b)(iii). Ecology's Sediment Cleanup User's Manual (SCUM) identifies creosote-treated piling removal as a form of source control. The PLPs must remove the following structures and creosote-treated pilings from the Site: two bulkhead structures containing an unknown number of piles and lagging, a remnant wooden barge, and approximately 45 free standing pilings or dolphins (see Figure 3). Some of the structures and/or pilings are on properties that are owned by the Wick Family Trust and Port of Everett. These structures and pilings will be removed as part of the selected marine remedial action described in this DCAP.

3.2.3. Sediment cleanup actions

Based on the marine sediment RI findings, seven sediment remedial alternatives were evaluated in the RI/FS.

- Marine Alternative M1: Source Control and Natural Recovery
- Marine Alternative M2: Engineered Cap On-Grade throughout SMA-3
- Marine Alternative M3: Targeted Removal and Engineered Cap (2-foot depth) in SMA-3 Southern Shoreline and Engineered Cap On-Grade SMA-3 Inlet
- Marine Alternative M4: Partial Removal and Engineered Cap (2-foot depth) throughout SMA-3

- Marine Alternative M5: Expanded Partial Removal (2 to 4-foot depth SMA-3 southern shoreline and a portion of SMA-2; 2-foot depth in SMA-3 Inlet) and Engineered Cap
- Marine Alternative M6: Removal Focus (full removal throughout SMA-3)
- Marine Alternative M7: Full Removal (full removal throughout all SMAs)

Ecology selected Marine Alternative M5 as providing the greatest degree of benefit for the associated cost out of the seven alternatives evaluated in the RI/FS. The planned cleanup action for sediments is a comprehensive final remedy for the sediments exceeding Site CULs and will comply with all applicable remedy selection requirements under MTCA and SMS. The cleanup action to remediate Site marine sediments will include a combination of monitored natural recovery (MNR), enhanced monitored natural recovery (EMNR), excavation, and engineered capping technologies. The performing PLPs shall implement Marine Alternative M5, which consists of the following major elements:

- Remove and dispose of accumulated sediment or debris from stormwater system
- Remove and dispose of piling and creosote-treated wood debris (SMA-1, 2, and 3)
- Demolish and dispose of two shoreline bulkheads and a remnant barge structure
- Construct shoreline erosion protection along the top of the bank adjacent to SMA 3 (as needed)
- Monitor the natural recovery of 8.2 acres of surface sediments in SMA 1.
- Place an EMNR layer as follows:
    - Procure approximately 12,480 tons of clean silty sand from a commercial upland or beneficial reuse source (dredged silty sand materials from the Snohomish River, for example).
    - Place a nominal 6-inch-thick layer of clean silty sand over 5.2 acres in SMA 2.
    - Monitor the effectiveness of EMNR actions upon completion of construction.
- Excavate sediments in 3.3 acres (2.9 acres in SMA 3 and 0.4 acres in SMA-2) as follows:
    - Remove up to approximately 21,623 cubic yards of sediments from the top 2 to 4 feet of SMA 3 and a portion of SMA-2 using land-based low ground pressure equipment and placement methods as appropriate.
    - Excavation in the north inlet area will also require shoring to protect the adjacent upland area where an access road and underground utilities are located at the top of the slope.
    - Removal volumes include an assumed over depth allowance of 0.25 feet and are scaled up by 20% to account for engineering factors (side slopes, level cuts, etc.) that will be considered during remedial design.
    - Place an estimated 29,592 tons of backfill in 2.8 acres of SMA-3 and SMA-2 where excavation depths are sufficient to remove sediment with concentrations above 8 ng/kg dw Dioxin/Furan TEQ and 117 µg/kg dw Total PCBs
    - Remove temporary shoring used to protect the slope adjacent to the upland side of the excavation.
- Manage excavated material as follows:
    - Temporarily stockpile excavated material in an upland stockpile area constructed to contain water generated from sediment dewatering and precipitation.

    - Treat water generated from temporary stockpiles for discharge as required by permits.
    - Dispose of the dewatered excavated material in an offsite Subtitle D landfill.
- Construct an engineered cap over a portion of SMA 3 (the north inlet area 0.5 acres), following a 2-foot excavation, as follows:
    - Procure an estimated 2,843 tons of material from a commercial upland source.
    - Construct a 2-foot-thick cap over the excavated area using land-based low ground pressure equipment and placement methods as appropriate.
    - Monitor the physical integrity of the engineered cap upon completion of construction.
    - Areas where 2-foot excavation depths are sufficient to remove sediment with concentrations above 8 ng/kg dw Dioxin/Furan TEQ and 117 µg/kg dw Total PCBs will be backfilled and not require an engineered cap.
- Ecology will determine which institutional controls and appropriate requirements the performing PLPs must implement to protect and maintain engineered caps during design, and that may include health and safety requirements for future Site workers potentially exposed to intertidal sediments, restrictions on activities that could impact engineered caps, or other appropriate controls.
- The selected cleanup includes periodic post-construction sampling and testing of sediments within the biologically active zone to verify that cleanup standards are met and continue to be met. The scope and details of the long-term monitoring are discussed further in Section 3.4 and will be refined during remedial design. Long-term monitoring will continue as long as contamination remains contained on the Site in excess of cleanup standards.

Removal of contaminated sediment and creosote treated wood will likely entail accessing excavation areas from the shoreline at low tide using land-based equipment. Removal in SMA-3 and portions of SMA-2 adjacent to the Knoll area will address sediments that are potentially a source of PCBs in upland groundwater. Remaining contaminated sediment will be managed by capping or backfilling excavated areas. Placement of EMNR material and engineered caps using land-based equipment and working in the dry will allow for more accurate placement and verification than through water column subtidal placement methods.

The SMA-3 inlet area engineered cap monitoring and maintenance will be conducted in accordance with an approved, long-term operations monitoring & maintenance (OMM) plan, which will be developed as part of remedial design. The estimated construction duration for this alternative would span multiple in-water construction seasons (approximately 7 to 8 months).

The extent of engineered caps and removal areas will be refined by the PLPs and provided to Ecology for review and approval during remedial design. Requirements for shoreline protection and slope stabilization in demolition and piling removal areas, and in areas adjacent to engineered caps or excavations will also be refined during remedial design, including considerations for climate change and seismic stability.

Figure 3 depicts a plan view of the Planned Sediment Cleanup Actions (i.e., selected Alternative M5).

3.2.4. Compliance with MTCA requirements

The selected cleanup actions were evaluated in detail in the RI/FS for compliance with MTCA and SMS requirements. The Ecology-selected cleanup alternatives were identified as the actions that provide the most permanent solution to the maximum extent practicable through the disproportionate cost analysis (DCA). Cleanup actions are required to, at a minimum, comply with cleanup standards, comply with ARARs, and provide for a reasonable restoration timeframe. An analysis of how these minimum requirements are met by the selected cleanup actions is provided in this section.

Upland cleanup

- **Overall Protectiveness:** There will be an improvement in overall environmental quality resulting from implementation of the selected upland cleanup actions via source removal, capping, and the implementation of institutional controls. Contaminated soil removal will reduce existing risks via direct contact and/or vapor intrusion and will control the primary source of groundwater contamination with the quickest risk reduction. BIO treatment has a lesser degree of certainty and requires more active treatment time, however, it will address residual impacts following soil removal as well as address deeper groundwater impacts.
- **Permanence:** The selected cleanup actions provide a significant reduction in contaminant toxicity and volume and are considered to be irreversible. There is a reduction in contaminant volume through physical removal of the majority contaminated soils in the cleanup areas. Toxicity to human and ecological receptors is reduced through capping by interrupting the pathways for exposure to the contamination remaining on the Site. Soil source removal along with BIO treatment of residual groundwater impacts will result in permanent contaminant volume reduction; however, BIO treatment has a lesser degree of certainty and may produce residuals.
- **Effectiveness Over the Long Term:** Both excavation and capping are common technologies that will remove contaminants or block exposure pathways; however, the capped areas will require continued maintenance and institutional controls. The BIO treatment of groundwater has a lower degree of certainty for certain substances (i.e., longer chain PAHs), however, a vast majority of contamination will be addressed with the source soil removal and the BIO treatment aimed at volatile constituents to address vapor intrusion concerns. The alternatives will be reliable as long as the cap is property maintained and institutional controls are followed. Potential future risks will be controlled through the enforcement of institutional controls and a soil management plan, which are examples of effective risk management tools.
- **Short-Term Risk Management:** During construction, contaminated soil will be handled and removed from the Site. There is moderate short-term risk to human health and the environment during implementation because excavation requires some contaminated materials handling. The BIO treatment will also require transport and handling of

chemicals (i.e., nitrate). There is low risk for public exposure because contaminated soil would be transported from the Site for disposal over public roadways; however, the excavated soil would be managed by licensed professionals with appropriate training. Site activities will require appropriate personal protection equipment (PPE), Best Management Practices (BMPs), and appropriate training requirements (to be described in a site-specific Health & Safety Plan). Together, these controls are highly effective and anticipated to adequately manage short-term risk.

- **Technical and Administrative Implementability**: This cleanup action has a high degree of implementability. It is technologically feasible and includes a reasonable and achievable scope. The selected alternative has some challenges associated with excavation in the saturated soil due to groundwater infiltrations and heaving sands; however, it uses proven technologies and there are locally available, experienced contractors and materials. The BIO treatment has a lower degree of certainty for certain substances (i.e., longer chain PAHs), but the BIO treatment component aimed at volatile constituents to address vapor intrusion concerns (AS/SVE) is a proven technology for this situation. This cleanup action complies with all applicable administrative and regulatory requirements and will be managed and constructed by specialty professionals familiar with this type of work. There are no difficult permitting requirements anticipated for the selected alternative. Implementation of this alternative may be phased to minimize impacts to Site operations and will be coordinated with any Site tenant at the time of construction.
- **Consideration of Public Concerns:** The RI/FS went through a public review process before finalization. The selected alternative recognizes the public interest of supporting remedial actions that achieve regulatory requirements by considering cost effectiveness and targeting remediation to mitigate impacts on local businesses. This DCAP is subject to public review and comment, and Ecology will consider public comments and concerns during finalization of the CAP.

Sediment cleanup

- **Overall Protectiveness:** There will be an improvement in overall environmental quality resulting from implementation of the selected cleanup action. At the highest level, selected remedial technologies (i.e., removal and partial removal with engineered capping) will entirely replace the sediment layer used by the benthic community in SMA-3. Human health cleanup standards (cleanup levels met within the top 1 foot of sediment on a SWAC basis), as well as cleanup standards protective of ecological receptors for COPCs, will be met throughout the marine areas of the Site immediately following construction. Contaminated sediment removal (full removal in SMA-3 southern areas and partial removal in the logway portions of SMA-3) reduces existing risks by removing contaminant mass from most of the contaminated in-water areas, including sediment that may be a source of contamination in upland groundwater. Additionally, engineered capping extends the protections against potential exposures to contaminated sediment remaining in place.
- **Permanence:** The selected cleanup action provides a significant reduction in contaminant toxicity and volume. There is a reduction in contaminant volume through removal of the most contaminated marine areas of the Site. The threat of toxicity to human and

ecological receptors is reduced through capping by interrupting the pathways for exposure to the contamination remaining on the Site. Sediment surface cap design will address contaminants remaining in the marine portion of the Site above CULs with physical and chemical isolation via engineered capping (i.e., cap design addresses climate change and seismic forces).

- **Effectiveness Over the Long Term:** The cleanup action provides certainty of long-term effectiveness through removal and partial removal with engineered capping. Climate change vulnerabilities and seismic forces will be addressed via engineered capping design. The long-term effectiveness was evaluated based on the certainty that the selected alternative would be successful throughout the timeframe that hazardous substances would be expected to remain at the Site in concentrations exceeding CULs, with considerations for climate change and seismic events. Long-term post construction compliance monitoring will take place at the Site until remaining contaminated sediment under the engineered cap no longer exceeds CULs (WAC 173-340-410(3)). Ecology will perform periodic reviews at the site to ensure institutional controls are followed and financial assurance is being met (WAC 173-340-420).
- **Short-Term Risk Management:** During construction, short-term risk is associated with potential release and transport of contaminated sediment in the water, as well as potential exposures to workers and the public as contaminated sediment is removed from the water for upland landfill disposal or possible beneficial reuse. Potential risks of in-water release will be managed through BMPs such as excavation at low tide (in the dry) and backfill/capping during a single tide cycle. Risks to remedial construction workers will be managed through a Site-specific Health and Safety Plan, which will consider engineering controls and the use of appropriate PPE to minimize potential exposure. Together, these controls are highly effective and anticipated to adequately manage short-term risk.
- **Technical and Administrative Implementability**: This cleanup action has a high degree of implementability. It is technologically feasible and includes a reasonable and achievable scope. The selected alternative has some challenges associated with excavation in the inlet area; however, it uses proven technologies and there are locally available, experienced contractors and materials. This cleanup action complies with all applicable administrative and regulatory requirements and will be managed and constructed by specialty professionals familiar with this type of work. There are no difficult permitting requirements anticipated for the selected alternative. Implementation of this alternative may be phased to minimize impacts to Site operations and will be coordinated with any Site tenant at the time of construction.
- **Consideration of Public Concerns:** The RI/FS went through a public review process before finalization. The selected alternative recognizes the public interest of supporting remedial actions that achieve regulatory requirements by considering cost effectiveness and targeting remediation to mitigate impacts on local businesses. This DCAP is subject to public review and comment, and Ecology will consider public comments and concerns during finalization of the CAP.

3.3. Applicable, Relevant, and Appropriate Requirements

3.3.1. Applicable requirements

MTCA requires the cleanup standards to be "at least as stringent as all applicable state and federal laws." WAC 173-340-700(6)(a). Cleanup levels and points of compliance meet applicable laws as described above. Besides establishing minimum requirements for cleanup standards, other regulatory requirements must be identified by the person conducting the cleanup and considered in the selection and implementation of the cleanup action. This section details the known and identified applicable state and federal laws that may impose certain technical and procedural requirements for performing cleanup actions. These requirements are described in WAC 173-340-710. Pursuant to WAC 173-340-710(2), Ecology has reviewed the identified applicable requirements and determined the following regulations are applicable as listed in Tables 3.1-3.3.

3.3.2. Relevant and appropriate requirements

In addition, relevant and appropriate requirements include those cleanup standards, standards of control, and other environmental requirements, criteria, or limitations established under state or federal law that, while not legally applicable to the hazardous substance, cleanup action, location, or other circumstance at a site, address problems or situations sufficiently similar to those encountered at the site that their use is well suited to the particular site. WAC 173-340-710 through 173-340-760 identifies several requirements Ecology considers relevant and appropriate for establishing cleanup standards. Pursuant to WAC 173-340-710(2), Ecology did not identify additional relevant and appropriate regulations.

3.3.3. Exemptions

Certain state law requirements, and the procedural requirements of any laws requiring or authorizing local government permits or approvals for the remedial action are exempt under RCW 70A.305.090(1) and WAC 173-340-710(9)(b).

Persons conducting a remedial action under an order or decree are exempt from the procedural requirements of the following laws:

- RCW Chapter 70A.15 [Washington State Clean Air Act]
  - Limited exemption: Non-federally delegated permits only
- RCW Chapter 70A.205 [Washington State Solid Waste Management Act]
- RCW Chapter 70A.300 [Washington State Hazardous Waste Management Act
  - Limited exemption: State only designated dangerous waste
- RCW Chapter 77.55 [Washington State Construction Projects in Water Act]
- RCW Chapter 90.48 [Washington State Water Pollution Control]
  - Limited exemption: Non-federally delegated state waste discharge permit only
- RCW Chapter 90.58 [Washington State Shoreline Management Act]
- Laws requiring or authorizing local government permits or approvals for the remedial action

3.3.4. Continuing obligation

Per WAC 173-340-710(9)(e), the performing PLPs have a continuing obligation to determine whether additional permits or approvals or substantive requirements are required. In the event that either the person conducting the remedial action or Ecology becomes aware of additional permits or approvals or substantive requirements that apply to the remedial action, they shall promptly notify the other party of this knowledge. Ecology, or the potentially liable person at Ecology's request, shall consult with the state or local agency on these additional requirements. Ecology shall make the final determination on the application of any additional substantive requirements at the Site, following consultation with appropriate state and local regulators.

3.4. Restoration Timeframe

The anticipated restoration timeframes for the cleanup action differ by media, area, and cleanup component and are as follows:

- **Soil**: Cleanup Standards are expected to be met at the POC immediately following completion of soil excavation through source removal and containment of contamination remaining on the Site.
- **Groundwater**: Cleanup Standards are expected to be met at the POC between 6 months (for shallow volatile impacts addressed with initial AS/SVE component of the remedial action) to 5 to 10 years (for NAPL and deep impacts addressed by operation of full BIO system and post-action monitoring in monitored natural attenuation phase). The BIO cleanup action will continue until there is a diminishing return and approval from Ecology. When REL has been achieved and the BIO system is showing diminishing return, the performing PLPs will initiate a study to determine if MNA is applicable to achieve the CUL (Section 2.3.2) in a reasonable restoration timeframe, which is estimated at 10 years. At any stage of the cleanup, if Ecology determines that CUL will not be achieved within a reasonable restoration timeframe, the performing PLPs shall conduct a CRA as described in section 3.9 or prepare an FFS under Ecology's direction to address the remaining contamination in the Creosote/Fuel Oil Area of the Site.
- **Sediment:** Sediment Cleanup Standards need to be met within 10 years following completion of construction per the SMS. However, the selected marine sediment cleanup action is expected to meet Cleanup Standards immediately following completion of construction (expected to occur over 2 construction seasons/in-water work windows).

3.5. Remedial Design Process

While a significant amount of site contaminant data has been collected to-date, there are still data gaps that will need to be addressed to allow for sufficient design of the final remedial components to ensure their effectiveness. The performing PLPs shall prepare a PDI Work Plan describing details on the PDI activities that they will present to Ecology for its approval, which will consist of the following general components:

3.5.1. Creosote/fuel oil area upland hot spot soil removal

In order to further delineate the lateral extent and vertical extent of hot spot soil impacts in the Creosote/Fuel Oil Area, the performing PLPs shall complete soil borings to supplement the existing Creosote/Fuel Oil Area soil data and to assess the extent of excavation shoring needed for hot spot soil excavation. It is anticipated that the PDI data in conjunction with the existing site data for the Creosote/Fuel Oil Area will be sufficient to allow for delineation of the soil impacts to be removed during remedial action.

The performing PLPs shall also perform an excavation and groundwater dewatering assessment to assess the feasibility of significant excavation into the saturated subsurface at the Site. This assessment will provide site-specific data regarding the expected groundwater infiltration rates and shoring requirements.

3.5.2. Creosote/fuel oil area groundwater BIO treatment

Prior to installing the BIO system, the performing PLPs shall install monitoring wells and temporary Geoprobe points to further refine the final system size and treatment interval, including several borings to better understand the nature and extent of NAPL at greater depth. Some of this data is anticipated to be obtained during the Creosote/Fuel Oil Area hot spot soil removal focus of the PDI described above. It is expected that some of the monitoring wells will be used for performance monitoring of the system upon operation. Pilot testing of the BIO system will be performed on-property to determine injection and extraction rates, the rate of nutrient consumption, the performance of vertical recirculation wells, and the performance of deep air injection wells. The results of the pilot testing will be used to finalize the design parameters for the system.

3.5.3. Woodlife area upland soil removal

In order to further delineate the lateral and vertical extent of impacts in the Woodlife Area, the performing PLPs shall complete soil borings to supplement the existing Woodlife Area soil data to determine the final extent of soil excavation. It is anticipated that the pre-remedial design data in conjunction with the existing site data for the Woodlife Area will be sufficient to allow for delineation of the soil impacts to be removed during remedial action.

3.5.4. Marine sediment cleanup action

The performing PLPs shall include details of the remedial design process for marine sediment in the PDI Work Plan. The PLPs will collect additional sediment data during the PDI to refine the extent of sediment cleanup required within the Site for compliance with cleanup standards, including both SWAC and point-by-point criteria, as applicable (refer to Section 2.3). The PDI data objectives to inform remedial design include the following:

- Collect additional surface sediment chemical concentration data sufficient to inform the remedial design of MNR areas (SMA-1), ENMR areas (SMA-2), and engineered capping areas (SMA-3).
- Collect additional subsurface chemical concentration data sufficient to inform the remedial design of excavation prisms to achieve complete removal of areas exceeding

RELs within SMA-3 and SMA-2 knoll area or to inform engineered cap design (logway portion of SMA-3).

- Collect geotechnical data on intertidal material properties and adjacent shoreline slopes to support remedial excavation design and potential shoring requirements.

The presence of wood debris (characterized as TVS through high volume loss on ignition methodology) and bulk sediment concentrations of cPAH TEQ do not require cleanup actions for the Site based on currently available information. During the PDI, the performing PLPs shall conduct further characterization of wood waste and cPAH TEQ within the marine Site boundary to confirm compliance determinations. The characterization of wood waste will follow Ecology's Wood Waste Cleanup guidance document (Publication No. 09-09-044). The PDI work plan will follow a "weight of evidence approach" (Chapter 2 of the wood waste guidance) and may involve up to three levels of testing to confirm wood waste impacts. Ecology may require the performing PLPs to remediate/address wood waste within the marine Site boundary if Ecology determines that, based on additional data collected during the implementation of the PDI, the wood waste is likely to cause adverse impacts to the benthic community.

If areas of wood debris, not identified during the PDI, are encountered during construction, these areas will be addressed through pre-determined adaptive management measures. The adaptive management process will be specified in the Engineering Design Report (EDR) and will apply within the marine Site boundary.

It is anticipated that capping footprints and intertidal excavations will be subdivided into areas that can be excavated and backfilled or excavated and capped within a single tide cycle during low tide (in the dry). This will eliminate or significantly minimize potential water quality and sediment recontamination impacts during construction. To allow for excavation and backfill or excavation and capping in the dry and in a single tide cycle, the performing PLPs shall collect sufficient PDI surface and subsurface sediment sampling data which may eliminate or reduce the need for post-excavation and post-capping confirmation sampling.

3.5.5. Priority species and habitat mitigation and monitoring

The performing Parties shall collect additional information during the PDI, as necessary, to avoid, minimize and compensate for impacts from remedial activities on priority/protected species and habitats. The data will be sufficient for the PLPs to develop, in consultation with applicable agencies and Tribes, mitigation, maintenance, and monitoring plans that meet federal, tribal, state, and local requirements. The PLPs will submit the plans to applicable regulatory and tribal parties for review and approval prior to implementing the selected cleanup actions.

3.6. Compliance Monitoring

Compliance monitoring requirements associated with remedy implementation consist of protection monitoring during construction activities, performance monitoring to ensure that remedy construction is in accordance with the project plans and design, and confirmation monitoring following remedy completion to confirm compliance with cleanup standards.

Requirements for compliance monitoring will be established in a Compliance Monitoring Plan the performing PLPs shall submit to Ecology for review and approval.

3.6.1. Protection monitoring

The performing PLPs shall conduct protection monitoring during construction and operation and maintenance activities to confirm the protection of human health and the environment. Protection monitoring requirements for worker safety will be described in Health and Safety Plans, and environmental protection monitoring will be described in the OMM Plan and Construction QAPP or equivalent documents developed as pre-construction submittals. Such documents will be reviewed and approved by Ecology.

Upland protection monitoring

Upland protection monitoring will include applicable permitting and notification requirements, including development of an Erosion Sediment Control Plan (ESCP) and obtaining a National Pollutant Discharge Elimination System (NPDES) construction stormwater permit, as well as other applicable local regulations presented in Table 3.1 to Table 3.3. Stormwater inspections and sampling will be performed per the terms of the construction stormwater general permit.

Sediment cleanup action protection monitoring

Marine Sediment protection monitoring may consist of the following:

- Resuspension barriers (turbidity/silt curtains/temporary cover material) will be evaluated during remedial design and may be used to minimize or reduce potential turbidity impacts during excavation where site conditions are compatible.
- Intertidal excavation and backfilling or capping of excavated areas in the dry during a single low tide cycle will be evaluated during remedial design as a construction method to reduce the potential for release of impacted intertidal sediment and shoreline bank soils to the Site during construction.
- Excavated sediments may be placed in an upland sediment processing area where debris and oversized material can be separated and the sediments allowed to passively dewater (via gravity) until they are ready for off-site transportation and disposal. Water that drains from the sediment during the passive dewatering step may require collection and treatment. Treatment requirements will be evaluated during remedial design.

In-water construction activities will be performed consistent with allowable work windows established in coordination with state and federal resource agencies and tribes. Final work windows will be specified in the issued permits for the project.

3.6.2. Performance monitoring

The performing PLPs shall conduct performance monitoring after cleanup construction to confirm that cleanup action has attained cleanup standards and/or remediation levels or other performance standards such as construction quality control measurements or monitoring necessary to demonstrate compliance with a permit or, where a permit exemption applies, the substantive requirements of other laws. Performance monitoring will be described in the OMM

Plan or equivalent documents developed for such monitoring. The performing PLPs will submit such documents to Ecology for review and approval.

Upland performance monitoring

The performing PLPs shall perform the following upland performance monitoring activities:

- Chemical sampling during PDI or following excavation to ensure that contaminant removal achieves remedial goals.
- Quality control monitoring for construction activities, including survey of excavation extents or caps, geotechnical assessment of backfilling and compaction, and chemical profiling of imported fill material.
- Groundwater monitoring during the BIO system operation and following operation of the BIO system to assess contaminant removal and/or stabilization. Performance groundwater monitoring will be performed semiannually at approximately 4 downgradient locations and 6 locations within the plume.

Sediment cleanup action performance monitoring

The performing PLPs shall conduct performance monitoring activities for the sediment cleanup action during construction. These performance monitoring will consist of the following:

- Chemical sampling during PDI to ensure design excavation limits and depths provide required contaminant removal to achieve remedial goals. Ecology may require additional sampling of the excavation limits prior to backfilling with clean sediment during remedial construction.
- Construction quality control surveys of intertidal excavations to ensure design criteria (limits and depths) are achieved during construction.
- Construction quality control surveys during cap placement to confirm engineered caps meet design requirements.
- Chemical and geotechnical testing of imported backfill and capping material.

3.6.3. Confirmation monitoring

The performing PLPs shall conduct confirmation monitoring after cleanup construction to confirm the long-term effectiveness of the cleanup action once cleanup standards and/or remediation levels or other performance standards have been attained. Confirmation monitoring will be described in the OMM Plan or equivalent documents developed for such monitoring. The performing PLPs will submit such documents to Ecology for review and approval.

Upland cleanup action confirmation monitoring

The performing PLPs shall perform the following upland cleanup action confirmation monitoring activities:

- Confirmation soil sampling from final practical excavation extents for analysis of IHS to verify that cleanup standards have been met.

- Routine inspections of capped areas to verify that the constructed remedy remains effective.
- Periodic groundwater monitoring to verify that groundwater cleanup standards have been met (i.e., concentrations below CULs or have not reached the CPOC). After decommissioning the BIO system at the Creosote/Fuel Oil Area, at least 10 wells will be monitored annually for at least five years to ensure that natural attenuation is taking place and the contamination plumes are stable or shrinking.

Marine sediment cleanup action remedy confirmation monitoring

The performing PLPs shall conduct remedy confirmation monitoring activities following construction of the sediment remedy to confirm ongoing compliance with cleanup standards. Confirmation monitoring will consist of the following:

- Routine visual inspections and/or surveys of engineered sediment cap areas to verify that the caps remain intact and protective
- Periodic post-construction sampling and testing of sediments within the biologically active zone to verify that cleanup standards are met and continue to be met
- Periodic post-construction sampling and testing of sediments near the outfalls to check for any recontamination

The performing PLPs shall include details of the confirmation monitoring requirements in the OMM Plan developed during design. The OMM Plan will specify details such as the following:

- Survey/inspection methods and frequency
- Sediment sampling methods, locations, analyses, and frequency
- Required maintenance activities

3.7. Schedule for Implementation

Appendix C contains an implementation schedule.

3.8. Institutional/Engineering Controls

Institutional controls to be implemented under this CAP include the recording of a restrictive covenant on the property with the County Assessor's Office. This covenant will include restrictions on soil digging and placement of drinking water wells in the property. The performing PLPs shall develop a soil management plan to control potential exposure risks posed by direct exposure to residual subsurface contamination and to protect the integrity of the remedy.

Engineering controls will include maintaining paved areas or clean soil caps that extend to the biologically active zone so that the Site continues to qualify for Terrestrial Ecological Evaluation exclusion.

For the Creosote/Fuel Oil Area, groundwater cleanup level is based on protection of human health from vapor intrusion. As such, an engineering control will also be necessary to prevent exposure from vapor intrusion, if the existing building is occupied or a new building is constructed.

For sediment in capped areas, institutional controls will be needed where the cleanup action leaves contaminated sediment exceeding cleanup levels. Sediment exceeding cleanup levels may remain where engineered capping is the selected cleanup method, and a protective covenant will restrict disturbance in these areas. The covenant will also include requirements for any future use or development in capped areas so that the capping is not compromised or is reconstructed if disturbed. The covenant will be recorded following the completion of excavation activities in the sediment areas described in this CAP.

3.9. Contingent Remedial Action

For the Creosote/Fuel Oil Area, Ecology acknowledges cleanup levels may not be achievable within the anticipated 10 years' timeframe due to the inherent uncertainty of the BIO system, as with any biological treatment system. The performing PLPs must implement a contingent remedial action (CRA) or prepare a focused feasibility study (FFS) under Ecology's direction and perform associated actions for this Area, if Ecology has determined any of the following:

- The BIO system has failed to achieve the REL for naphthalene in groundwater (Exhibit 3) within 5 years. Or,
- There is evidence in the early stages of the remedial action that BIO will not achieve REL and/or CUL at the POC within a reasonable restoration timeframe (i.e., 10 years). Or,
- MNA study shows that the CULs at the POC will not be achieved with natural attenuation.

Ecology has selected the CRA as "Thermal Treatment" for the Creosote/Fuel Oil Area. The Thermal Treatment CRA is based on the next most permanent alternative evaluated in the FS, which is described in Alternative 5 of the FS. Alternately, an FFS may be prepared by the performing PLPs under Ecology's direction to determine if there are alternative CRAs that can be implemented at the Creosote/Fuel Oil Area. If an FFS is not prepared and Thermal Treatment, as evaluated in the FS, must be implemented as part of the CRA, the performing PLPs shall prepare and submit a CRA plan for Ecology approval. The CRA plan will further detail the thermal treatment alternative with any anticipated pre-design activities and a schedule for engineering design report and cleanup construction. After Ecology approval of the CRA plan, the PLPs shall implement that plan in accordance with a revised schedule.

3.10. Public Participation

This DCAP is prepared by Ecology with assistance from the PLP. The interested Indian tribes will have a chance to review the DCAP prior to public comment period. Following these reviews, and incorporation of applicable edits, a Draft Final CAP will be distributed for public review. Based on the currently anticipated review and revision timeframes, the public review comment period is expected to be in winter 2022. Following the public comment period, the Final CAP will be prepared, incorporating any required public comment revisions to the Draft Final CAP.

4. References

Ecology. (2021). *Sediment Cleanup User's Manual (SCUM). Guidance for Implementing the Cleanup Provisions of the Sediment Management Standards, Chapter 173-204 WAC*. Toxics Cleanup Program. Washington State Department of Ecology, Olympia, Washington. Publication No. 12-09-057. Final Revised December 2021.

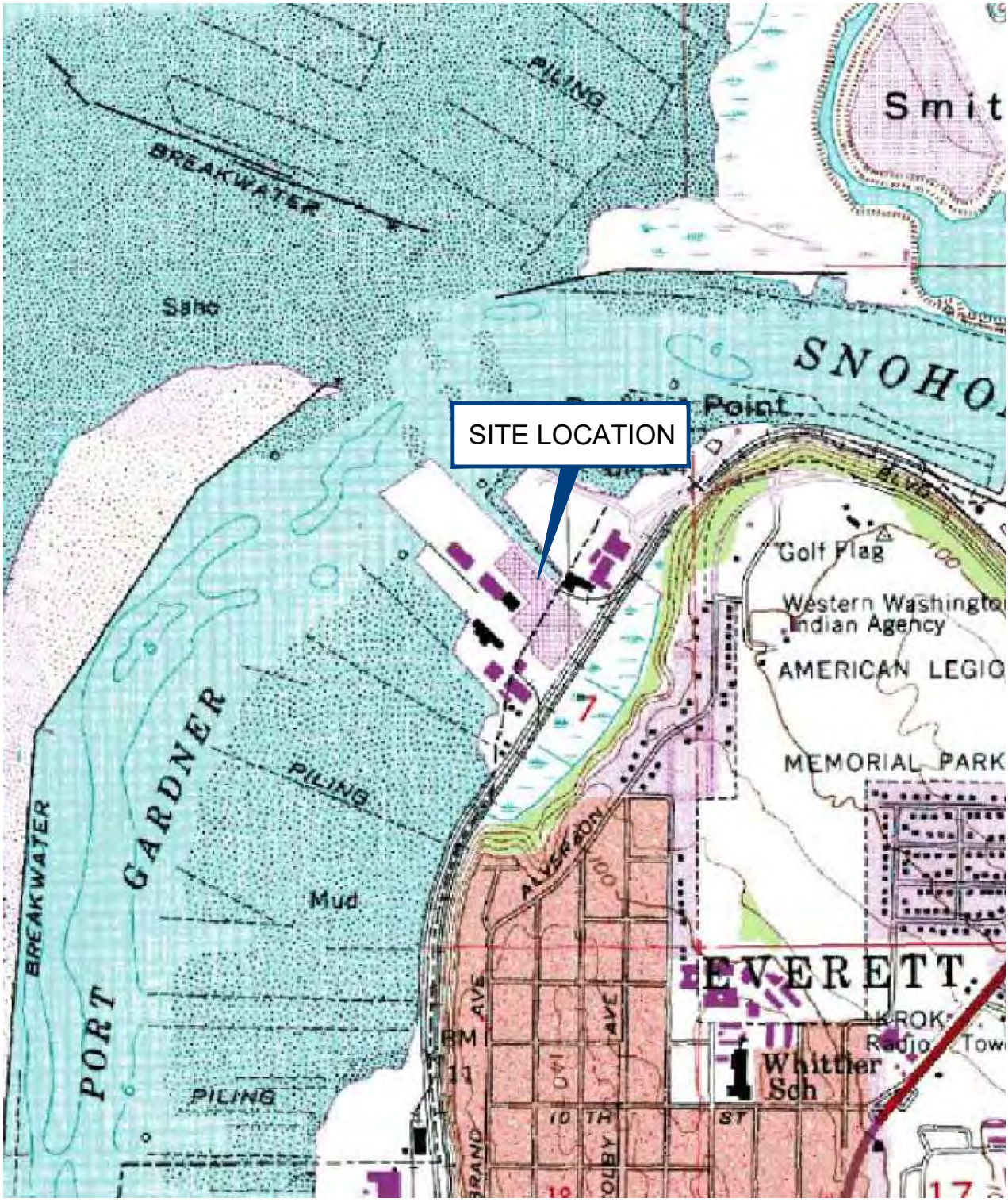
Ecology. (2013). *Sediment Management Standards (SMS).* 2013 (Amended). WAC 173-205.

Ecology. (2007). *Model Toxics Control Act (MTCA) Cleanup Regulation*. 2007 (Amended). WAC 173-340.

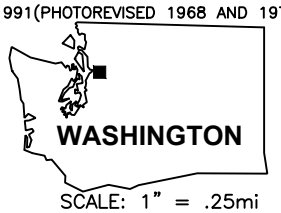
SLR/Anchor. (2021). *Final Remedial Investigation / Feasibility Study*. Jeld-Wen / Former Nord Door Facility. Prepared by SLR International Corp. and Anchor QEA LLC. January 2021.

SLR. (2019). *Summary of Source Control Evaluation to Assess Data Gaps for Completion of RI/FS. JELD-WEN Former Nord Door Site.* Prepared by SLR International Corp, West Linn, OR. January 2019.

Figures



SOURCE: USGS 7.5 MINUTE QUADRANGLE MARYSVILLE, WA; 1991(PHOTOREVISED 1968 AND 1973)



SCALE: 1" = .25mi

0 .25 .5 .75mi

SLR

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
DRAFT CLEANUP ACTION PLAN

Drawing
SITE LOCATION MAP

Date	APRIL 2020	Scale	AS SHOWN	Fig. No. 1
File Name	SITE LOCATION MAP-1	Project No.	108.00228.00061	

N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2022\Figures\CAD\SITE LOCATION MAP.dwg

LEGEND

EXISTING BUILDINGS

REMOVED BUILDINGS

NOTES

THE BUILDINGS, SURFACE UTILITIES, EDGE OF PAVEMENT, AND APPROXIMATE SHORELINE SHOWN ON THIS MAP ARE BASED ON A 2006 SURVEY PERFORMED BY WH PACIFIC.

AERIAL PHOTO FROM GOOGLE EARTH PRO, JULY 2019

0 200 400 600'

SLR ANCHOR QEA

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

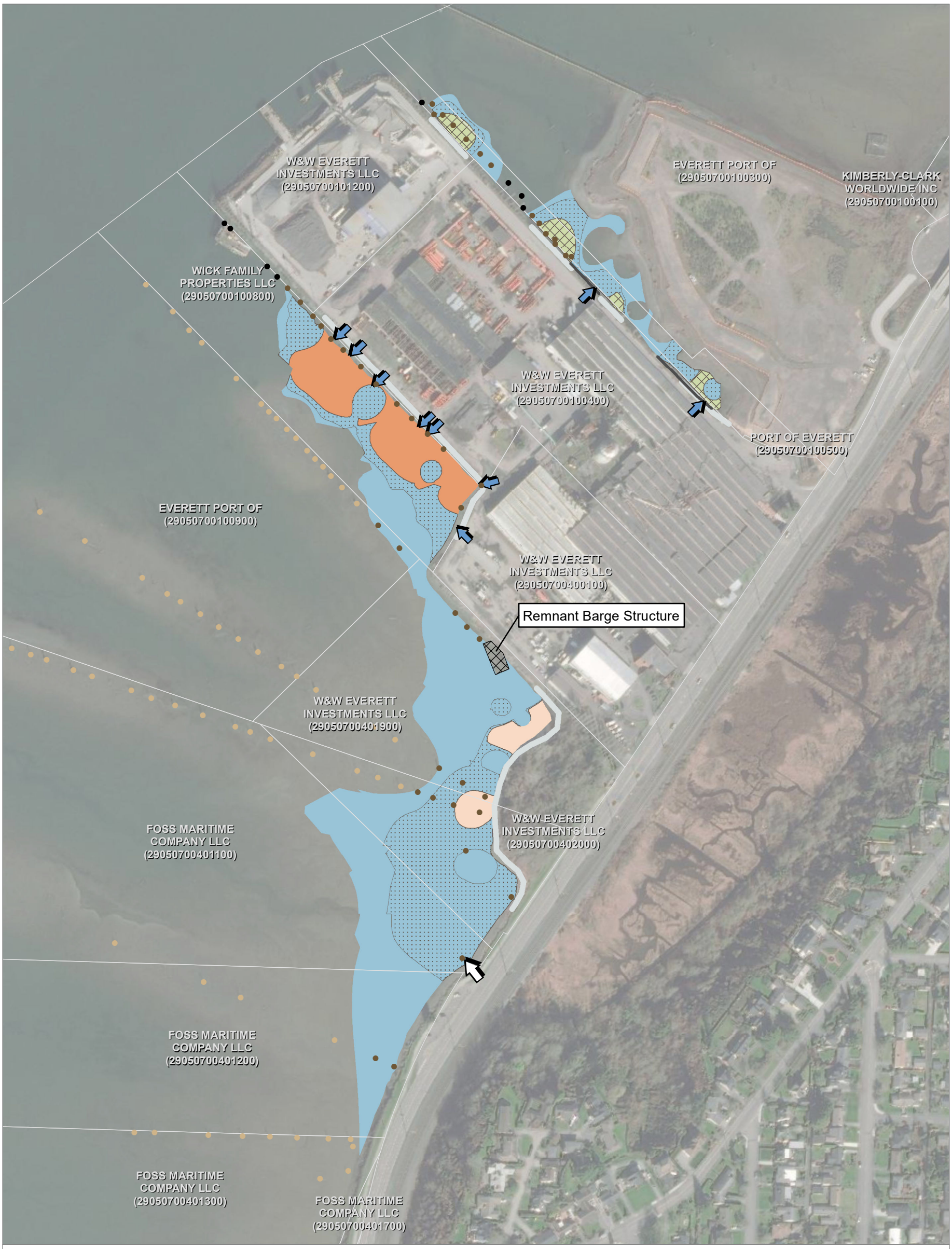
Report
DRAFT CLEANUP ACTION PLAN

Drawing
SITE MAY AND KEY UPLAND FEATURES

Date	MARCH 2021	Scale	AS SHOWN	Fig. No. 2
File Name	SITE PLAN_NEW SYMBOLS	Project No.	108.00228.00061	

N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2022\Figures\CAD\SITE PLAN_NEW SYMBOLS.dwg

DRAFT



Stormwater Outfall

Jeld-Wen Outfall

Pile Location Outside Project Boundary

Pile Location Within Project Boundary

Pile Location Outside Project Boundary But Identified For Removal Pending Owner Approval

Bulkhead Removal (350 L.F.)

Rip Rap Shoreline Protection (2,300 L.F.)

Remnant Barge Structure to be Removed

Parcels

SMA 1

Monitored Natural Recovery (8.2 Acres)

SMA 2

Enhanced Monitored Natural Recovery (5.2 Acres)

SMA 3

2-foot Removal and Backfill (0.5 acres)

Remove All (4-foot assumption)* and backfill

2-foot Removal and Engineered Cap (0.47 Acres)

NOTES:
Piling and large surficial wood debris to be removed throughout the site.

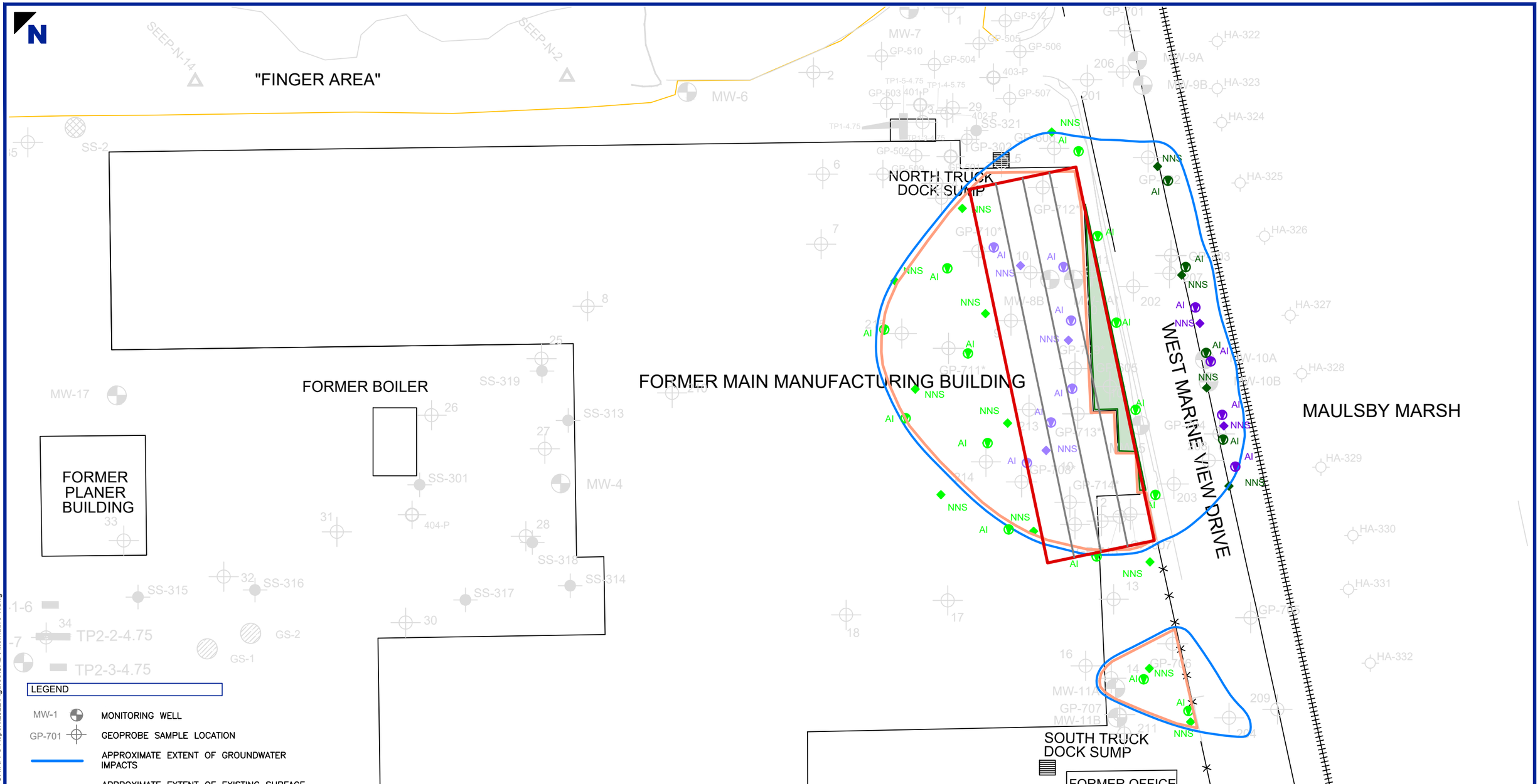
*maximum excavation depths in intertidal areas to be evaluated in design

0 320
Feet

Publish Date: 2022/06/06, 8:14 AM | User: jsfox
Filepath: \\orcas\GIS\Jobs\100546-01_JELD-WEN\Maps\Cleanup_Action_Plan\CAP_RemedialAlternatives_DDP.mxd

ANCHOR QEA SLR

Figure 3
Planned Sediment Cleanup Action, Key Figures and Parcel Ownership
Draft Cleanup Action Plan
Jeld-Wen/Former Nord Door Facility



LEGEND

- MW-1 — MONITORING WELL
- GP-701 — GEOPROBE SAMPLE LOCATION
- APPROXIMATE EXTENT OF GROUNDWATER IMPACTS
- APPROXIMATE EXTENT OF EXISTING SURFACE CAP WITHIN IMPACTED AREA ON PROPERTY
- APPROXIMATE EXTENT OF UNPAVED GROUND SURFACE ON PROPERTY (3,700 SQ FT)
- HOTSPOT REMOVAL AREA (100 FT X 350 FT)
- PROPOSED SHORING (25 FT SPACING)

PROPOSED BIOREMEDIATION TREATMENT

AI	AI WELLS (ON PROPERTY)	NNS	NNS WELLS (ON PROPERTY)
AI	AI WELLS (OFF PROPERTY)	NNS	NNS WELLS (OFF PROPERTY)
AI	AI DEEP WELLS (ON PROPERTY)	NNS	NNS VERTICAL RECIRCULATION WELLS (ON PROPERTY)
AI	AI DEEP WELLS (OFF PROPERTY)	NNS	NNS VERTICAL RECIRCULATION WELLS (OFF PROPERTY)

NOTES

THE BUILDINGS, SURFACE UTILITIES, EDGE OF PAVEMENT, AND APPROXIMATE SHORELINE SHOWN ON THIS MAP ARE BASED ON A 2006 SURVEY PERFORMED BY WH PACIFIC.

0 90 180 270’

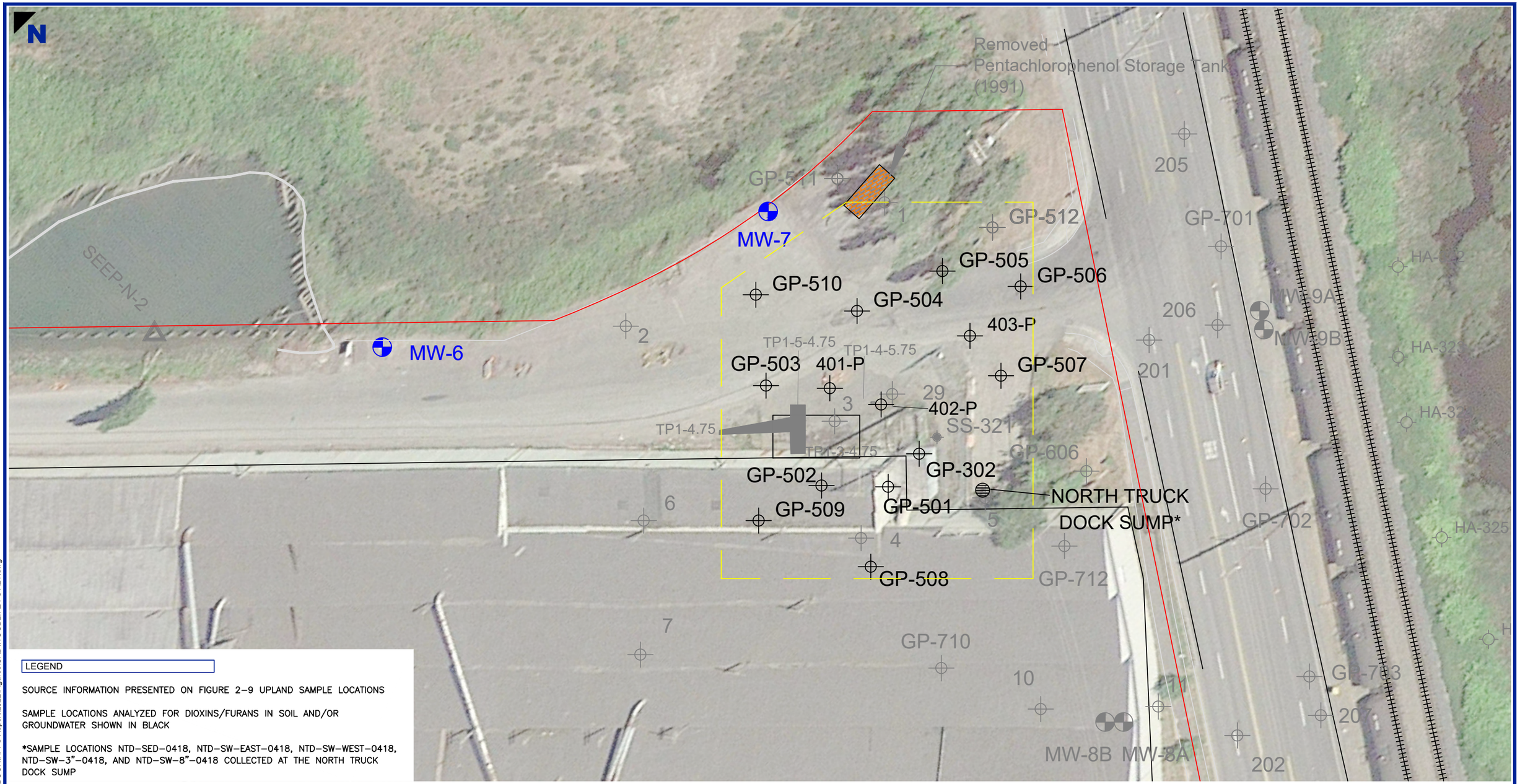
JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
DRAFT CLEANUP ACTION PLAN

Drawing
UPLAND CLEANUP ACTION - CREOSOTE/FUEL OIL AREA

Date	February 2022	Scale	AS SHOWN	Fig. No.	4
File Name	Alternative 7	Project No.	108.00228.00061		

N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2022\Figures\CAD\Alternative 7.dwg



LEGEND

SOURCE INFORMATION PRESENTED ON FIGURE 2-9 UPLAND SAMPLE LOCATIONS

SAMPLE LOCATIONS ANALYZED FOR DIOXINS/FURANS IN SOIL AND/OR GROUNDWATER SHOWN IN BLACK

*SAMPLE LOCATIONS NTD-SED-0418, NTD-SW-EAST-0418, NTD-SW-WEST-0418, NTD-SW-3"-0418, AND NTD-SW-8"-0418 COLLECTED AT THE NORTH TRUCK DOCK SUMP

MW-6 EXISTING GROUNDWATER MONITORING WELLS

ESTIMATED LIMITS OF EXCAVATION (ACTUAL HORIZONTAL AND VERTICAL EXTENTS TO BE DETERMINED BY PRE-REMEDIAL DESIGN INVESTIGATION)

APPROXIMATE PROPERTY BOUNDARY

SLR ANCHOR QEA

NOTES

THE BUILDINGS, SURFACE UTILITIES, EDGE OF PAVEMENT, AND APPROXIMATE SHORELINE SHOWN ON THIS MAP ARE BASED ON A 2006 SURVEY PERFORMED BY WH PACIFIC.

0 45 90 135'

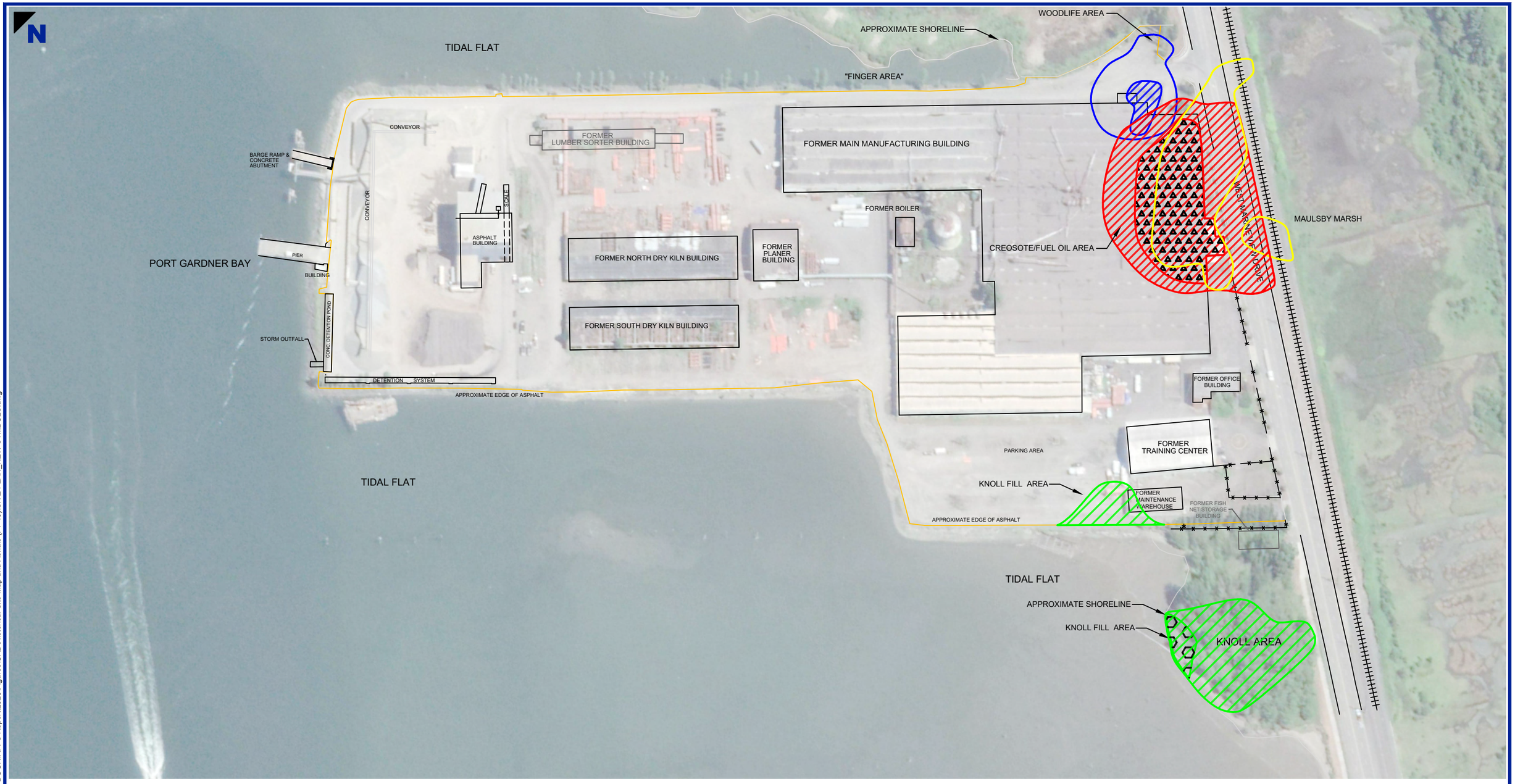
JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
DRAFT CLEANUP ACTION PLAN

Drawing
UPLAND CLEANUP ACTION - WOODLIFE AREA

Date	MARCH 2021	Scale	AS SHOWN	Fig. No. 5
File Name	WOODLIFE FS ALT	Project No.	108.00228.00061	

N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2022\Figures\CAD\WOODLIFE FS ALT.dwg



LEGEND

- cPAH IN SOIL
- NAPHTHALENE IN GROUNDWATER
- NAPHTHALENE IN SOIL-GAS
- PCB CONGENERS IN GROUNDWATER
- PCB CONGENERS IN GROUNDWATER SEEP
- DIOXINS IN SOIL
- DIOXINS IN GROUNDWATER

NOTES

AERIAL PHOTO FROM GOOGLE EARTH PRO, JULY 2019

0 200 400 600'

SLR ANCHOR QEA

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
DCAP

Drawing
PCL EXCEEDANCES

Date	OCTOBER 2022	Scale	AS SHOWN	Fig. No.	6
File Name	SITE PLAN_NEW SYMBOLS	Project No.	108.00228.00061		

N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2020\Figures\CAD\Historical Site Map and Aerials (F1-10)\SITE PLAN_NEW SYMBOLS.dwg

Tables

Table 3.1
Potential Chemical-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
Sediment Requirements		
Sediment Management Standards (SMS; WAC 173-204)	Establishes standards for the quality of surface sediment in Washington state. These standards provide chemical concentration criteria, which identify surface sediment without adverse effects on biological resources and no significant health risk to humans.	Applicable; Site is regulated under SMS and must meet SMS standards.
Groundwater Requirements		
Model Toxics Control Act (MTCA; WAC 173-340)	Establishes Washington state administrative processes and standards to identify, investigate, and clean up facilities where hazardous substances are located.	Applicable; Site is regulated under MTCA and must meet MTCA standards.
Drinking Water Standards—State Maximum Contaminant Levels (WAC 246-290-310)	Establishes standards for contaminant levels in drinking water for water system purveyors.	Not applicable; highest potential future beneficial use at the Site is not drinking water.
Washington State Maximum Contaminant Levels (WAC 246-290-310)	Washington state maximum contaminant levels (MCLs) are presented in WAC 246-290-310. These are standards that are generally promulgated by the United States Environmental Protection Agency (USEPA) and adopted by Washington State to protect for drinking water quality. An MCL is the legal threshold limit on the amount of a substance that is allowed in public water systems under the Safe Drinking Water Act.	Not applicable; MCLs pertain to protection of groundwater for drinking water. Groundwater at the Site has been determined to be non-potable.
Water Quality Standards for Groundwaters of the State of Washington (WAC 173-200)	Implements the Water Pollution Control Act and the Water Resources Act of 1971 (90.54 RCW).	Not applicable to sites undergoing cleanup actions under MTCA, according to WAC 173-200-010(3)(c).
Water Quality Standards for Surface Waters of the State of Washington (WAC 173-201A)	The Surface Water Standards establish water quality standards for surface waters of the State of Washington. Water quality standards require that toxic substances shall not be introduced beyond the mixing zone greater than levels that have the potential to adversely affect characteristic water users, cause acute or chronic toxicity to the most sensitive biota, or adversely affect public health.	Applicable; surface water standards were considered during PCL and CUL development.
Total Maximum Daily Loads Established under Section 303(d) of the Clean Water Act (CWA; 40 CFR Part 130)	Requirements for water quality planning, management and implementation, and non-construction management sections of the CWA.	Not applicable; the water surrounding the Site is not on the 303(d) list and is not subject to total maximum daily load.
Water Quality Criteria Established under Section 304(a)(1) of the Clean Water Act (33 USC 1314)	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121(d)(2) requires the USEPA to consider whether nationally recommended Ambient Water Quality Criteria should be relevant and appropriate requirements at a site. Section 401 of the CWA requires the establishment of guidelines and standards to control the direct or indirect discharge of pollutants to the waters of the United States. Section 401 of the CWA requires the state to certify that federal permits are consistent with RCW 90.48 and WAC 173-201A. This may include the issuance of a 401 Water Quality Certification. Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), which provides for the issuance of permits to regulate discharges to navigable waters.	Section 401 is applicable. Requirements under Section 402 are discussed under action-specific ARARs for NPDES issues related to construction.

Table 3.1
Potential Chemical-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
Groundwater Requirements (cont.)		
National Toxics Rule (NTR; 40 CFR 131.36 et seq)	NTR promulgates for 14 states (Washington included) the chemical-specific, numeric criteria for priority toxic pollutants necessary to bring states into compliance with Section 303(c)(2)(B) of the CWA.	Applicable; NTR criteria was considered during PCL and CUL development.
Washington Water Quality Standards Clean Water Act (40 CFR 131.45)	Clean Water Act-Effective Human Health Criteria Applicable to Washington were promulgated under 40 CFR Part 131.36 and were moved into 40 CFR 131.45 to have one comprehensive human health criteria rule for Washington. They became effective on December 28, 2016.	Applicable; CWA criteria was considered during PCL and CUL development.
MTCA Method B Surface Water Cleanup Standards (WAC 173-340-730(3))	WAC 173-340-730(3)(b)(iii) establishes that MTCA Method B values should be considered when sufficiently protective health-based criteria or standards have not been established under applicable state and federal laws.	Applicable only if sufficiently protective health-based criteria or standards have not been established under applicable state and federal laws.
SMS (WAC 173-204)	Establishes standards for the quality of surface sediment in Washington state. These standards provide chemical concentration criteria, which identify surface sediment without adverse effects on biological resources and no significant health risk to humans.	Applicable; SMS standards for groundwater to surface sediment pathway were considered during PCL and CUL development.
Vapor Intrusion	Ecology's Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action, as revised in 2015, identifies volatile organic compounds (as defined by WAC 173-340-200) and other substances and their respective screening levels that may pose a vapor intrusion threat. This pathway must be evaluated at sites where volatile contaminants are present within the vertical separation distances and lateral inclusion zone.	Applicable; groundwater to vapor intrusion pathway was considered during PCL and CUL development.
Soil Requirements		
Model Toxics Control Act (WAC 173-340)	Establishes Washington state administrative processes and standards to identify, investigate, and clean up facilities where hazardous substances are located.	Applicable; Site is regulated under MTCA and must meet MTCA standards.
Vapor Intrusion	Ecology's Updated Process for Initially Assessing the Potential for Petroleum Vapor Intrusion memorandum establishes total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations in soil to quantify the total vapor phase concentrations of hydrocarbons within the vertical separation distance. This pathway must be evaluated at sites where volatile contaminants are present within the vertical separation distances and lateral inclusion zone.	Applicable; soil to vapor intrusion pathway was considered during PCL and CUL development.

Abbreviations:
ARAR - Applicable or Relevant and Appropriate Requirement
BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes
CFR - Code of Federal Regulations
CWA - Clean Water Act
MCL - Maximum Contaminant Level
NPDES - National Pollutant Discharge Elimination System
NTR - National Toxics Rule
RCW - Revised Code of Washington
SMS - Sediment Management Standards
TPH - Total Petroleum Hydrocarbons
USEPA - United States Environmental Protection Agency
WAC - Washington Administrative Code
USC - United States Code
MTCA - Model Toxics Control Act

Table 3.2
Potential Location-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
Shoreline, Wetlands, and Other Critical Areas		
Coastal Zone Management Act (16 USC 1451 et seq.)	Construction activities requiring federal approval must be consistent with the state's Coastal Zone Management Program.	Applicable; implemented through Washington State Shoreline Master Program.
Washington State Shoreline Management Act (RCW 90.58; WAC 173-27-060) City of Everett Shoreline Master Program (SMP; City of Everett Ordinance 3053-08)	The Shoreline Management Act (RCW 90.58) and its implementing regulations establish requirements for substantial developments occurring within water areas of the state or within 200 feet of the shoreline. Local shoreline management master programs are adopted under state regulations, creating enforceable requirements.	Applicable; the Site is located within a shoreline as defined in the applicable requirements. MTCA remedial actions are exempt from the procedural requirements of the local and state laws but must comply with the substantive requirements.
Executive Order 11988, Protection of Floodplains (40 CFR 6.302(b) and Appendix A); Federal Emergency Management Agency (FEMA) National Flood Insurance Program Regulations (44 CFR 60.3)	In 100-year floodplains, actions must be taken to reduce the risk of flood loss, minimize the impact of floods on human safety, and restore and preserve the natural beneficial values of floodplains.	Applicable; the Site is located within a designated floodplain. MTCA remedial actions are exempt from the procedural requirements of the local and state laws but must comply with the substantive requirements.
Washington Floodplain Management Plan (RCW 86.16; WAC 173-158)	Directs Washington State Department of Ecology (1) to establish minimum state requirements for floodplain management, which equal the National Flood Insurance Program (NFIP) minimum standards; (2) to provide technical assistance and information to local governments related to administration of their floodplain management ordinances and the NFIP; and (3) to provide assistance to local governments in identifying the location of the 100 year (base) floodplain. Also allows for the issuance of regulatory orders.	
Protection of Wildlife and Habitat		
Endangered Species Act (16 USC Chapter 35 §1531 et seq.; 50 CFR Part 17; 50 CFR Part 402; Title 77 or 79 RCW)	Section 7 of Endangered Species Act requires that federal agencies consult with Natural Resources Trustees if listed threatened or endangered species are present in or near the project area, before making any decisions that may affect these species.	Listed species are present in or near the Site; therefore, agency consultation and compliance with the Endangered Species Act are required.
Magnuson-Stevens Act (MSA, 16 USC § 1801 et seq.)	The MSA governs marine fisheries management in the United States. The MSA mandates the identification of essential fish habitat for federally managed species and development of measures to conserve and enhance the habitat necessary for the fish life cycles.	Applicable if the remedial action may adversely affect EFH.
Migratory Bird Treaty Act (16 USC 703-712.)	Establishes federal responsibility for the protection of the international migratory bird resource and requires continued consultation with the United States Fish and Wildlife Service (USFWS) during remedial design and construction to ensure that the cleanup of the site does not unnecessarily impact migratory birds.	Applicable if migratory birds are impacted during investigation or remedial action.

Table 3.2
Potential Location-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
Bald Eagle Protection Act (16 USC 668 et seq.)	Requires continued consultation with USFWS during remedial design and construction to ensure that any cleanup of the site does not unnecessarily adversely affect the bald or golden eagle.	Applicable if bald or golden eagles are impacted during investigation or remedial action.
Executive Order for Wetlands Protection; Executive Order 11990 (1977), 40 CFR 6.302(a); 40 CFR 6, App. A	Requires measures to avoid adversely affecting wetlands whenever possible, to minimize wetland destruction, and to preserve the value of wetlands.	Applicable for assessing impacts on wetlands, if any, from the remedial action and for developing appropriate compensatory mitigation.
Marine Mammal Protection Act; 16 USC Chapter 31	Prohibits the taking (to hunt harass, capture, or kill) of marine mammals in U.S. waters.	Applicable if marine mammals are impacted during investigation or remedial action.
Tribal and Cultural Protections		
Native American Graves Protection and Repatriation Act (25 USC Chapter 32 §3001 through 3113; 43 CFR Part 10) Protection of Indian Graves (RCW 27.44) Archaeological Sites and Resources (RCW 27.53)	These statutes prohibit the destruction or removal of Native American cultural items and require written notification of inadvertent discovery to the appropriate agencies and Native American tribe. These programs are applicable to the remedial action if cultural items are found. The activities must cease in the area of the discovery; a reasonable effort must be made to protect the items discovered; and notice must be provided.	Applicable if Native American cultural items are present in an excavation area.
Archaeological Resources Protection Act (16 USC 470aa et seq.; 43 CFR Part 7)	This program sets forth requirements that are triggered when archaeological resources are discovered. These requirements only apply if archaeological items are discovered during implementation of the selected remedy.	Applicable if arcaheological items are discovered during implementation of the selected remedy.
National Historic Preservation Act (16 USC 470 et seq.; 36 CFR Parts 60, 63, and 800)	This program sets forth a national policy of historic preservation and provides a process that must be followed to ensure that impacts of actions on archaeological, historic, and other cultural resources are protected.	Applicable if historic properties are affected by remedial activities. No historic properties have been identified at the Site to date but could potentially be identified during remedial design.
Other Regulations to be Considered		
State Aquatic Lands Management Laws (RCW 79.105 through 79.140; WAC 332-30)	Sediment management on state-owned lands must comply with state regulations and rules for management of state-owned aquatic lands.	Not Applicable; sediment management requirements for cleanup actions are on privately owned parcels.

Abbreviations:
ARAR - Applicable or Relevant and Appropriate Requirement
CFR - Code of Federal Regulations
FEMA - Federal Emergency Management Agency
MSA - Magnuson-Stevens Act
MTCA - Model Toxics Control Act
NFIP - National Flood Insurance Program
RCW - Revised Code of Washington
USC - United States Code
USFWS - United States Fish and Wildlife Service
WAC - Washington Administrative Code

Table 3.3
Potential Action-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
Evaluate Environmental Impacts		
State Environmental Policy Act (SEPA, RCW 43.21C; WAC 197-11)	Establishes the state's policy for protection and preservation of the natural environment.	Applicable; a SEPA checklist will be required prior to initiating remedial construction activities. Coordination with federal agencies may be necessary to ensure the SEPA process will meet National Environmental Policy Act (NEPA) requirements. Because the Site cleanup action will be performed under a Consent Decree, SEPA and MTCA requirements will be coordinated, where possible.
Uplands Construction and Grading		
Clean Water Act - NPDES (40 CFR 122)	In areas that could potentially erode or release soil, controls and best management practices (BMPs) are to be used to control runoff from construction activities. Requires permits for the discharge of pollutants from any point source into waters of the United States. Washington state has been delegated authority to issue NPDES permits. CWA Sections 401, 402, and 404 require states to adopt water quality standards and implement a NPDES permitting process. The Washington Water Pollution Control Law and regulations address this requirement.	Applicable; any construction or regrading activity will require compliance with Washington Water Pollution Control Law NPDES.
Washington Water Pollution Control Law (RCW 90.48; WAC 173-216; WAC 173-226)		
City of Everett Grading Code (Title 19.26.080 EMC)	The City of Everett requires a grading plan to be submitted to the city engineer "before any site modification where existing natural features would be disturbed or removed" (EMC 19.26.080(A)). The Everett Municipal Code (EMC) establishes minimum standards for clearing and grading, generally based on following "sound engineering techniques." The EMC states, in relationship to environmentally sensitive areas, that "Clearing and grading limits shall be established so as to not impact environmentally sensitive areas, the required buffers, and adjacent properties" (EMC 19.26.080(E)(4)) and that "on projects that have environmentally sensitive features and in critical drainage areas, clearing and grading and other significant earth work may be limited to a specific time period as determined by the city" (EMC 19.26.080(F)).	Applicable; MTCA remedial actions are exempt from the procedural requirements of the local and state laws but must comply with the substantive requirements. Therefore, the applicability of the substantive requirements will be determined through consultation with the City of Everett during the design phase of the selected cleanup action and incorporated into the design documents.
City of Everett Traffic Code (Title 46 EMC)	Construction activities such as haul truck operations or installation of remediation systems within the public roadway may require that traffic be directed by flaggers and signage.	Applicable; MTCA remedial actions are exempt from the procedural requirements of the local and state laws but must comply with the substantive requirements. Therefore, the applicability of the substantive requirements will be determined through consultation with the City of Everett during the design phase of the selected cleanup action and incorporated into the design documents.

Table 3.3
Potential Action-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
Excavation, Filling, and In-water Construction		
Dredged Material Management Program Guidelines (RCW 79.105.500-520; WAC 332-30-166)	Establishes a characterization and permitting process for sediments destined for unconfined open-water disposal.	Not applicable; open water disposal is not currently anticipated for the planned cleanup actions.
Marine Protection, Research and Sanctuaries Act (PL 92-532; 33 USC 1401-1445) Ocean Dumping of Dredged Materials Regulations (40 CFR 227; 33 CFR Part 324)	Regulates the open-water disposal of dredged sediments.	Not applicable; open water disposal is not currently anticipated for the planned cleanup actions.
Solid Waste Management/Minimum Functional Standards for Solid Waste Handling (RCW 70.95 and WAC 173-304)	Establishes minimum standards for handling and disposal of solid waste. Solid waste includes wastes that are likely to be generated as a result of site remediation (e.g., contaminated sediments, construction and demolition wastes, and garbage). Sets minimum functional standards for the proper handling of all solid waste materials originating from residences, and commercial, agricultural, and industrial operations, as well as other sources.	Applicable; soil waste handling and disposal requirements will be considered prior to excavation and hauling upon consultation with selected contractors.
Washington State Hydraulic Code (HPA; RCW 77.55, WAC 220-110)	This statute and its implementing regulations apply to any work conducted within the designated shoreline that changes the natural flow or bed of a water body (and therefore has the potential to affect fish habitat). The requirements include bank protections and prohibited work times based on life stages of endangered or threatened fish species.	Applicable; MTCA remedial actions are exempt from the procedural requirements of this law but must comply with the substantive requirements.
Section 10 of the Rivers and Harbors Act (33 USC 401 et seq.; Rivers and Harbors Act, Section 10; 33 CFR Parts 320 to 322)	This act prohibits unauthorized activities that obstruct or alter a navigable waterway. Section 10 applies to all structures or work below the mean high water mark of navigable tidal waters and the ordinary high water mark of navigable fresh waters. Actions in wetlands within these limits are subject to Section 10 provisions. U.S. Army Corps of Engineers permits are needed for the alteration or the modification of the course, condition, location, or capacity of a navigable water of the United States.	Applicable; Snohomish River and Port Gardner Bay (Possession Sound) are navigable waters, in-water work will require compliance with Rivers and Harbors Act.
Section 404 of the Clean Water Act (33 USC 1311-1341; 33 CFR 320, 323, and 330; 40 CFR Parts 230 to 231)	Regulates activities that may result in any discharge into navigable waters, and permits for discharge of dredged or fill material into navigable waters.	Applicable; the selected alternative include excavating and filling along the shoreline or within Snohomish River or Port Gardner Bay (Possession Sound).
Upland Disposal of Soils and Excavated Sediments		
Resource Conservation and Recovery Act (RCRA, 42 USC Chapter 82 §6901 et seq.), Title D, Solid Waste, and Title C, Solid Hazardous Waste	Establishes requirements for the identification, handling, and disposal of hazardous and non-hazardous waste.	Applicable; off-site disposal material will be subject to chemical and characteristic profiling prior to off-site disposal.

Table 3.3
Potential Action-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
Upland Disposal of Soils and Excavated Sediments (cont.)		
Resource Conservation and Recovery Act (40 CFR Parts 260 to 268)	Excavated material may be subject to RCRA regulations if it contains a listed waste, or if it displays a hazardous waste characteristic (e.g., under Toxicity Characteristic Leaching Procedure).	Applicable; if waste generated contains listed waste or displays hazardous waste characteristics.
Hazardous Waste Management (RCW 70.105) Dangerous Waste Regulations (WAC 173-303)	Establishes regulations that are the state equivalent of RCRA requirements for determining whether a solid waste is a state dangerous waste. This regulation also provides requirements for the management of dangerous wastes if dangerous wastes are generated during the cleanup action.	Applicable; if waste generated contains state dangerous waste characteristics.
Solid Waste Disposal Act (42 USC Sec. 325103259, 6901-6991; 40 CFR 257,258) Federal Land Disposal Requirements (40 CFR Part 268)	Protects health and the environment and promotes conservation of valuable material and energy resources.	Applicable; land disposal requirements will be considered prior to off-site disposal and upon consultation with selected contractors.
Minimum Functional Standards for Solid Waste Handling (WAC 173-304)	Sets minimum functional standards for the proper handling of all solid waste materials originating from residences, commercial, agricultural, and industrial operations as well as other sources.	Applicable; soil waste handling requirements will be considered prior to excavation and hauling upon consultation with selected contractors.
Solid Waste Handling Standards (WAC 173-350)	Establishes minimum standards for handling and disposal of solid waste. Solid waste includes wastes that are likely to be generated as a result of site remediation, including contaminated soils, construction and demolition wastes, and garbage.	Applicable; soil waste handling requirements will be considered prior to excavation and hauling upon consultation with selected contractors.
Health and Safety for Hazardous Waste Operations and Emergency Response (WAC 296-62; and Health and Safety 29 CFR 1901.120)	The Hazardous Waste Operations and Emergency Response (HAZWOPER) regulates health and safety operations for hazardous waste sites. The health and safety regulations describe federal requirements for health and safety training for workers at hazardous waste sites.	Applicable; any cleanup work will require compliance with Occupational Safety and Health Act (OSHA) and Washington Industrial Safety and Health Act (WISHA).
Worker Safety		
Occupational Safety and Health Act (29 USC 653, 655, 657) Occupational Safety and Health Standards (29 CFR 1910)	Employee health and safety regulations for construction activities and general construction standards as well as regulations for fire protection, materials handling, hazardous materials, personal protective equipment, and general environmental controls. Hazardous waste site work requires employees to be trained prior to participation in site activities, medical monitoring, monitoring to protect employees from excessive exposure to hazardous substances, and decontamination of personnel and equipment.	Applicable; any cleanup work will require compliance with OSHA.
Washington Industrial Safety and Health Act (RCW 49.17) Washington Industrial Safety and Health Regulations (WAC 296-62, WAC 296-155, WAC 296-800)	Adopts the OSHA standards that govern the conditions of employment in all work places. The regulations encourage efforts to reduce safety and health hazards in the work place and set standards for safe work practices for dangerous areas such as trenches, excavations, and hazardous waste sites.	Applicable; any cleanup work will require compliance with WISHA.

Table 3.3
Potential Action-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
Air Quality Controls		
Federal, State, and Local Air Quality Protection Programs, State Implementation of Ambient Air Quality Standards, Puget Sound Clean Air Agency (PSCAA) Ambient and Emission Standards, Regional Standards for Fugitive Dust Emissions, and Toxic Air Pollutants	Regulations promulgated under the federal Clean Air Act (42 USC 7401) and the Washington State Clean Air Act (RCW 70.94) govern the release of airborne contaminants from point and non-point sources. Local air pollution control authorities such as the PSCAA have also set forth regulations for implementing these air quality requirements. These requirements may be applicable to the Site for the purposes of dust control should the selected remedial alternatives require excavation activities. WAC 173-460 establishes ambient source impact levels for arsenic.	Applicable; the selected alternative will require compliance with air quality regulations and BMPs for dust control during structural demolition.
Miscellaneous		
Noise Control Act of 1974 (RCW 70.107, WAC 173-60)	Establishes maximum noise levels.	Applicable; the selective alternative will need to comply with state noise pollution requirements. Construction and other activities will need approval to be conducted outside of normal working hours.
National Electrical Code (NFPA 70) WAC (WAC 296-46B; administrative provisions)	Establishes restrictions and guidelines for temporary and/or permanent electrical installations.	Applicable; compliance required should the selected alternative require temporary electrical power.
Construction and Maintenance of Water Wells (RCW 18.104, WAC 173-160-101, 121, 161 to 241, 261 to 341, and 381)	Minimum standards for construction and maintenance of water wells are established in Chapter 18.104 RCW and WAC 173-160-101, 121, 161 to 241, 261 to 341, and 381. This regulation is potentially applicable to wells constructed for groundwater withdrawal and monitoring or remediation system components. This regulation is also potentially applicable to the decommissioning of existing or future wells.	Applicable; remedial components that include installation or decommissioning of water wells for monitoring or remedial action (i.e. injection) will be subject to these regulations.
City of Everett Stormwater and Storm Drainage (Title 14.28 EMC), City of Everett Stormwater Management Manual	The City of Everett ordinance specifies requirements for the management of stormwater and development of storm drainage systems for new and redeveloped properties. These requirements include meeting Minimum Technical Standards, which may include some or all of the following based upon the size of the addition of the impervious surface: erosion and sediment control for all sized projects, for projects adding more than 5,000 square feet of impervious surface: 1) development of a Stormwater Site Plan, Construction Stormwater Pollution Prevention Plan, Large Parcel Erosion and Sediment Control Plan and Drainage Plan; 2) apply erosion and sediment controls; 3) preserve natural drainage; 4) apply source control Best Management Practices (BMPs); 5) apply runoff treatment BMPs where the project creates 5,000 square feet or more of net additional pavement; treatment BMPs shall be sized to capture and treat a 6-month, 24-hour return period storm; 6) off-site analysis and mitigation; and 7) operation and maintenance.	Applicable; MTCA remedial actions are exempt from the procedural requirements of the local and state laws but must comply with the substantive requirements. Therefore, the applicability of the substantive requirements will be determined through consultation with the City of Everett during the design phase of the selected cleanup action and incorporated into the design documents.

Table 3.3
Potential Action-Specific ARARs

Standard, Requirement, or Limitation	Description	Applicability
City of Everett Discharge to POTW (Title 14.40 EMC)	Dewatering activities associated with excavation or sediment stockpile dewatering may require a wastewater discharge permit to discharge water to the publicly owned treatment works (POTW).	Applicable; MTCA remedial actions are exempt from the procedural requirements of the local and state laws but must comply with the substantive requirements. Therefore, the applicability of the substantive requirements will be determined through consultation with the City of Everett during the design phase of the selected cleanup action and incorporated into the design documents.

Abbreviations:
ARAR - Applicable or Relevant Appropriate Requirement
BMP - Best Management Practice
CFR - Code of Federal Regulations
CWA - Clean Water Act
EMC - Everett Municipal Code
HAZWOPER - Health and Safety for Hazardous Waste Operations and Emergency Management
HPA - Hydraulic Project Approval
MTCA - Model Toxics Control Act
NEPA - National Environmental Policy Act
NFPA - National Fire Protection Association
NPDES - National Pollutant Discharge Elimination System
OSHA - Occupational Safety and Health Act
PL - Public Law
PSCAA - Puget Sound Clean Air Agency
RCRA - Resource Conservation and Recovery Act
RCW - Revised Code of Washington
SEPA - State Environmental Policy Act
USC - United States Code
WAC - Washington Administrative Code
WISHA - Washington Industrial Safety and Health Act

Appendices

Appendix A

Historical Aerial Photos and Sanborn Maps
(included as Appendix A of 2021 Final RI/FS Report)

NOTES

AERIAL PHOTO FROM GOOGLE EARTH PRO, JULY 2019.

0 200 400 600’

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 2019 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No.
File Name	Aerials	Project No.	108.00228.00061	AA-1

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg

SLR

ANCHOR QEA

NOTES

AERIAL PHOTO FROM GOOGLE EARTH PRO, DECEMBER 2003.

0 200 400 600'

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 2003 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No.	AA-2
File Name	Aerials	Project No.	108.00228.00061		

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1995 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No.	AA-3
File Name	Aerials	Project No.	108.00228.00061		

NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1995.

0 200 400 600’

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg

NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1991.

0 200 400 600'

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1991 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No. AA-4
File Name	Aerials	Project No.	108.00228.00061	

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg

NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1984.

0 200 400 600’

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1984 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No. AA-5
File Name	Aerials	Project No.	108.00228.00061	

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg

NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1978.

0 200 400 600'

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1978 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No. AA-6
File Name	Aerials	Project No.	108.00228.00061	

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg

NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1974.

0 200 400 600’

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1974 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No. AA-7
File Name	Aerials	Project No.	108.00228.00061	

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg

NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1965.

0 200 400 600’

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1965 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No. AA-8
File Name	Aerials	Project No.	108.00228.00061	

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS_Report\Appendices_REV\APPENDIX A\Aerials.dwg

NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1955.

0 200 400 600’

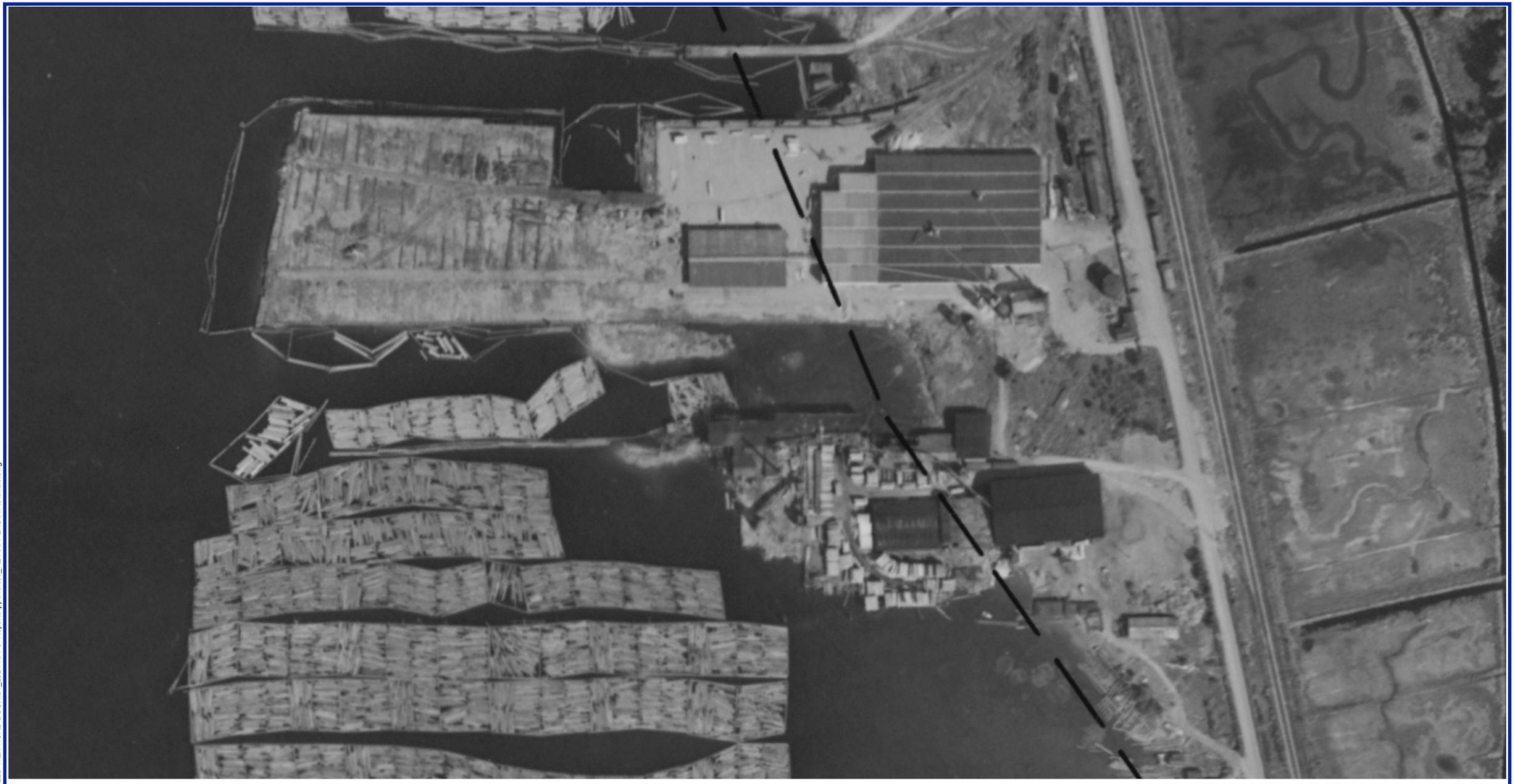
JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1955 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No. AA-9
File Name	Aerials	Project No.	108.00228.00061	

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg



NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1947.

0 200 400 600'

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1947 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No.
File Name	Aerials	Project No.	108.00228.00061	AA-10

\\us.slr.local\us-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg

NOTES

AERIAL PHOTO FROM SNOHOMISH COUNTY PUBLIC WORKS, 1938.

0 200 400 600’

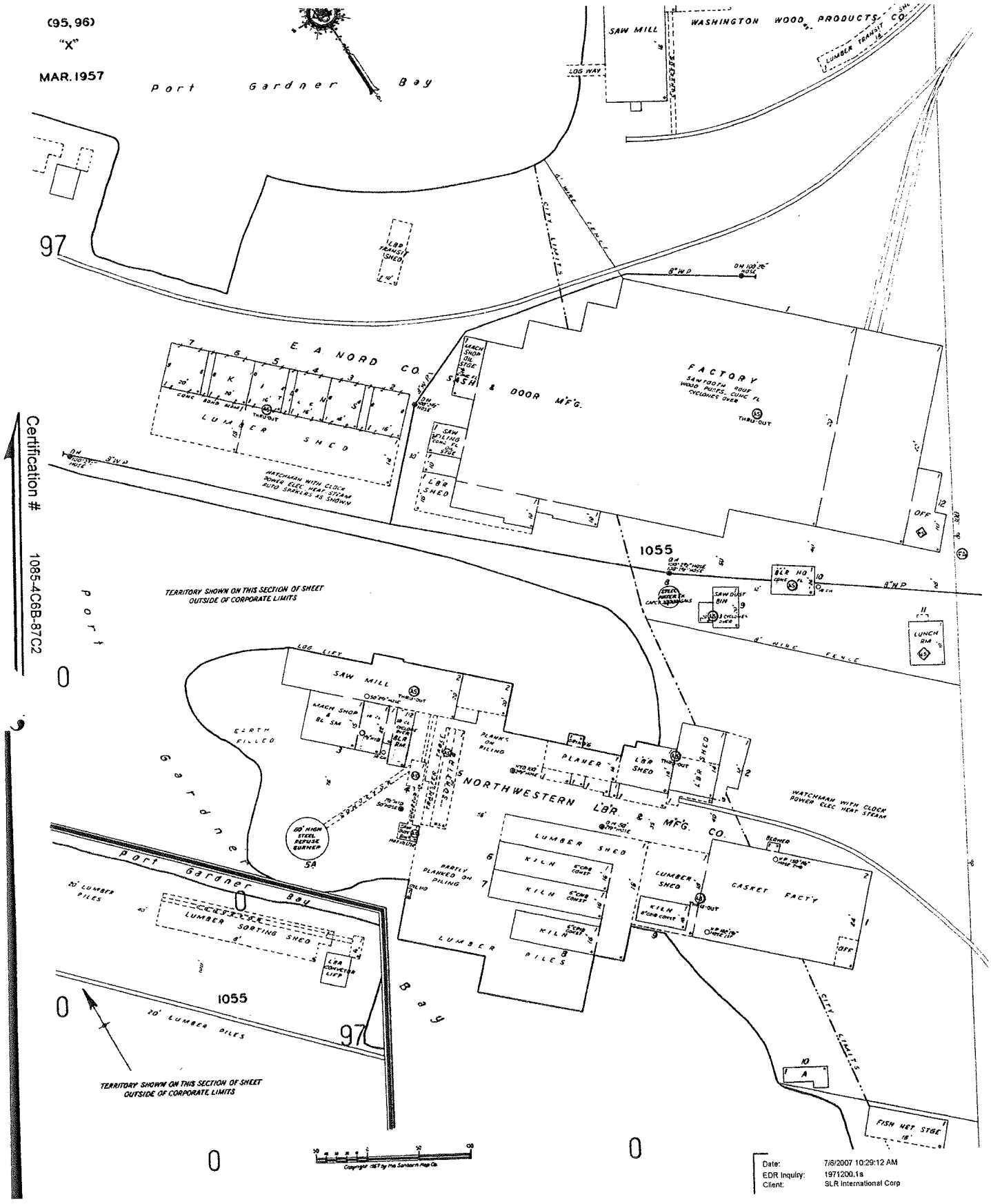
JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
2021 FINAL RI/FS REPORT

Drawing
APPENDIX A - 1938 AERIAL

Date	December 2021	Scale	AS SHOWN	Fig. No. AA-11
File Name	Aerials	Project No.	108.00228.00061	

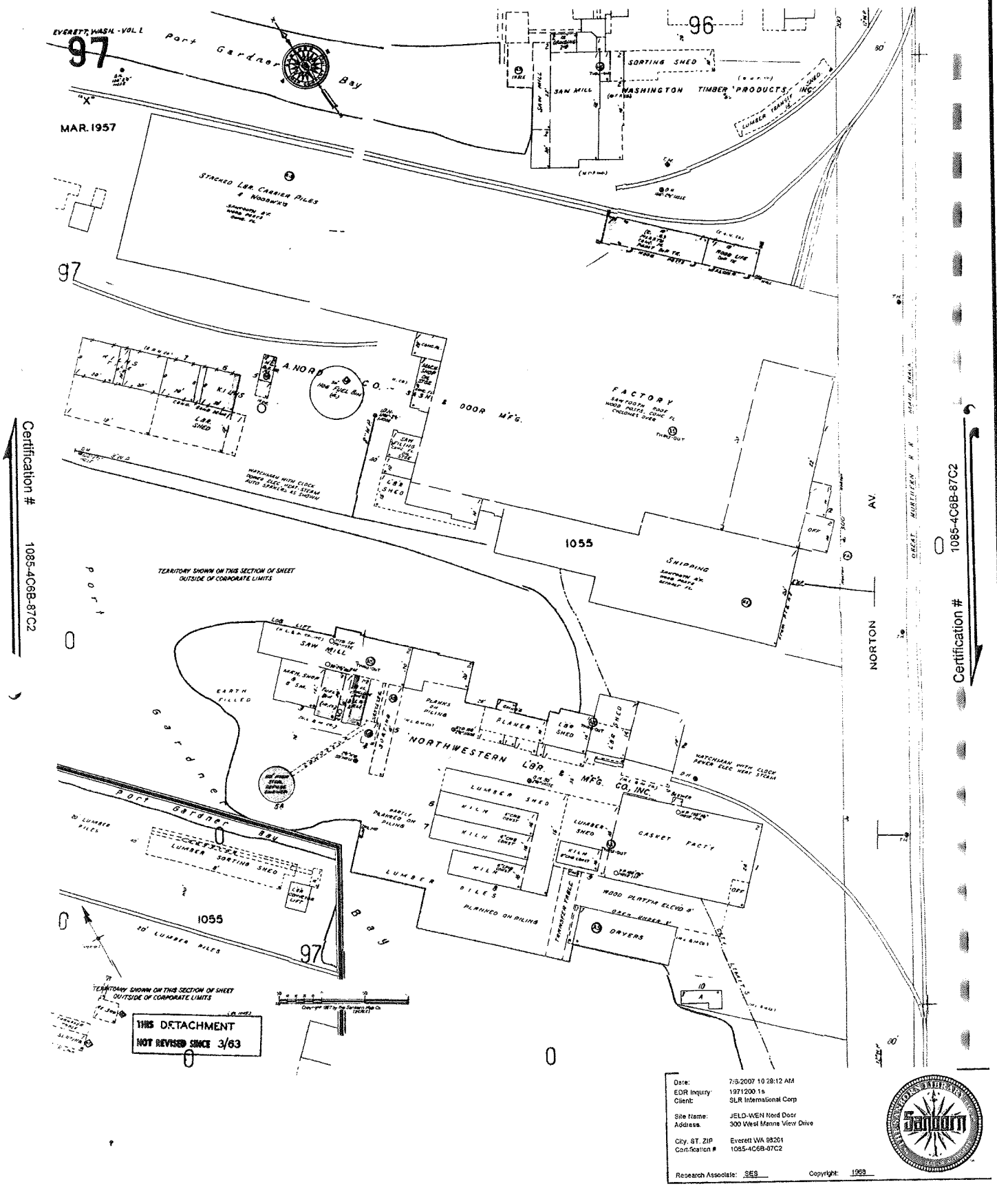
\\us.slr.localus-dfs$\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\01_2021 RI-FS Report\Appendices_REV\APPENDIX A\Aerials.dwg



SLR International Corp
1800 Blankenship Road
Suite 440
West Linn, OR 97068
T: 503-723-4423
F: 503-723-4436

DATE 03/08
DWN. EMG
APPR. _____
REVIS. _____
PROJECT NO.
008.0228.00026

ATTACHMENT 1
JELD-WEN SITE
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON
1950 SANBORN MAP



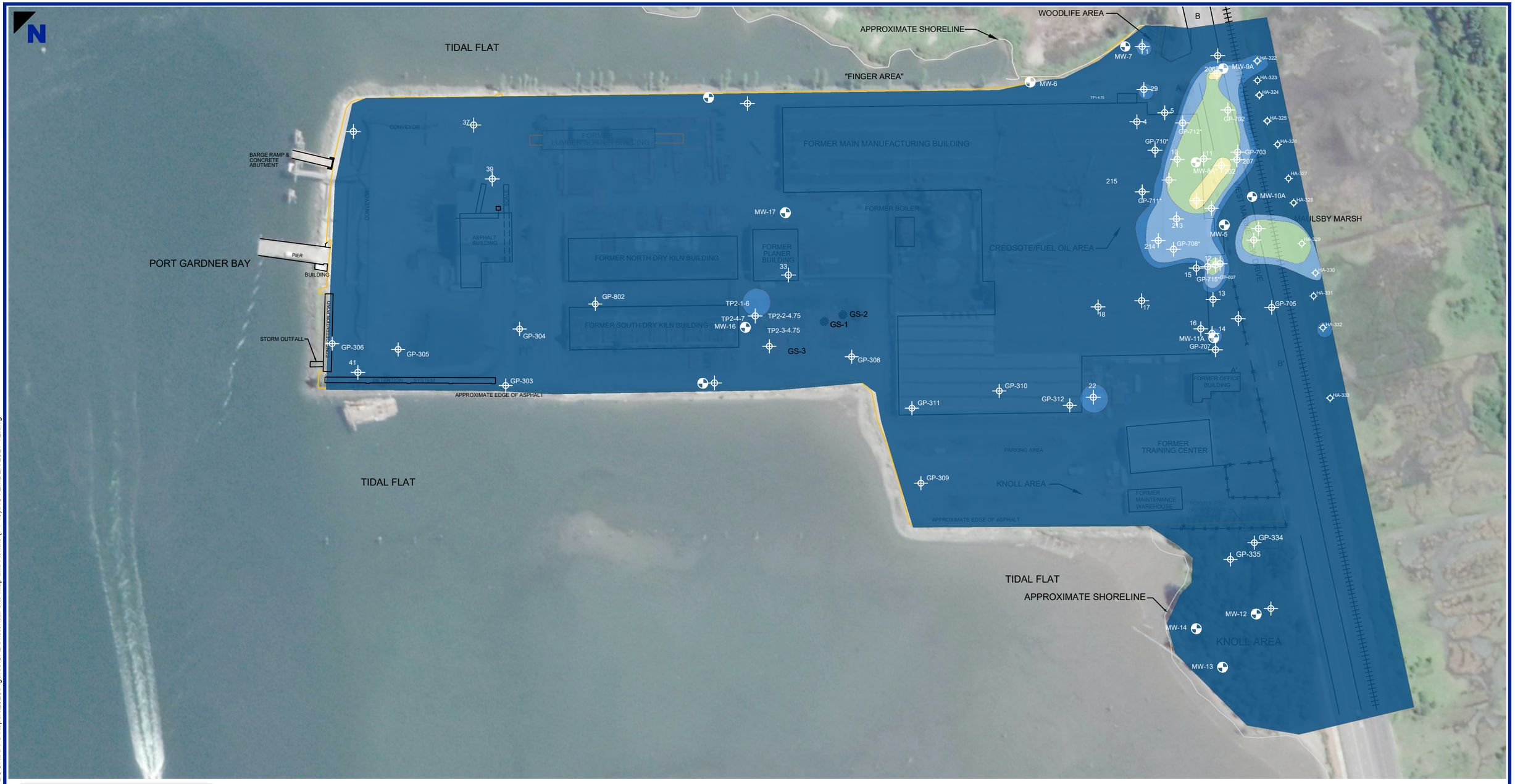
SLR International Corp
1800 Blankenship Road
Suite 440
West Linn, OR 97068
T: 503-723-4423
F: 503-723-4436

DATE 03/08
DWN. EMG
APPR. _____
REVIS. _____
PROJECT NO.
008.0228.00026

ATTACHMENT 1
JELD-WEN SITE
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON
1968 SANBORN MAP

Appendix B

Select Figures from the RI/FS (Section 4 figures)



LEGEND

GP	GEOPROBE	SOIL cPAHs (TEQ)
MW-1	MONITORING WELL	<0.19 MG/KG (LESS THAN PCL)
		>0.19 MG/KG (GREATER THAN PCL)
		>1.9 MG/KG (10X PCL)
		>19 MG/KG (100X PCL)
		>190 MG/KG (1,000X PCL)

NOTES

THE BUILDINGS, SURFACE UTILITIES, EDGE OF PAVEMENT, AND APPROXIMATE SHORELINE SHOWN ON THIS MAP ARE BASED ON A 2006 SURVEY PERFORMED BY WH PACIFIC.

AERIAL PHOTO FROM GOOGLE EARTH PRO, JULY 2019

0 200 400 600'

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

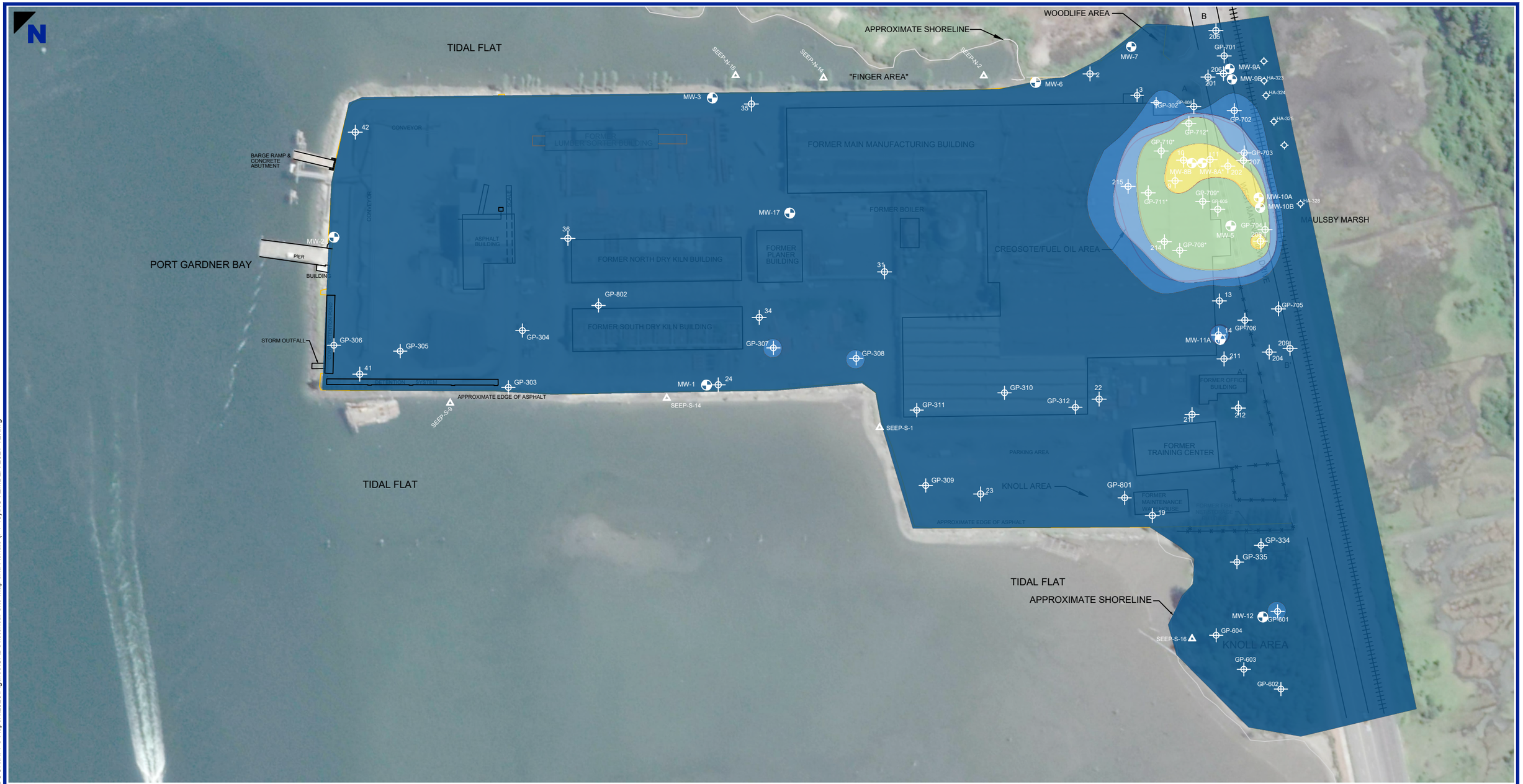
Report
DRAFT FINAL RI/FS REPORT

Drawing
INDICATOR HAZARDOUS SUBSTANCE PCL EXCEEDANCES - CPAHS (TEQ) IN SOIL

Date	MARCH 2021	Scale	AS SHOWN
File Name	NOVEMBER 2021 V2	Project No.	108.00228.00061

Fig. No. 4.1.3-a

N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2020\Figures\CAD\Historical Site Map and Aerials (F1-10)\NOVEMBER 2021 V2.dwg



LEGEND

GP	GEOPROBE	GROUNDWATER NAPHTHALENE
MW-1	MONITORING WELL	<8.9 µg/L (LESS THAN PCL)
		>8.9 µg/L (GREATER THAN PCL)
		>89 µg/L (10X PCL)
		>890 µg/L (100X PCL)
		>8,900 µg/L (1,000X PCL)

NOTES

THE BUILDINGS, SURFACE UTILITIES, EDGE OF PAVEMENT, AND APPROXIMATE SHORELINE SHOWN ON THIS MAP ARE BASED ON A 2006 SURVEY PERFORMED BY WH PACIFIC.

AERIAL PHOTO FROM GOOGLE EARTH PRO, JULY 2019

0 200 400 600'

SLR ANCHOR QEA

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

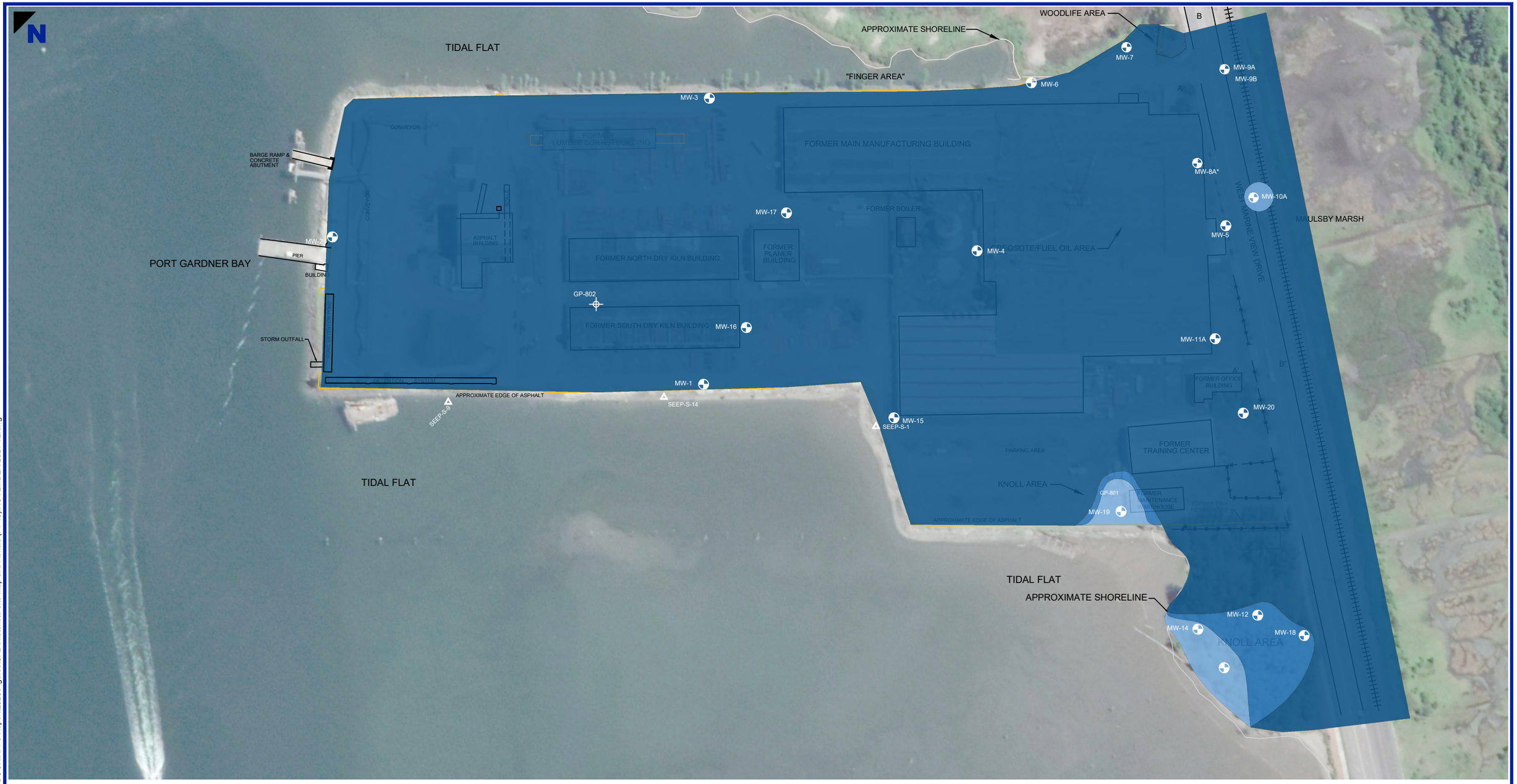
Report
DRAFT FINAL RI/FS REPORT

Drawing
INDICATOR HAZARDOUS SUBSTANCE PCL EXCEEDANCES - NAPHTHALENE IN GROUNDWATER

Date	MARCH 2021	Scale	AS SHOWN
File Name	NOVEMBER 2021 V2	Project No.	108.00228.00061

Fig. No. 4.1.3-b

N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2020\Figures\CAD\Historical Site Map and Aerials (F1-10)\NOVEMBER 2021 V2.dwg



N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2020\Figures\CAD\Historical Site Map and Aerials (F1-10)\NOVEMBER 2021 V2.dwg

LEGEND

GP	GEOPROBE	GROUNDWATER PCB COGENERS
MW-1	MONITORING WELL	<1,210 PG/L (LESS THAN PCL)
		>1,210 PG/L (GREATER THAN PCL)
		>12,100 PG/L (10X PCL)

NOTES

THE BUILDINGS, SURFACE UTILITIES, EDGE OF PAVEMENT, AND APPROXIMATE SHORELINE SHOWN ON THIS MAP ARE BASED ON A 2006 SURVEY PERFORMED BY WH PACIFIC.

AERIAL PHOTO FROM GOOGLE EARTH PRO, JULY 2019

0 200 400 600'

SLR ANCHOR QEA

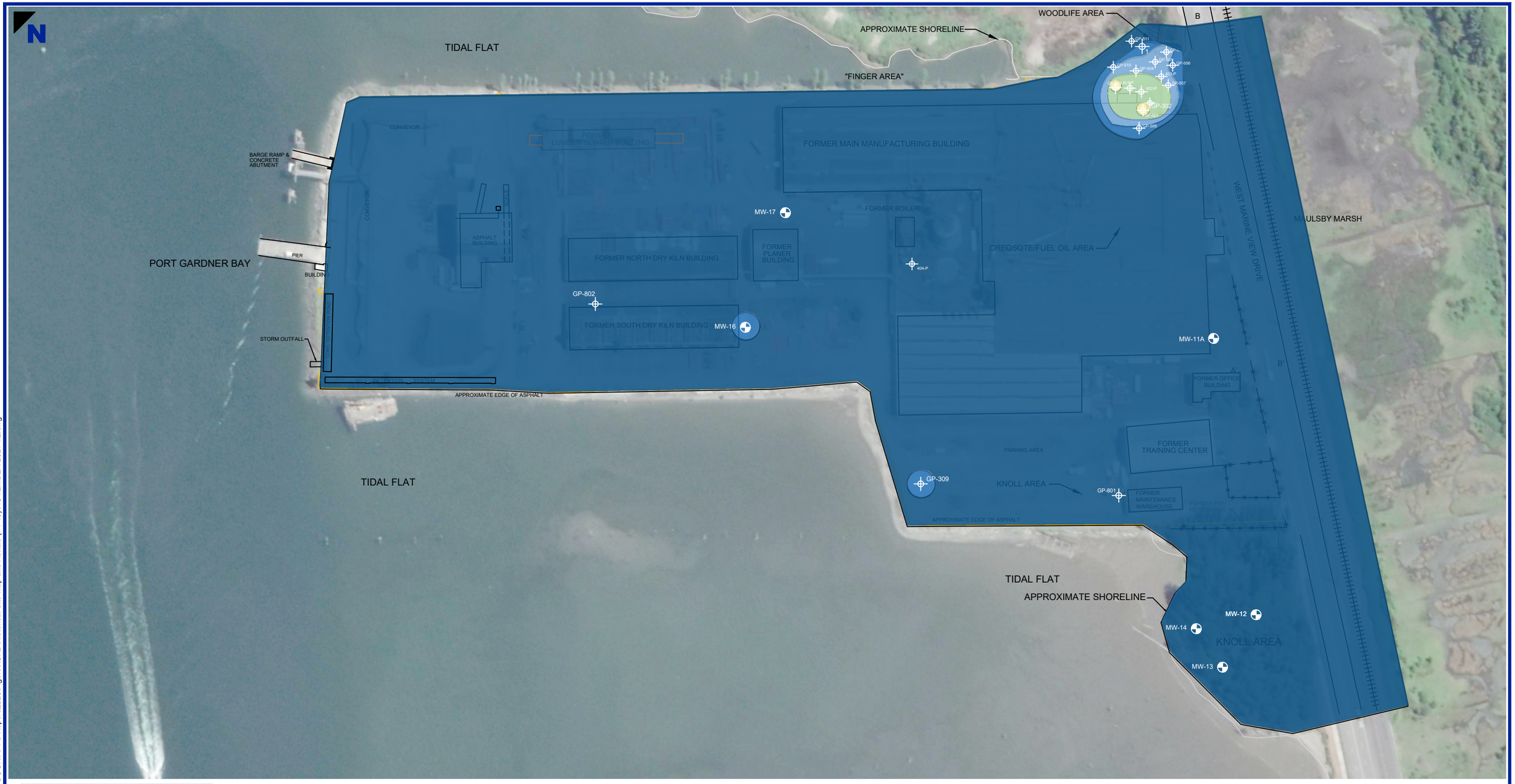
JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
DRAFT FINAL RI/FS REPORT

Drawing
INDICATOR HAZARDOUS SUBSTANCE PCL EXCEEDANCES - PCB CONGENERS IN GROUNDWATER

Date	MARCH 2021	Scale	AS SHOWN
File Name	NOVEMBER 2021 V2	Project No.	108.00228.00061

Fig. No. 4.1.3-c



N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2020\Figures\CAD\Historical Site Map and Aerials (F1-10)\NOVEMBER 2021 V2.dwg

LEGEND

GP	GEOPROBE	SOIL DIOXINS (TEQ)
MW-1	MONITORING WELL	<5.2 PG/G (LESS THAN PCL)
		>5.2 PG/G (GREATER THAN PCL)
		>52.2 PG/G (10X PCL)
		>522 PG/G (100X PCL)
		>5,220 PG/G (1,000X PCL)

NOTES

THE BUILDINGS, SURFACE UTILITIES, EDGE OF PAVEMENT, AND APPROXIMATE SHORELINE SHOWN ON THIS MAP ARE BASED ON A 2006 SURVEY PERFORMED BY WH PACIFIC.

AERIAL PHOTO FROM GOOGLE EARTH PRO, JULY 2019

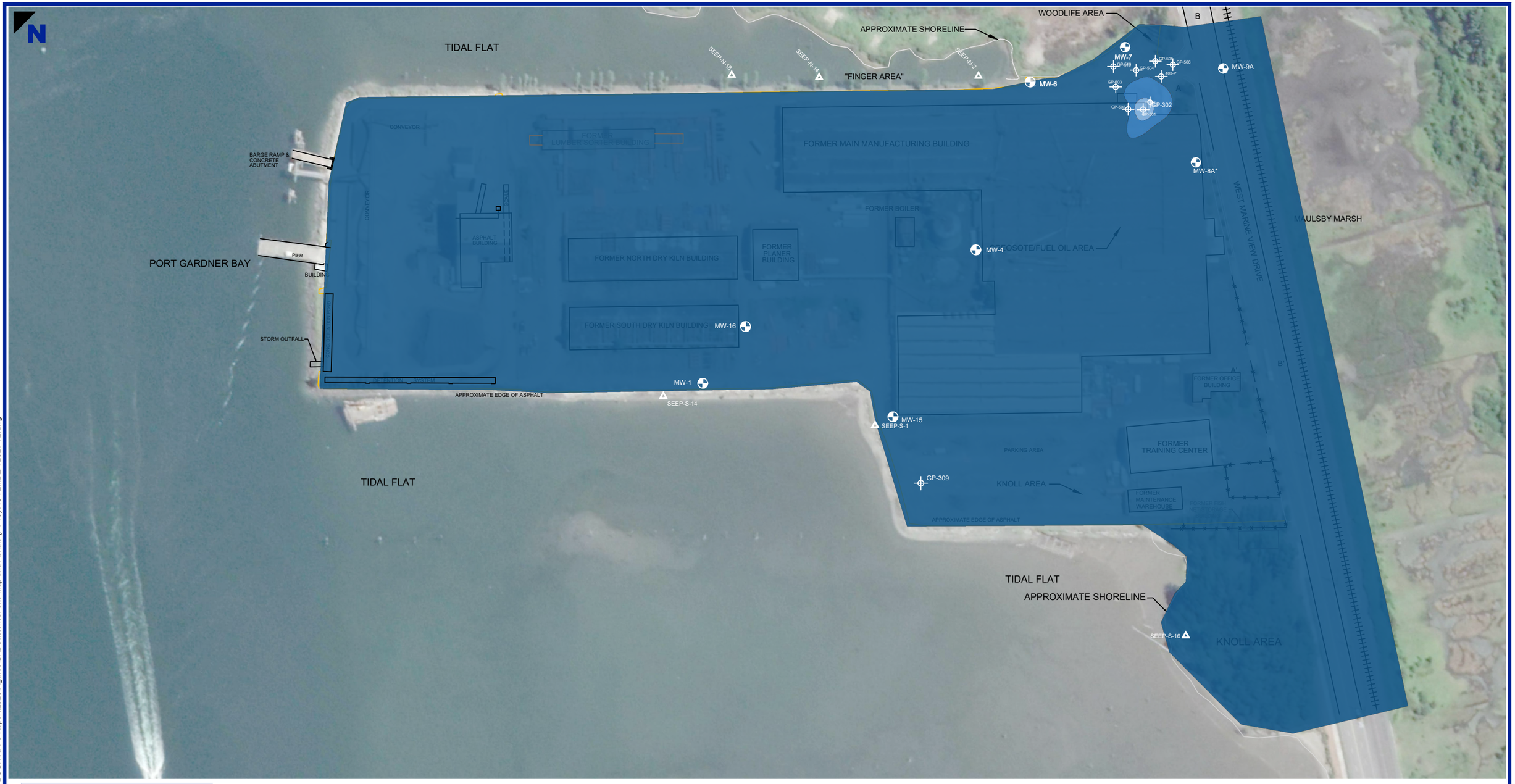
0 200 400 600'

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

Report
DRAFT FINAL RI/FS REPORT

Drawing
INDICATOR HAZARDOUS SUBSTANCE PCL EXCEEDANCES - DIOXINS (TEQ) IN SOIL

Date	MARCH 2021	Scale	AS SHOWN	Fig. No.	4.1.3-d
File Name	NOVEMBER 2021 V2	Project No.	108.00228.00061		



LEGEND

GP	GEOPROBE	GROUNDWATER DIOXINS (TEQ)
MW-1	MONITORING WELL	<57 PG/L (LESS THAN PCL)
		>57 PG/L (GREATER THAN PCL)
		>570 PG/L (10X PCL)

NOTES

THE BUILDINGS, SURFACE UTILITIES, EDGE OF PAVEMENT, AND APPROXIMATE SHORELINE SHOWN ON THIS MAP ARE BASED ON A 2006 SURVEY PERFORMED BY WH PACIFIC.

AERIAL PHOTO FROM GOOGLE EARTH PRO, JULY 2019

0 200 400 600'

SLR ANCHOR QEA

JELD-WEN/FORMER NORD DOOR FACILITY
300 WEST MARINE VIEW DRIVE
EVERETT, WASHINGTON

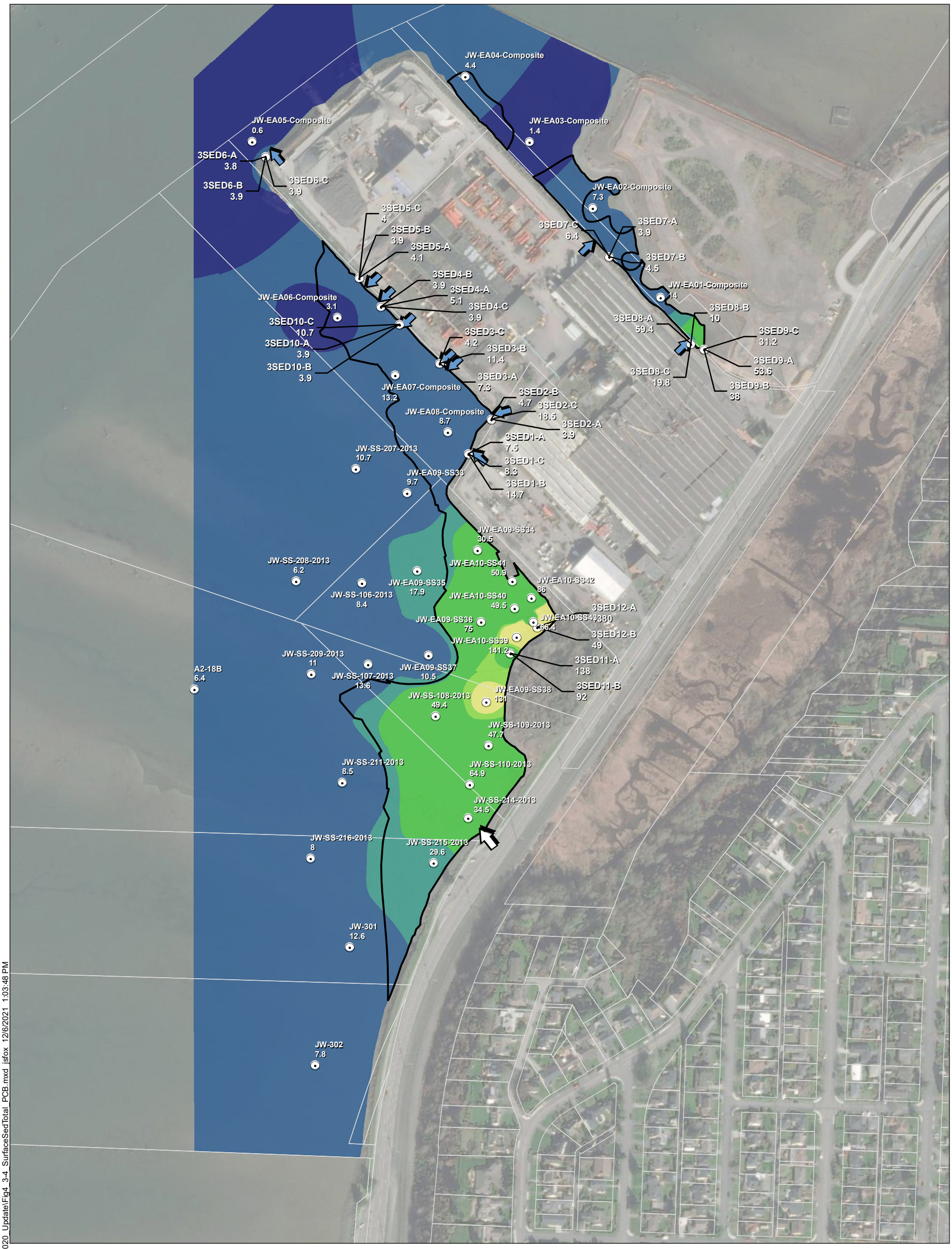
Report
DRAFT FINAL RI/FS REPORT

Drawing
INDICATOR HAZARDOUS SUBSTANCE PCL EXCEEDANCES - DIOXINS (TEQ) IN GROUNDWATER

Date	MARCH 2021	Scale	AS SHOWN
File Name	NOVEMBER 2021 V2	Project No.	108.00228.00061

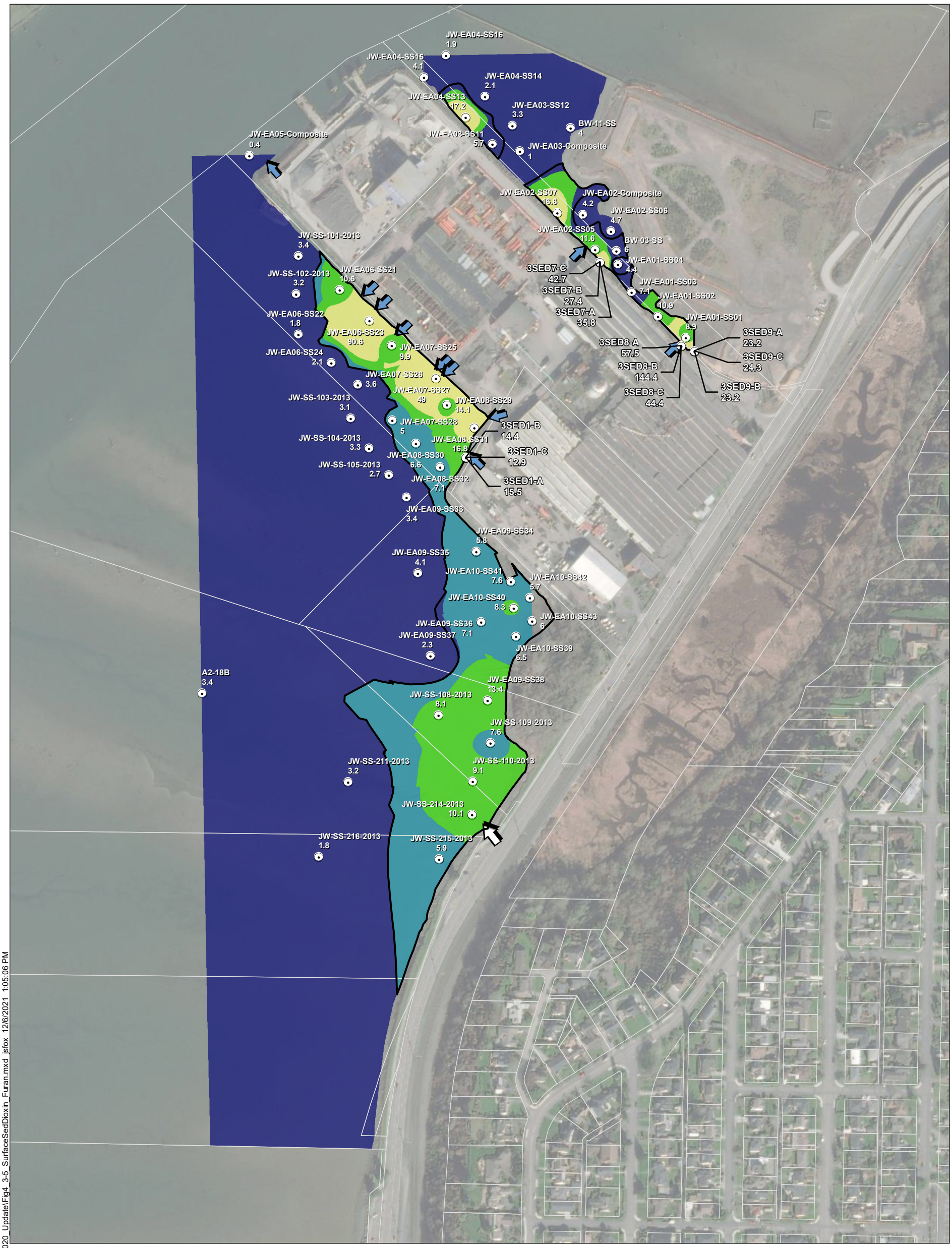
Fig. No. 4.1.3-e

N:\Portland\Projects\JELD-WEN\JELD-WEN NORD DOOR\RI-FS Report\2020\Figures\CAD\Historical Site Map and Aerials (F1-10)\NOVEMBER 2021 V2.dwg



\\orcas\GIS\Jobs\100546-01_JELD-WEN\Maps\RIFS_2020_Update\Fig4_3-4_SurfaceSedTotal_PCB.mxd jsfox 12/6/2021 1:03:48 PM

Figure 4.3-4
Surface Sediment Total PCB Concentrations
Final RI/FS
Jeld-Wen/Former Nord Door Facility



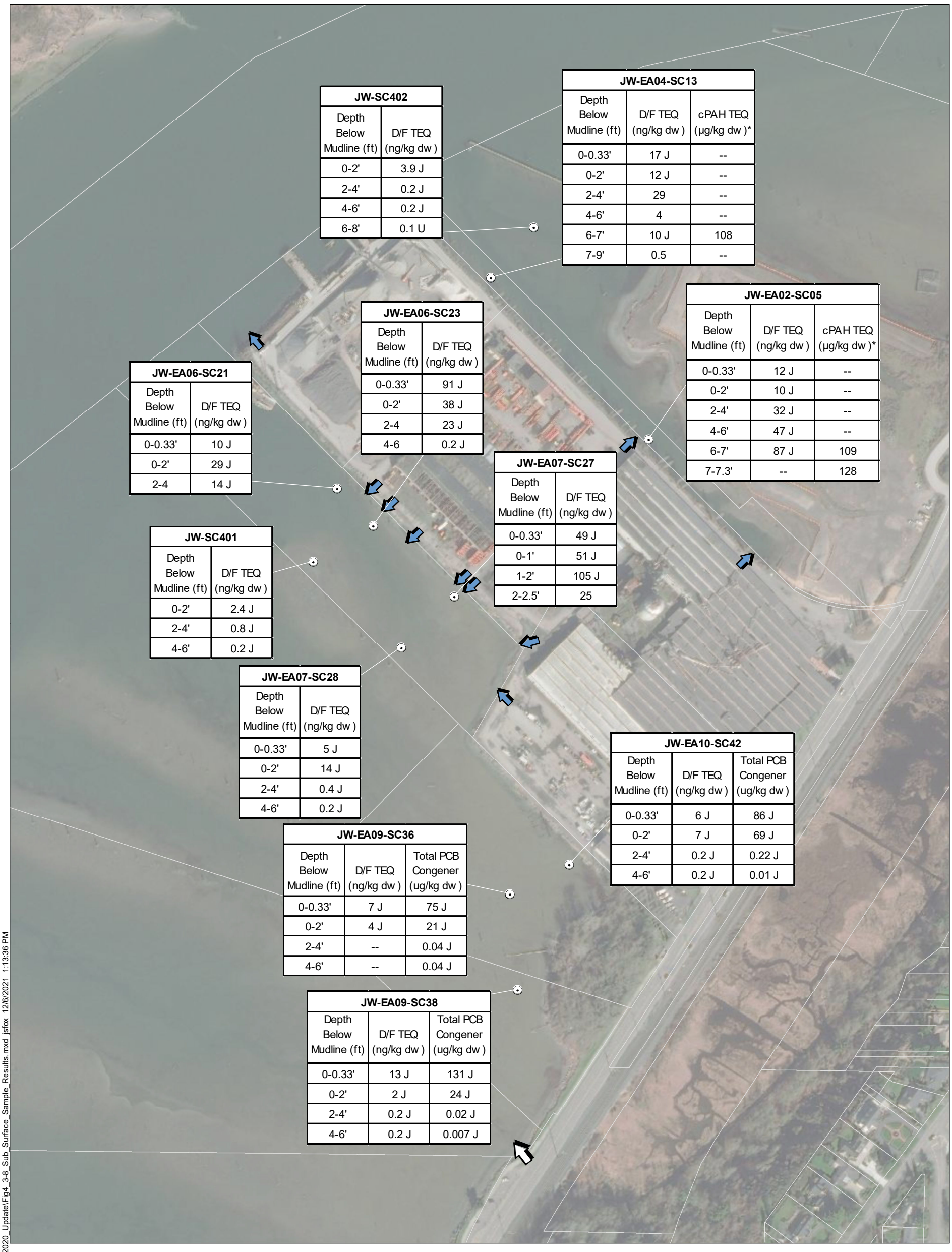
\\orcas\GIS\Jobs\100546-01_JELD-WEN\Maps\RIFS_2020_Update\Fig4_3-5_SurfaceSedDioxin_Furan.mxd jsfox 12/6/2021 1:05:06 PM

ANCHOR QEA

SLR

Figure 4.3-5
Surface Sediment Dioxin/Furan Concentrations
Final RI/FS
Jeld-Wen/Former Nord Door Facility

Figure 4.3-6
Surface Sediment PCB TEQ Concentrations
Final RI/FS
Jeld-Wen/ Former Nord Door Facility



JW-SC402	
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)
0-2'	3.9 J
2-4'	0.2 J
4-6'	0.2 J
6-8'	0.1 U

JW-EA04-SC13		
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)	cPAH TEQ (µg/kg dw)*
0-0.33'	17 J	--
0-2'	12 J	--
2-4'	29	--
4-6'	4	--
6-7'	10 J	108
7-9'	0.5	--

JW-EA06-SC21	
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)
0-0.33'	10 J
0-2'	29 J
2-4	14 J

JW-EA06-SC23	
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)
0-0.33'	91 J
0-2'	38 J
2-4	23 J
4-6	0.2 J

JW-EA02-SC05		
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)	cPAH TEQ (µg/kg dw)*
0-0.33'	12 J	--
0-2'	10 J	--
2-4'	32 J	--
4-6'	47 J	--
6-7'	87 J	109
7-7.3'	--	128

JW-EA07-SC27	
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)
0-0.33'	49 J
0-1'	51 J
1-2'	105 J
2-2.5'	25

JW-SC401	
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)
0-2'	2.4 J
2-4'	0.8 J
4-6'	0.2 J

JW-EA07-SC28	
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)
0-0.33'	5 J
0-2'	14 J
2-4'	0.4 J
4-6'	0.2 J

JW-EA10-SC42		
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)	Total PCB Congener (ug/kg dw)
0-0.33'	6 J	86 J
0-2'	7 J	69 J
2-4'	0.2 J	0.22 J
4-6'	0.2 J	0.01 J

JW-EA09-SC36		
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)	Total PCB Congener (ug/kg dw)
0-0.33'	7 J	75 J
0-2'	4 J	21 J
2-4'	--	0.04 J
4-6'	--	0.04 J

JW-EA09-SC38		
Depth Below Mudline (ft)	D/F TEQ (ng/kg dw)	Total PCB Congener (ug/kg dw)
0-0.33'	13 J	131 J
0-2'	2 J	24 J
2-4'	0.2 J	0.02 J
4-6'	0.2 J	0.007 J

Sub-Surface Sample Locations

Parcels

Stormwater Outfall

Jeld-Wen Outfall

Feet
0 125 250 375 500

NOTES:
1. Total dioxin/furan surface sediment results 2005 Toxic Equivalency (TEQ) for mammals where U=1/2.
2.Total Polychlorinated Biphenyls (PCB) congener surface sediment concentrations dry weight where U=0.
3. Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAH) TEQ were calculated where U = 1/2
4. Duplicate results averaged.
ng/kg dw = nanograms per kilograms dry weight
µg/kg dw = micrograms per kilograms dry weight
ft = feet
* = During core collection at location SC-05, sediments in the 6- to 7-foot interval exhibited visual and olfactory characteristics (staining and hydrocarbon-like odor) indicative of potential contamination. In consultation with Ecology, select subsurface intervals were submitted for semi-volatile organic compound testing including PAHs. Core logs and comprehensive subsurface results are presented appendices to this document.

\\orcas\GIS\Jobs\100546-01_JELD-WEN\Maps\RIFS_2020_Update\Fig4_3-8_Sub_Surface_Sample_Results.mxd lsfox 12/6/2021 1:13:36 PM

ANCHOR QEA

SLR

Figure 4.3-8
Subsurface Sediment Dioxin/Furan and Total PCB Concentrations
Final RI/FS
Jeld-Wen/Former Nord Door Facility

Appendix C: Implementation Schedule

Line Item	AO Task	Event	Estimated Completion Date	Duration (Days)	Precedent
1	--	Start PRDI Project Plan/Permitting/Mitigation Submittals	4/18/2023	--	--
2	--	In-Water Permitting Submittal Development	6/17/2023	60	1
3	--	In-Water Permitting Agency Review Period	12/8/2024	540	2
4	--	Obtain In-Water Permits	12/9/2024	1	3
5	--	**Effective Date of the Second Amendment to the AO**	**7/1/2023**	--	--
6	--	Draft Step 1 PRDI Project Plan (Marine Grabs)	5/25/2023	37	1
7	--	Ecology Review Draft Step 1 PRDI Project Plan	6/8/2023	14	6
8	--	Revise Draft Step 1 PRDI Project Plan	6/15/2023	7	7
9	--	Ecology Review Final Draft Step 1 PRDI Project Plan	6/22/2023	7	8
10	--	Ecology Approves Step 1 PRDI Project Plan	7/1/2023	9	9
11	--	Mobilize to conduct Step 1 PRDI Project Plan	7/2/2023	1	10
12	--	Complete Marine Step 1	10/30/2023	120	11
13	B.1	Draft Step 2 PRDI Project Plan	10/29/2023	120	5
14	--	Ecology Review of Draft Step 2 PRDI Project Plan	11/28/2023	30	13
15	--	Revise Draft PRDI Step 2 PRDI Project Plan	12/12/2023	14	14
16	--	Ecology Review of Final Draft Step 2 Project Plan	12/26/2023	14	15
17	B.2	Ecology Approves Final Step 2 Project Plan	1/2/2024	7	16
18	B.3	Mobilize to conduct Step 2 PRDI Project Plan**	3/2/2024	60	17
19	B.4	Complete Marine Step 2	8/29/2024	180	18
20	--	Draft Marine PRDI Data Report	10/28/2024	60	19
21	C.1	Ecology Review of Draft Marine PRDI Data Report	11/27/2024	30	20
22	C.2	Final PRDI Marine PRDI Data Report	12/27/2024	30	21
23	--	Draft Marine Engineering Design Report (EDR)	2/25/2025	60	22
24	D.1	Ecology Review of Draft Marine EDR	4/26/2025	60	23
25	--	Revise Draft Marine EDR	6/10/2025	45	24
26	--	Final Marine EDR to Ecology	7/10/2025	30	25
27	D.2	Ecology Approves Marine EDR	7/11/2025	1	26
28	E.1	60% Construction Plans and Specifications (CPS) – Marine	11/8/2025	120	27
29	--	Ecology Review of 60% CPS - Marine	12/8/2025	30	28
30	E.2	90% CPS – Marine	3/8/2026	90	29
31		Ecology Review of 90% CPS – Marine	3/22/2026	14	30
32	E.3	100% CPS - Marine	4/21/2026	30	31
33	--	**Final Consent Decree for Implementation**	**4/22/2026**	--	--
34	--	Marine Contracting	6/15/2026	55	32
35	--	Marine Award/mobilization	7/15/2026	30	4,34
36	--	Marine Construction*	10/13/2026	90	35
37	B.4	Upland Investigation and Pilot Testing	3/2/2025	365	18
38	--	Draft PRDI Upland Data Report	5/31/2025	90	37
39	--	Ecology Review of Draft Upland PRDI Data Report	6/30/2025	30	38
40	--	Final PRDI Upland Data Report	7/30/2025	30	39
41	--	Draft Upland EDR	1/26/2026	180	40
42	D.1	Ecology Review of Draft Upland EDR	3/27/2026	60	41

Line Item	AO Task	Event	Estimated Completion Date	Duration (Days)	Precedent
43	--	Revise Draft Upland EDR	5/11/2026	45	42
44	--	Final Upland EDR to Ecology	6/10/2026	30	43
45	D.1	Ecology Approves Upland EDR	6/11/2026	1	44
46	E.1	60% CPS – Uplands	10/9/2026	120	45
47	--	Ecology Review of 60% CPS - Uplands	11/8/2026	30	46
48	--	90% CPS – Uplands	1/7/2027	60	47
49	E.2	Ecology Review of 90% CPS – Uplands	2/6/2027	30	48
50	E.3	100% CPS - Uplands	3/8/2027	30	49
51	--	Upland Contracting	5/7/2027	60	50
52	--	Upland Award/mobilization	6/6/2027	30	51
53	--	Upland Construction	6/5/2028	365	52
54	--	Monitoring	6/4/2033	1825	53